Feasibility Report

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Produced for:

City and Borough of Juneau
Juneau, Alaska

Produced by:

Gravity Logic

INNOVATIONS IN BIKE PARK
DESIGN + DEVELOPMENT
WHISTLER, BC

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1.0 EXECUTIVE SUMMARY

Eaglecrest: From the base of the mountain, Eaglecrest appears to have many of the assets required for the development of a modest but exciting bike park. The topography is interesting, and the vertical differential of the most appropriate lift is perfectly suited for the design and construction of a variety of lift-accessed trails. Most importantly, however, the stakeholders we met on the ground had the unbridled enthusiasm and stubborn resolve required to bring a project from an idea, to planning, to execution.

Two Gravity Logic staff spent two days on the ground in an effort to identify the best plan on which to develop a sustainable lift-assisted mountain bike park. What was found, unfortunately, was some of the most challenging topography, poor (or lack of) soils, and complex hydrology we have ever witnessed. In short, the development of a financially sustainable mountain bike park does not appear to be possible. Even with the infusion of great deal of initial capital, the operating costs vs the forecast visitation would likely mean a significant yearly subsidy just to keep the lifts spinning.

With very few (if any) exceptions, modern bike parks need to offer a wide range of trails to attract riders of all ability levels. Green trails provide opportunities to generate revenue through bike rentals and lessons. These trails, even in the best terrain, tend to be especially difficult to build because of their width, large radius corners, and need for a very consistent trail surface. Blue Flow trails, another important piece of the puzzle require copious amounts of dirt to shape berms, rollers, and jumps. Unfortunately, in the case of Eaglecrest, the muskeg covered ski runs are generally inappropriate for trail building and most of the tree islands and forested areas are either too steep, too wet, or lacking in appropriate amounts of good soil to build modern trails. Once the thick mat of tree roots and organic material is removed, it is likely that almost the entire length of trail would have to be capped with drain rock, cloth, and soils brought in from an external source. This is an extremely expensive and time-consuming process. Even if this long and difficult trail capping is undertaken, the final product is likely to be very expensive to maintain and difficult to alter without starting from scratch.

Given the modest permanent local population likely to be patrons, a bike park at Eaglecrest would have to draw a large percentage of its guests from the ever-increasing number of cruise ship that tie up in Juneau's busy port. Even though the demographics of the cruise ships are changing, with more families and an overall younger clientele, the majority of the guests visiting Juneau on the cruise ships are not the type of visitors who are likely to be interested in lift access mountain biking. Non-traditional cruise ships (i.e UnCruise Adventures) would certainly provide a more appropriate potential clientele, but the numbers required to offset the enormous capital costs invested presented in the pro forma would be unlikely. This, combined with the ships

relatively short time in port, makes attracting large numbers of cruise ship passengers out to Eaglecrest for a downhill mountain biking experience unlikely.

While we did examine other areas that might be accessed by future lift expansion, our study did not lead us to the discovery of any significant areas appropriate for trail building. The forested areas that were not primarily muskeg were all quite steep and very wet, with an extensive layer of organics and large amounts of free flowing water.

Although we did not see much opportunity for a commercially viable bike park on the lower reaches of the mountain, we were more enthusiastic about the terrain at the top of the Ptarmigan lift. The views of the ocean, glaciers, and rocky peaks from the top of this lift were amazing, leading us to contemplate the possibility of a limited sightseeing/alpine hiking product located in this area that could be offered to cruise ship guests. We explored the existing short trail network in this area, and we thought that perhaps this sightseeing and hiking product, in association with a limited food and beverage operation at the top of the mountain might be able to attract cruise ship guests to ride the lift and take in the magnificent views. The short, hardened multi-use trails could be expanded (certainly an expensive and time-consuming process). With the tram at the cruise ship dock already at capacity on busy days, Eaglecrest could possibly position itself to attract a portion of these guests. If this sightseeing product was financially viable, it might also be possible to allow bikers to also use these ridgetop trails. Over time, the ridgetop network could be expanded and linked to one or two trails descending down to the base of the resort. Although this would not represent enough quality trails to create a financially viable bike park, it may be possible to offer this "community amenity" piggybacked on a more financially successful sightseeing operation on the Ptarmigan lift.

This report outlines what could be built in terms of a "typical" lift-accessed bike park but, with respect to financially sustainability, should probably not be built.

Areas to consider outside of Eaglecrest: As part of Gravity Logic's visit, we spent an additional 2 days examining existing and potential areas for the possible development of non-commercial mountain bike trails. While we were able to briefly tour a dozen different sites, we have focused our report on what we feel are the most appropriate for future trail development. The areas covered in this report are: Pederson Hill, Cope Park, The PBR Zone, and Lower Perseverance. Regardless of where (and if) Juneau might decide to invest in additional trail infrastructure, it should be understood that trail construction costs are likely to be significantly higher that most areas in the lower 48. The complex hydrology, abundance of rock, clay, and muskeg, and the generally steep slopes will make sustainable trail design and construction a formidable task.

2.0 OUR COMPANY

Gravity Logic is the world leader in the design of safe, sustainable and progressive mountain bike trails for summer resort operations.

The company was founded to utilize the expertise gained in building the Whistler Mountain Bike Park—the World's #1 Bike Park—to assist other businesses in the design, development, and construction of unparalleled park riding experiences by creating trails and facilities that thrill riders of a wide variety of ages, skill, and interests.

2.1 OUR SERVICES

Gravity Logic provides a wide range of services to clients who are interested in developing their mountain biking products, including:

- Feasibility Studies
- Operational Assessments
- Design and Planning
- Development and Construction
- Rental and Retail Consulting
- Safety and Risk Management

2.2 OUR TEAM

Gravity Logic was founded by the team behind the Whistler Mountain Bike Park's success. In fact, Gravity Logic is still actively involved in the continuing development of the Whistler Bike Park.

Dave Kelly is the true genius behind A-Line, Dirt Merchant and Whistler's legendary "flow". He has been involved with the Whistler Mountain Bike Park since its opening in 1996. Dave was among the first to officially establish downhill mountain bike trails on Whistler Mountain and continued to work as part of a small trail crew / summer patrol for the following four years. As the mountain bike park grew, Dave worked his way up from lead hand, to crew supervisor, to co-manager of the Whistler Mountain Bike Park. Dave also has eleven years-experience with the Whistler Mountain Ski Patrol. Because of Dave's extensive experience in the field of risk management, he has been called upon to offer expert advice on the safety, risk management and construction practices of mountain bike parks around the world. Dave was instrumental in the design and construction of the Trestle Mountain Bike Park, which is currently the most successful mountain bike park in the United States.

Tom "Pro" Prochazka managed the Whistler Mountain Bike Park from 2001 to 2007. His ability to visualize trails and trail features that are both progressive and safe has earned him international respect from casual park visitors and professional riders alike. Tom's twenty years of experience as a carpenter and sawyer are an incredibly valuable asset in terms of designing trail features that are structurally sound, safe, and fun to ride. Tom, also our resident jet-setter, is racking up the air miles travelling to such far flung places as Ukraine, Russia, Italy and Sweden, and continues to travel the globe offering advice to resorts hoping to emulate Whistler's success.

Rob Cocquyt worked on design and construction of the first trails on Whistler Mountain in 1995. In 1996, he established his own trail design and construction company and, over the following years, secured government funding and hired crews to build some of the West Coast's most highly regarded trails. Rob worked full time with the Whistler Mountain Bike Park from 2005-2008 as lead hand, carpenter, and finally as trail crew supervisor. Rob is Gravity Logic's go-to guy for mapping and GPS work, occasionally finds himself running a mini-ex, and spends an inordinate amount of time laying out and designing trail in the thickest, thorniest forests to be found in the world. Rob was the project manager in the design and construction of a 63-kilometer downhill and cross-country trail network in West Virginia for the Boy Scouts of America permanent jamboree site.

The Gravity Logic core is assisted by a variety of consultants and contractors on an "as needed" basis. We have direct access to experts in Risk Management, Mapping, Environmental Planning, Rental/Retail, Event Planning, and many other areas.

3.0 AIMS AND OBJECTIVES

This report serves to provide a broad overview of the work carried out by Gravity Logic at the Eaglecrest Ski Area, The PBR Zone, Cope Park, Pederson Hill, and Lower Perseverance between October 1st and 4th, 2018. The aims and objectives of the visit and follow up work were as follows:

- To examine, through on-the-ground proofing, the potential (in terms of capacity, scale, and scope) of Eaglecrest ski area as the site of a commercial mountain bike park.
- To examine additional mountain bike development opportunities in the greater Juneau area.

4.0 MARKET

4.1 POPULATION

Typical of many ski areas around the country, the immediate Juneau and Borough area has a relatively small permanent population of approximately 33 000.

Given the modest population of locals and visitors able to easily access Eaglecrest, the quality and variety of the product would be a major factor in determining how far riders would travel to visit the mountain, and how many riders Eaglecrest ski area might be able to attract.

*In 2007, a British Columbia Mountain Bike Tourism Association study showed that **56% of Whistler's riders were overnight visitors**, with **60% of riders arriving from outside of British Columbia**. **International visitors alone made up 21% of Whistler's visits**. Riders in the bike park stayed in Whistler an average of 5 days compared to the overall resort average of 3 days. More anecdotally, an excellent example of the travel-willing ways of bike park guests is Sugarloaf Bike Park, located in northern New Brunswick, Canada. This small bike park (less than 500 vertical feet) has season's pass holders from as far away as Montreal (a 10-hour drive) who make regular 2-4 day trips to ride the park. It is worth noting that these same riders are bypassing other larger bike parks such as Bromont and Mount Saint Anne along the way. With the help of Gravity Logic, the trail network at Sugarloaf has become quite popular in Eastern Canada, and it enjoys a modest following both locally and regionally.*

Eaglecrest ski area's biggest challenge (and opportunity) would be to create a park that riders are willing to visit for more than one day.

It is not unreasonable to assume that the evolution of Eaglecrest ski area into a quality bike park destination could encourage riders to travel surprising distances. It would be important to develop a core local ridership from the immediate area to act as Eaglecrest ski area's small army of bike park ambassadors (through social media and word-of-mouth). Riders that are considering driving to visit Eaglecrest ski area would need to have their plans initiated by Eaglecrest ski area's marketing efforts, validated by the riding community, and further encouraged by an easy and attractively priced booking process that includes an incredible product.

5.0 PRODUCT ATTRIBUTES

5.1 TERRAIN FEATURES

General: The terrain that forms the study area was explored by foot with an eye towards revealing its challenges and opportunities. Our exploratory walks led to the discovery of wetlands, rocky ridges, peat meadows, and stunted forests with a mixture of copious amounts of rock and good quality mineral soil.

As always, our challenge at Gravity Logic is to design a trail network that link geological and topographical features together in a way that results in a bike park that feels more organically designed and with natural flow being more the result of interesting micro-topography rather than the result of moving mountains of dirt. Eaglecrest poses a unique challenge in this regard in that the best terrain and best soils are not located in areas conducive to reasonable lift access.

5.2 EXISTING TRAILS

The existing flow trail built on the ski run as a prime example of what can be expected with further trail building on the muskeg. Although a large amount of volunteer effort, time and capital went into the construction of this trail, the results were only modestly successful. Although some improvements in the layout and construction method could be suggested that would help improve the flow of this trail segment, it is our opinion that building a “floating” flow trail on the muskeg should not be continued. It will likely continue to sink and settle, and the membrane used in the construction process will forever continue to reveal itself. This type of construction will be expensive initially and require continuous and expensive maintenance. Unfortunately, excavating below the muskeg, and building the trail back up with rocks and dirt would be a very expensive and time-consuming task, if it is even possible. At all the resorts we visit, we strongly advise against building long sections of trail on open ski runs. Trails on open ski runs are more exposed to the weather and require more maintenance than trails built in the forest. Also, berms and jumps built on ski runs have significant impact on winter operations, especially in areas of low snow or limited snowmaking. Trails on ski runs should be limited to straight crossings with minimal features. These crossings should be used to link up trails built in forested areas or tree islands, where the majority of the length of trail should be built. Unfortunately, extensive exploration of the remaining tree islands did not lead us to the discovery of any significant areas appropriate for trail building. The forested areas that were not primarily muskeg were all quite steep and very wet, with an extensive layer of organics and large amounts of free-flowing water.

6.0 OPERATIONS AND INFRASTRUCTURE

6.1 LIFT

The existing lift at Eaglecrest would adequately serve the expected number of visitors. While we generally suggest purchasing purpose-built trays for uploading bikes, Eaglecrest would likely be able to use an inexpensive "hook" style carrier mounted on every third chair. Modifications to the load/unload areas and ramps may be required to safely allows pedestrians / riders to use the lift.

6.2 PATROL / RISK MANAGEMENT

***Patrol**:*

Eaglecrest ski area would need to establish ***a full-time dedicated*** bike patrol, regardless of the size of the bike park operation. Ideally, Eaglecrest ski area's bike park patrol will consist of individuals who already possess a background in mountain biking as well as first aid. Bike patrollers should all be advanced or expert level riders. This will reduce workplace injuries, and will allow for quicker responses to injured guests. Additionally, patrollers who have a background in mountain biking will be better able to recognize safety concerns and trail maintenance requirements that can be documented and passed onto the dedicated trail crew.

In general, the procedures, paperwork, training methods and equipment used for winter ski resort operations can all be adapted to the summer bike park operation. The minimum first aid and CPR certifications for patrollers are the same as for winter ski hill operations.

We recommended a minimum of 2 patrollers per day. Our pro forma numbers are based on a minimum of 2 patrollers plus an additional patroller for each 200 riders/day. This will allow for the patrol team to potentially respond to multiple incidents at the same time. Additional patrollers can be added based on increases in rider visits and the expansion of the trail network. Other considerations (overall acreage accessible, events, etc.) to staffing levels will also have to be taken into consideration and adjusted accordingly.

Although cooperation between departments is an integral part of any successful operation, Gravity Logic does not recommend "job sharing" between patrol and other departments such as lift operations or trail crew**.** The responsibilities of a patroller in a downhill bike park are quite extensive, especially when the crew is small. Between morning trail checks, responding to injured guests, maintaining fencing and signage, end of day sweeps and the inevitable "things to do" list, patrollers will have no shortage of tasks requiring their full attention. Similarly, trail crew staff will have an endless stream of tasks to fill their time, and should not be expected to leave those tasks to respond to first aid.

6.3 HOSPITAL INTERFACE

The summer patrol will need to establish procedures with the local health care facilities. Trail design should include emergency access locations some of which may be accessible by 4wd

ambulance. As part of its SOP's, Eaglecrest ski area would need to coordinate with the appropriate emergency services to communicate the locations of these access points. Once again, existing winter procedures will provide a logical starting point. Gravity Logic has the expertise to facilitate the creation of these critical procedures.

7.0 STAKEHOLDER CONSIDERATIONS

7.1 LOCAL BUSINESS

Local businesses in Juneau are heavily reliant on revenue from the cruise ship industry. It is worth noting that, if the city were to actively try to capture some of the cruise ship business, it might be seen as competing with its own "shareholders". While this negative perception could be somewhat mitigated by including private business in the business plan (i.e having an existing bike rental company provide bike rentals for a Bike Park) this approach would also negatively effect the viability of the Bike Park itself.

7.2 POTENTIAL BARRIERS

Capital Investment: As with any new operation or capital improvement, the willingness to invest the amount of capital required can represent a significant barrier. In terms of bike park operations, it is important to understand that operators which "dabble" or fail to treat their bike parks as legitimate operations have a difficult time realizing a return on investment conducive to long term success. Conversely, operators that understand that bike parks are a real (although smaller) business every bit as important as their ancillary operations are seeing impressive growth from year to year. While Eaglecrest ski area has potential to attract guests from the nearby population centers, it also has a great deal of work to be done (and capital invested) to build the type of infrastructure that will convert its permanent and tourist population into year-round Eaglecrest ski area advocates.

Operating Costs: Given the modest visitation projections, the operating costs of running a lift assisted bike park would likely exceed the potential revenue. Unless additional uses for the lift could be justified (sight-seeing / mountain coaster) the standalone operation of a bike park would almost certainly require a subsidy to cover additional staffing, maintenance, and electrical costs.

8.0 PRODUCT OVERVIEW

Many bike parks around the world have achieved varying degrees of success not because of what they do, but despite what they do and have been unable to fully capitalize on the growth of the sport. They have found and retain existing riders but have done little to foster loyalty from new riders. They have built their brand on being exclusive rather than inclusive and with trails catering to more advanced riders rather than to the unmet needs of beginners and intermediates.

Recognizing that (*just like a ski area*) a bike park's offerings need to cater to the beginner, the advanced, and everyone in between we would like to envision Eaglecrest as a trail destination for all riders - where 16 year-old rippers can ride with their parents and where girlfriends can bring boyfriends, husbands can bring wives. Most importantly we like to see a bike park where someone can learn how to ride a Green DH trail for the first time, where they can safely progress to riding every challenge the mountain has to offer, and where they can still enjoy the rush, predictability, and easy-on-the-body joy of a flowy blue trail as their tired old bones carry them down the mountain many years later. We want riders to dream, to plan, to validate, book, experience, and then advocate for other riders to join the cycle. Eaglecrest ski area will need to ensure that the trails are packed – top to bottom – with ***"More Smiles Per Foot"*** that will help define the Eaglecrest bike park. Creative trail design will be required, but we feel that ample doses of art and science can lead to the development of memorable story-creating trails. What Eaglecrest ski area needs is a Green trail to teach beginners, A Blue jump trail to satisfy the masses and make them feel like mountain bike rock stars, and a race ready DH to appease the riders who want to point their bikes downhill and beat their previous lap time.

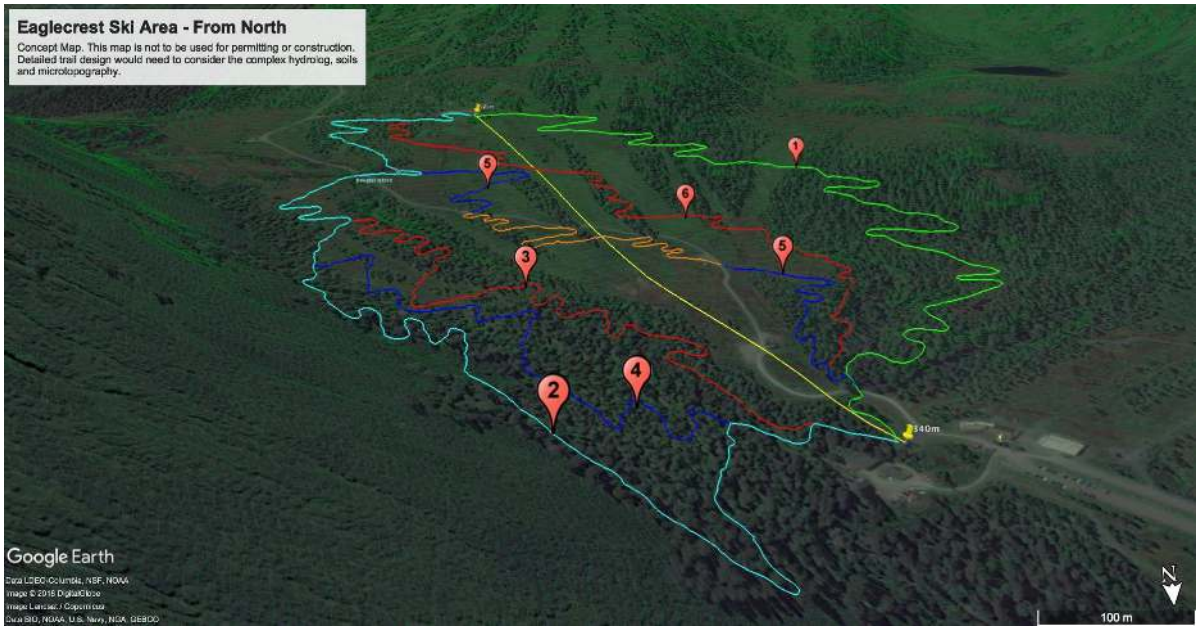
Capital and operating costs aside, Eaglecrest has the potential to increase purpose-built mountain bike specific offerings in Alaska considerably, and to fill the unmet needs of both dedicated mountain bike riders and adventurous families. The vastly underserved market for beginner and intermediate riding terrain cannot be ignored. Beginner and intermediate riders are more likely to rent bikes and sign up for lessons, increasing the opportunities for the bike park to prosper.

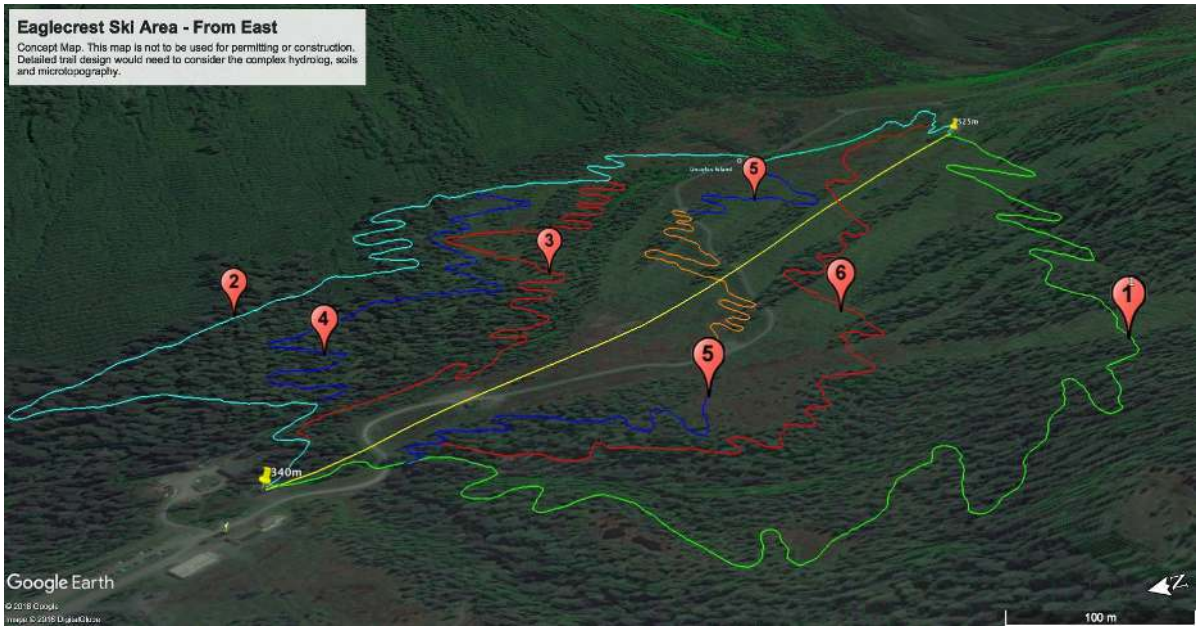
Lift-Assisted Mountain Bike Park: We have drawn the DH conceptual trail map with the same approach as we would with any ski area we visit except for the number of trails being scaled back to reflect a more realistic capital expenditure given the anticipated high construction costs. The concept map allows for a top-to-bottom Green trail and a variety of Blue and Black (drawn as red lines) trails.

The plan calls for the construction of 13.12 km of trails to be built over 5 years. All trails would require a ***very*** significant amount of good quality mineral soil to be imported to raise the tread and allow for the construction of ditches and technical trail features. Trail costs ($80-$120/m) are a high level estimate that would need to be refined during detailed trail design. The placeholder number, however, is based on recent real-world costs in the Pacific Northwest in some similar challenging terrain with an additional cost added to reflect the need to import soils.

Years 4 and 5 would not have any full length trails built but a placeholder "Infill Trails" has been added to the pro forma to allow for the construction of any needed connectors and variations to existing trails.

The maps below show conceptual **numbered** trail corridors. Please note that this map is a visual tool to help identify where trails might go and how they might tie together. It should not be used for permitting purposes. Detailed trail design (should this project move forward) will consider the micro topography, soils, sensitive areas, and operational constraints that are beyond the scope of the feasibility assessment.





9.0 DESIGN AND CONSTRUCTION PLAN

9.1 THE DEVELOPMENT OF A TRAIL PLAN

A well-designed downhill mountain bike facility must be able cater to the full spectrum of visitor's abilities while having minimal environmental impacts and low maintenance costs. A balanced approach to the development of a trail network is key to the success of the bike park.

To identify the proper terrain for any given trail, the Gravity Logic team spent two days on the ground walking and observing as much of Eaglecrest ski area as practical.

9.2 THE TRAIL PLAN

Any successful mountain bike facility must pay careful attention to the layout and design of the trail network. Some of the trails, designed to accommodate the wide spectrum of riders that the park will attract, will need to be built by machine. Other trails might also have Technical Trail Features (TTF) built into them, at a degree of difficulty appropriate to the overall trail rating.

All mountain bike trails on the conceptual plan have been designed with approximately 5%-14% average grade over the length of the trail. A 10% grade is generally considered sustainable in terms of resistance to erosion and damage. Moderately graded trails (<10%) work with most soil types, minimize erosion, and allow for flexibility of design. As it is the average grade, some trail segments would understandably be greater or less than 14% based on detailed design.

The conceptual trail corridors have been identified on the attached maps. Further field studies (ground-proofing) will identify positive and negative control points in order to refine exact trail locations and incorporate positive flow and transition between trail segments. Control points

identify specific areas along the trail that should be connected (positive-viewpoints, terrain benches, unique geography etc.) or avoided (negative-watercourses, user conflict, extremely difficult construction challenges, wildlife habitat, etc.).

9.3 DEVELOPMENT SCENARIO

Our construction plan has the bulk of new trails being built over a period of 3 years, with additional improvements and adjustments to existing trails through years 4 and 5. We strive to design trails as not just Green, Blue, and Black, but rather Light Green and Dark Green…Light Blue and Dark Blue…Black and Double Black. We feel that a properly planned trail system allows Green riders to safely progress to the Blue trails and allows instructors to teach Blue skills in a controlled environment. We want Blue trails that offer progression into Black trails.

9.4 CONSTRUCTION PLAN

Trail Design and Construction: There are several resources available that outline and diagram specific trail construction techniques. It will be important that Eaglecrest ski area proponents present any construction documentation as guidelines rather than standards. Flow trail design and construction is unique in that the goal is to create a sustainable surface with minimal impact. Typically, the goal is to use the micro topography of the land (where possible) rather than excavating or importing large amounts of material. In the case of Eaglecrest, most trails would need a significant amount of both base and capping material to properly manage water and to provide a suitable tread.

Many resources quote the size of the material to be used, the degree of compaction required, the minimum turn radius and slope angle. Not only is this not practical for lighter-on-the-land trail construction but it can work against the natural flow of the landscape.

While Gravity Logic follows the generally accepted sustainable methods of construction, downhill mountain biking is a relatively new pursuit compared to cross country mountain biking and trail construction techniques are quickly evolving to accommodate the different types of bikes, riding styles, and sheer volume of riders that are likely do laps on a well-designed and well-built mountain bike trail. While many of the fundamentals of trail construction are similar to trail building techniques used since the beginning of time, there are a few key differences, particularly in the insloping of trails and water management.

Generally, Gravity Logic-built downhill trails are insloped (the bench of the trail is canted back towards the hill). This forces water to run to the inside of the trail bench and into frequently placed culverts. The water flows into a small sediment trap and only flows through the culvert if the volume exceeds the ability of the sump to naturally drain. The added retention time created by the sump allows sediment to fall out of suspension. Sumps are generally cleaned as part of regular trail maintenance on an as-needed basis. Aggressively insloped turns (berms) allow riders to maintain their speed without the need for aggressive braking and the erosional effects associated with it.

Frequent grade reversals are another key component to minimize erosion. Based on observations made during our visit, the soils at the Eaglecrest ski area site appear to be generally stable. However, even the most stable soils can quickly erode due to sediment recruitment caused by a combination of an excessive volume and velocity of water. Long uninterrupted downhill trail segments can quickly channel an amount of water that will invariably lead to scouring and trenching. A fundamental part of our design process is to incorporate very frequent grade reversals to minimize the volume and velocity of water captured by any individual trail segment. Grade reversals have the added benefit of creating a roller-coaster effect for riders.

- Forest clearing in the proposed trail corridors would be reduced to the extent practical through careful trail layout and design.
- Trails corridors will be grubbed (cleared of organic materials) in order for the trail surface to consist solely of quality mineral soil. Grubbed organics may be used to re-vegetate off-trail disturbed areas.
- Watercourses will be avoided or spanned with bridges. Bridges would be built using a combination of treated and untreated wood. Galvanized fasteners will be used throughout. Wet and/or boggy areas will be crossed, if necessary, using a combination of raised mineral soil causeways, ditching, and/or raised wooden boardwalks. In watercourses where seasonal flow is expected, but permanent water is not present culverts (min 30cm) or bridges (site specific) will be used. In any areas where water is not expected, but possible, culverts (min 15cm) will be used.
- Re-vegetation may include topsoil / organic replacement, planting, seeding and fertilization where appropriate.

9.5 TRAIL MAINTENANCE

The importance of incorporating and planning for adequate maintenance resources is often overlooked. Neither riders, nor media, nor trail crew will speak as excitedly about a well maintained trail as compared to entirely new trails being unveiled or, for that matter, trails simply under construction. Trail maintenance is not glamorous. On a less obvious, almost subliminal level, however, the difference between a well-maintained park and a poorly maintained park can mean the difference between success and failure. Trail maintenance is, quite likely, the single most important component of the bike park machine.

A well-maintained park:

- Reduces damage to the rental fleet
- Reduces rider injuries
- Reduces erosion

- Encourages repeat and increased multi-day visits

We generally suggest park managers to budget 10% of the previous year's capital expenses to be dedicated to trail maintenance. This number might vary, however, based on terrain, trail type, and expected rider numbers.

Maintenance might include any or all of the following:

- Spot maintenance. Identifying and dealing with a fallen tree, or a large hole, or a collapsed turn.
- Safety maintenance. Identifying a section of trail that is producing an abnormal amount of injuries. Determining the root cause (i.e. too much speed leading into a small jump). Fixing the problem (i.e. rerouting the trail to reduce speed or adjusting the size / angle / landing of the jump)
- Routine maintenance. Closing a trail for a day or days to give it a minor overhaul (i.e. filling holes, repairing berms, removing loose rocks, trimming branches, cleaning ditches, inspecting / repairing wooden structures)
- Overhaul. After a few years a trail might require a partial or complete overhaul. At a significantly lesser expense than new trail construction, a trail overhaul (elimination / addition of features / jumps, rerouting, resurfacing) can breathe new life into an old trail.

10.0 REVENUE MODELING AND ASSUMPTIONS

NOTE: See attached spreadsheet; *Eaglecrest ski area Pro Forma* for visit and revenue modeling and assumptions.

There are four different Lines of Business (LOB) contained in the pro forma and all are important in maximizing ROI on the investment in the park, and the guest experience. The four LOB's are as follows:

- Tickets
- Rental/Demo
- Retail
- Lessons

10.1 TICKET REVENUE

Ticket yield should be managed with a similar process to winter ticket yield. Consider the impact of packaging, season passes, special offers and white space opportunities. At this point in the maturity of Bike Parks, ticket yields are considerably less than winter yields, however, they are rising quickly as the demand and the quality of experience grows. Unlike the winter business, competition is relatively limited and, as such, has little impact on pricing and yield strategies.

Visit Forecasts by Year

- Year 1 –2200
- Year 2 –3300
- Year 3 – 4950
- Year 4 – 6930
- Year 5 – 8663

Operating Dates and Hours

For the pro forma, it is assumed that the lift service side of the park is open a total of 57 days. This includes three-day weekends from late May through early October. The park would generally open 7.5 hours each day in the summer however limited twilight opens could be considered as park visitation and demand grows. This calendar would need to be adjusted to consider snowpack variations from year to year.

10.2 AUXILIARY REVENUE – RENTAL/DEMO

Rental (and Demo) serves as the second biggest individual category for revenue (just behind tickets). This is because of two reasons:

- Expected penetration into the rider base
- The cost to rent/demo relative to the cost of the lift ticket

Often the lack of availability of rental or demo bikes at a park is a limiting factor for visit growth. While having too many bikes (not being rented) is a drain on cash flow, having too few bikes can have even worse impact on potential cash flow, and more importantly guest impressions. *Offering bikes that are of good quality, appropriate for the trails, well maintained and an additive to the bike park experience is regularly overlooked by startup bike parks.* Rentals, therefore, need to be given significant thought, planning and resources in the operation. The rental experience can make or break the park guest experience, and a positive one will significantly increase the likelihood of the guest returning, and being a net promoter of the park.

The attached pro forma outlines fleet size and make up, rental penetration and fleet utilization benchmarks. Delivering these achievable industry benchmarks and best practices (while

maintaining Eaglecrest ski area's core values and business objectives) would require additional focus and effort. The core of the sales and rental process, along with the attention to detail and quality that is used in the winter would not stop…but it would need to evolve to meet the needs of the park and its riders.

Rental penetration reflects the relative newness of the sport and the fact that there are limited other places to ride DH bikes in the area; so fewer people will choose to own one.

There should be three levels of DH bikes: Basic Rental, Demo and Junior 24" (for 9 -13 year olds). Packages should be offered that include bike, helmet, gloves and protective gear. This will maximize revenues and reduce minor injuries by including protective gear.

A "one-stop shop" for the Bike Park could be established allowing for maximum cross-selling opportunities.

- ***Flow*** **-** A step one, two, three etc. flow is the most efficient for a high volume rental shop. Clearly defined "Steps" allow guests to feel confident about the process and can maximize the efficiency of the store.

  Steps recommended are:

  1. Greet and sell (upgrade, lesson, additional items such as shoes, GoPro etc.)
  2. Pay + Sign Waiver
  3. Fit armor, gloves and pads
  4. Helmet fitting
  5. Bike issue and settings adjusted
  6. Take bike and exit the location

  In this flow, the guest leaves with the bike fully outfitted and ready to ride. The bike should be the last item. If they need to put the bike down, ideally it is already with them outside. (Tip – remind them to go to the washroom BEFORE they get their bike. This is a great icebreaker for the greeter upselling opportunity)

  Step 1 should include a "showroom" experience for your rental offerings, at the beginning of the process. Showrooming and predetermining rental equipment choices will speed up the rental process and maximize upgrades and revenue opportunities (see merchandising).

  Opportunity: Have a permanent greeter in your showroom area. The greeter can answer any questions, up sell, and help guests feel confident and excited about what is ahead. An effective greeter will also speed up the payment and rental process.

- ***Merchandising –*** Knowing that there isn't anywhere else to rent downhill gear at the base, guests are locked into renting from the Bike Park Shop. The game then shifts to maximizing how much they will spend when they rent. Effective merchandising can translate into incremental rental items and equipment upgrades.

  Using the front of the rental shop as a "Showroom" (as discussed earlier), and merchandising the demo and new rental offerings similar to a retail shop, will capture the riders (or their parents) at the decision point. People often perceive the upgrades, such as carbon helmets or DH biking shoes, as higher quality and in most cases they make for a more comfortable biking experience. High net worth clients should embrace this change and drive up the RPV.

  Manufacturers will often provide significant discounts on demo product over and above previously negotiated best retail pricing. Demo product can be sold after just a few uses at excellent margins and allow you to constantly refresh the product.

  Opportunity: Move displays of bikes outside the front of the store and use the exterior to showcase equipment, brands and gear. Vendor tents add animation as well as protect bikes and gear from the weather.

- **Branding**- Make sure the rental business tell the Bike Park story. Avoid the trap of having a shop that looks like a ski shop that rents bikes. Embracing the bike park story through images, partner brand messaging/logos and bike park footage creates a sense of excitement and passion for DH biking for riders and staff. The first step is hiding or

removing the “ski shop” feeling and becoming part of the bike park experience.

Partner vendors are likely to support a branding effort in the rental shops with co-op and/or further incremental discounts or no charge product. Using their logos, brand and athlete images adds a sense of authenticity to the store and can also reduce costs and efforts.

Example of partner branding in a Bike Park Shop

- **Fleet Size and Assortment –** Having the right sized rental fleet is crucial to the long-term health of the park. Cash flow, visitation, guest satisfaction and profitability are all materially impacted by the success of the bike park shop rental operations. Being sold out is a big issue for both missing revenues and guest service/expectations. Having too many bikes is a much bigger investment/risk as far as working capital is concerned.

  The ideal fleet size is one where the fleet is in use around 60% of the time. This balances a minimal buy-in with being able to maximize renting out bikes as often as possible. The limiting factor is demand on the busiest days (is running out of bikes acceptable? – likely in most cases you can move riders into an afternoon session should this happen). The correct fleet size also allows for maximized yield and minimal repair costs.

  Opportunity: Offer a multi-branded Demo bike fleet. Bike parks that have offered dynamic demo programs see more visitors choose their park because of the equipment selection compared to bike parks that do not offer this option.

  Demo programs also offer the opportunity for partner bike shops to send their customers to “try before they buy” bikes (retailing DH bikes at your park is not recommended, however, partnering with local retailers to refer retail bike sales is a powerful business community engagement tool). By offering bikes for demo that retailers generally do not carry, bike shops become ambassadors for the park and promote the opportunity heavily. As sales are generated, owners of newly purchased DH bikes will likely return to Eaglecrest ski area’s Bike Park to ride and enjoy their bike. The best traction for the demo program amongst bike shops happens where there is a discounted rate offered via their shop to

their customers to demo. Manufacturers are very supportive of bike park demo programs as well.

"*Other Rental Revenue*" should provide around 18% of total rental revenue. Opportunities for "other rental revenue" generation include damage waiver (average $20 per rental and should not be included in the rental price) and offering additional rental items such as shoes, goggles, GoPro cameras and neck braces. Also, consider upgrades such as high-end carbon fiber full face helmets and armor. Many XC/All Mountain riders who are considering trying out the park will rent full face helmets, padding and body armor to use with their own bike in the park. Having the right amount of these items available will maximize your revenues and ensure that there is "no excuses" for riders not to venture into the Park.

Over time, Eaglecrest ski area is forecast to achieve around 35%-40% rental penetration, but will need a specific marketing, sales and trail plan to drive this type of rider to the park. Mid 30's would be consistent with most mature bike parks as the number of season passes and "local" riders will impact the percent downward.

To help deliver the growth, a marketing and sales plan aimed at beginners, families and groups is needed.

- **Sales Plan**: A sales plan that identifies where the rental days are coming from will be a valuable tool to help Eaglecrest know if they are on track to achieving the overall rental penetration goal. Breaking the segments of rental business down (by both rentals and yield) allows insight into what areas are performing and where course correction is needed. Assign rental management and sales teams the responsibility to deliver these numbers along with weekly reporting on both achieved and forecasted numbers.

  Opportunity: Develop a simple sales plan that breaks up the expected rental day budget by the following areas:

  - Ride school (X rental days and $Y average yield)
  - Group business (X rental days and $Y average yield)
  - Call Center (X rental days and $Y average yield)
  - Walk in (X rental days and $Y average yield)

Listed below are some additional opportunities to drive incremental growth and profitability:

- Rental Equipment Packaging – Consider changing the rental packages to include a full set of body protection. The bike rental package should include full face helmet, gloves, knee pads and jacket (i.e. Fox Titan Jacket). This allows you to charge more and will likely reduce minor injuries. The costs to add this equipment to the rental fleet is relatively minor (around $150 per set) and can be recovered at the end of the season through resale.
- Packaging – Consider changing the way bike park products are sold to "package" bikes and lift tickets along with Bike, Lift and Lessons. This will provide more of a one stop shop for guests and discourage competing rental operations.
- Variable Pricing – Can you encourage more ½ day rentals through pricing changes? Are full day renters using the bike all day or are they keeping the bike while they have lunch, go to the bar etc. It may be possible to move more people into ½ day rentals and then re-rent the bike in the afternoon (increasing average yield, selling two lift ticket sales per day per bike). Consider a bigger gap between ½ day and full day (say $77 - $129). If this does not increase rental days, you may be able to get away with a smaller fleet (less working capital and risk in the bike fleet).

Can you charge more when demand is higher? Can you charge more on weekends (message as discounted weekday rates, not higher priced weekends)?

10.3 AUXILIARY REVENUE – RIDE SCHOOL

Ride School is a critical piece in the long-term success of the bike park. It serves as a vehicle to introduce bikers to park riding in a controlled, friendly way. It gives riders a confident, low risk method to enjoy the park and progress much faster than they otherwise would have.

At 10% penetration into the park rider visits, ride school touches 1 in 10 park riders and adds a sense of legitimacy to the activity. It is also a great sales tool for attracting school and corporate groups. Almost all rider school guests also rent all the equipment needed for their park experience, adding another important cog in the revenue maximization plan.

A ***Beginner 101*** is the core of the Ride School offering. It should be carefully priced to drive easy entry into the sport. It should include a 2 ½ hour lesson, ticket and bike rental. A limited number of lessons should be offered for every morning, early and late afternoon with a strong pre-book message to "reserve your spot". This could be a lodging packaging opportunity as well (Family Friendly Experience). Riders should arrive 30 minutes early to get riders suited up and familiar with the bike.

A strong marketing and signage plan should support the ***101*** program and it should be offered to all riders who visit the park. It should message that this the best way for a rider to adapt their riding skills to bike park riding and to progress quicker to the blue and black trails. Consider a discounted

offer or 2 for 1 for slow times, early mornings or even try a late evening session.

Group lessons and private lessons should grow as the park grows.

Guide / Instructor Training:

Most Bike Parks are using a professional certification company to train and certify their instructors. In the absence of a PSIA equivalent for downhill biking, using a company such as Zep Techniques (http://www.zeptechniques.com/) ensures that best practices are in place and reduces risk to the organization. It will also allow the company to tap into a worldwide pool of instructors (much like the winter).

10.4 AUXILIARY REVENUE – RETAIL

It is important for a bike park to operate a bike park shop. A bike park shop differs from a bike shop in that its purpose is to support the bike park and sell items that enhance the experience and celebrate the lifestyle. It is not a bike shop.

By offering items that support the bike park, stores can focus on stocking high margin/low effort items such as accessories (gloves, pads, goggles), logo clothing and small spare parts that allow guests to "keep going" without the requirement to stock low margin/high effort product like bikes, wheels, brakes, technical outerwear etc. that are more commonly found in full service bike shops.

11.0 MARKETING OVERVIEW

11.1 OVERVIEW OF MARKETS

Mountain bikers are characteristically a very passionate audience. If you communicate with them in the right way you will find them to be much more engaged than an average ski/snowboard visitor and you will be rewarded by their support and loyalty.

The trend of "all-mountain" bikes has opened park-riding up to a whole new audience. This has resulted in the development of three main audience profiles:

1. Family Riders

Aged between 35-55, with children aged 8-16, this audience sees mountain biking as a fun family adventure activity, similar to white water rafting or snowmobiling. Their preference is for un-intimidating entry level to mid-level trails that can accommodate a wide range of riding abilities. Their focus is on family, fun and safety. This market segment is likely to have more disposable income than Core Riders, and is profitable due to the increased revenue from rentals and food and beverage purchases.

2. Core Riders

Aged between 18-44, this is an audience for whom riding is not just a past-time. It is core to their identity, defining their lifestyle and creating their community. Riding drives all their decisions – from the magazines, blogs, and product reviews they read, to where they travel to, what movies they watch, and which athletes they are inspired by. They have a high sense of adventure and desire the best and newest experiences that their chosen lifestyle can bring.

3. Mainstream All-mountain Riders

Aged between 25-44, this rider is competent and comfortable on most cross-country trails. They have recently spent a portion of their sizable disposable income on a new 6-and-6 all-mountain bike to improve their riding, and they now have the option of venturing into downhill. They are looking to accomplish something from their riding, to see new sights and tick some 'adventures' off their list. The main barriers to park trial for this demographic are: their false perception of the difficulty of terrain (fear of the unknown), a fear of looking and feeling out of place and the risk of injury. (Their jobs and families are too important to risk injury)

It is important to note that additional emerging markets may exist, but are best targeted through tactical marketing around programming than through the overarching marketing strategies.

11.2 MARKETING STRATEGIES AND CHANNELS

To ensure a successful launch and first year, the most important tool is a fully integrated marketing plan based around a central concept, with supportive key messages developed specifically for the new facility.

The mixture of channels used to communicate those key messages will vary by situation, budget and location but should address all key parts of the purchasing cycle as people discover, transact, express and share the product.

Channels may include:

- *Collateral* – including trail maps, rack cards and posters. Consider how and when your visitors will require information they can carry with them. Stay visible in key locations without being wasteful or environmentally irresponsible.
- *Website* – developing a user-focused and scalable website that allows you to add regular new content will be key if your objective is to build a loyal online following. Consider your visitors and your content in terms of mobile: what content do they want to access "on the go" and "on the couch"?
- *Social Media & Blogs* – before starting up an online community, develop a plan to ensure you have the resources in place to meet the content demand of your customers, and can regularly

create the type of content they value and can engage in online conversation with them. Social media can be a double-edged sword. A well thought out plan to engage the public through these channels can result in a positive online presence for the bike park. Poorly executed, these same channels can turn into an avalanche of negativity that can be very difficult to overcome.

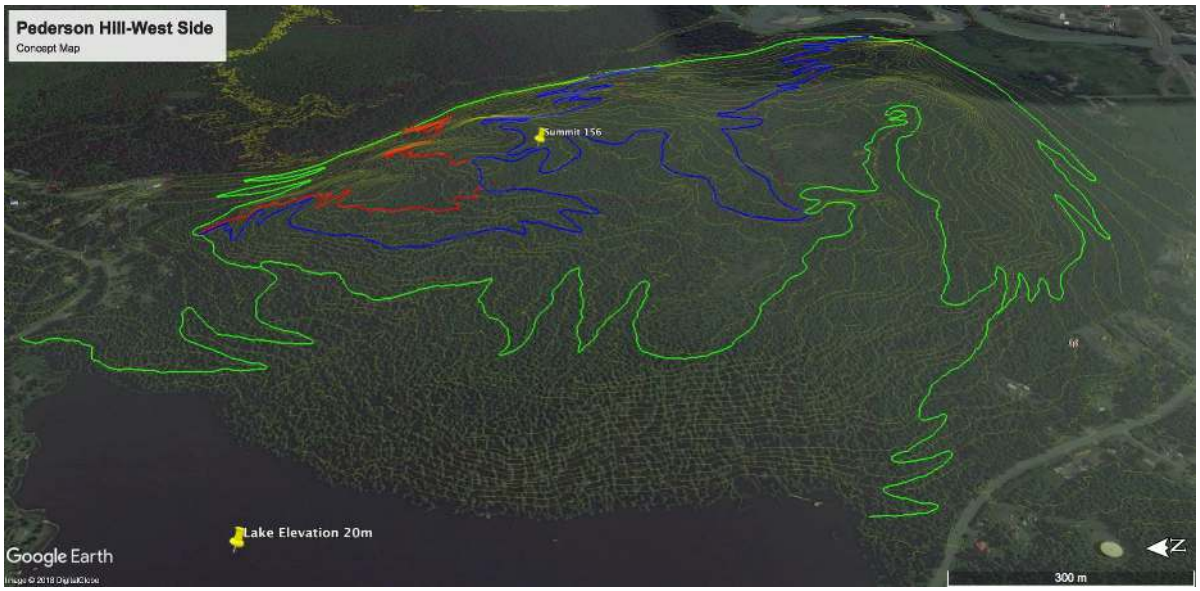
- *Events* – creating reasons for people to visit and sample the park in Year 1 will help spread word of mouth and provide stories for PR. Consider they type of event that will position your product in its ideal way and provide strong appeal to your primary audience. Prior research to ensure that the most active online mountain bike community contributors are included on your invite list will help the benefits of your events reach further.
- *Advertising* – traditional advertising can get expensive so critically evaluate where you can get the most impact for your budget. Online ads, paid search, outdoor and broadcast can all be used to increase awareness and drive traffic both to your website (for more information) and to the ticket window.
- *PR* – 3rd party endorsements and editorial coverage adds credibility to all of your efforts. Establishing a media and blogger relations strategy and team from the outset is important. Remember the people you put in these roles will also be the front line for dealing with any difficult situations.

11.3 MARKETING SUMMARY

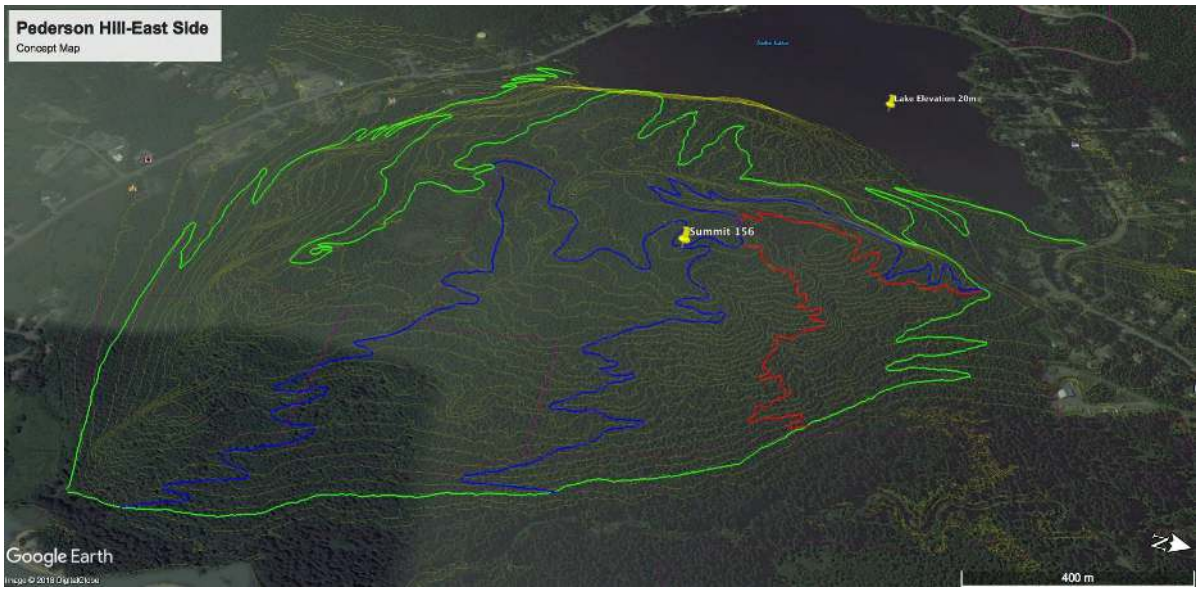
Creating a good product mix and delivering great service are important, but if no one knows about the product, you don't have the customers for your business. Marketing is one of the most important factors in establishing your new enterprise. While overarching industry standards and trends exist, as outlined above, all marketing activities must be planned carefully, in the context of the unique opportunities and specific challenges facing your operation.

12.0 BEYOND EAGLECREST – Trail Development Opportunities near Juneau

12.1 PEDERSON HILL

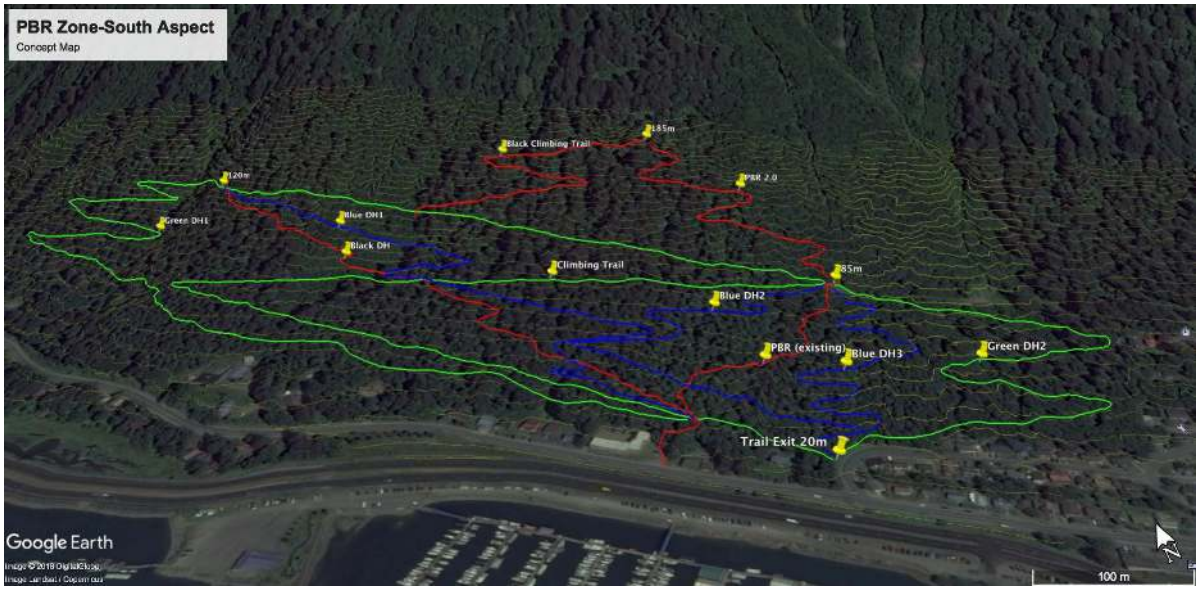


Pederson Hill offers interesting topography, a relatively untouched forest and a modest elevation suitable for the development of a number of mountain bike or multi-purpose trails. Its proximity to a UofA campus would allow students and staff access to more trails without needing to drive to other popular trailheads. Residents of the Mendenhall neighborhood would also benefit from easy access to new purpose-built trails. Pederson Hill's extreme western flank abutting Auke Lake is too steep for the development of mountain bike trails and most of its eastern half is privately owned by the UofA. While it would advantageous to try to acquire easements through some of the UofA land, it still appears possible to develop some trails on city-owned land from near the Auke Lake hiking trail trailhead, up the hill, and back down to the Mendenhall Loop Road. This trail could be designed as a Green mountain bike trail with grades not exceeding 5%. As drawn on the conceptual mapping, this trail would be approximately 6.5km. While we generally discourage multi-use trails (to avoid design and safety compromises), a directional Green trail could be designed (and signed) to allow for use by both mountain bikers and hikers.



If it were possible to secure permission to develop trails on UofA land, a small trail network could be built and could include trails of all types. Even with the modest vertical differential of 136m from the summit to the lake a downhill "flow" trail built at 7% average grade would be approximately 2km in length. While the soils around Pederson Hill appear to be better than the muskeg found in many other areas, there does still appear to be an abundance of rock and a thick root mat. We would expect average trail construction costs to be in the range of $70-$90/meter for a Green trail surfaced with native (not imported) materials.

12.2 PBR ZONE



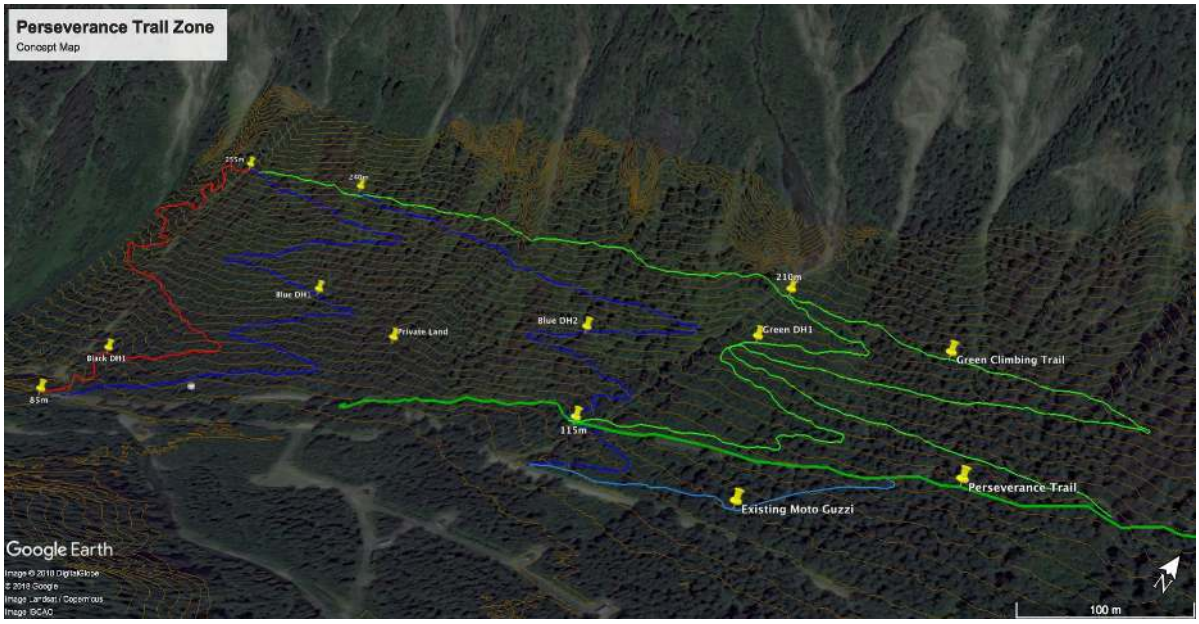
While this area currently offers only one trail (PBR) it appears to hold potential for the development of a wide variety of trails with up to 165 meters of vertical differential. The soils exposed during the construction of PBR are well suited to the development of trails. We have drawn a concept map with trails beginning and ending on Ross Way with additional access possible through a gravel road continuing from beyond the gate at the end of Coleman Road.

A Green climbing trail built at 5% average grade and approximately 2km in length could be built from Ross Way up to 120m elevation. Another short climbing trail (Black) could be built up to 185 meter elevation. Above 185m the mountainside steepens considerably and does not appear to be suitable for the construction of suitable trails. With enough resources, we could also envision the development of 2 Green downhill trails, three Blue trails, and two additional Black trails. Again, we would expect average construction costs to be in the range of $70-$90/m. The average grades and approximate lengths would be as follows:

Green Climbing / 5% / 100m vertical / 2km
Green DH1 / 6% / 100m vertical / 1.7km
Green DH2 / 5% / 65m vertical / 1.3km
Blue DH1 / 8% / 100m vertical / 1.25km
Blue DH2 / 7% / 65m vertical / 0.9km
Blue DH3 / 9% / 65m vertical / 0.722km
Black DH1 / 10% / 100m vertical / 1km
PBR 2.0 / 10% / 100m vertical / 1km

12.3 LOWER PERSEVERANCE

The Perseverance Trail is an extremely popular out-and-back hiking and biking trail which extends just over 5km and 260m up the Sparkling Valley. For the most part, this trail is a consistently sloped historic road grade that climbs steadily up the valley and across numerous slide paths. We heard numerous anecdotal stories about frequent (minor) conflicts between peace-seeking hikers, cardio-seeking runners, and speed-seeking mountain bikers who all share the same path…blind corners and all. Because of its popularity, we would not recommend the development of any additional trails much beyond the existing Moto Guzzi trail. We would suggest considering the construction of a climbing trail branching off the Lower Perseverance at the 165m elevation climbing to about 255m. Downhill trails could then be built terminating near the Mt Roberts trailhead giving riders a usable vertical differential of approximately 170 meters. The following map shows a trail concept that could be considered for the area.



12.4 MONTANA CREEK

During our visit we met with members of the Nordic club and explored an area of land in the Montana Creek area with a goal to explore connecting two existing Nordic trails, and the possibility of sharing this resource with the mountain bike community. Unfortunately, the connection that we examined would have needed to climb almost 1000 vertical feet and would need to travel through quite steep terrain. At a 5% grade (a usable grade for both mountain biking and Nordic skiing) this equates to a trail approximately 4 miles long. Add in the requirement for the trail to be 10-12 feet wide (to accommodate the Nordic grooming machines) and this is an extraordinarily expensive proposition more akin to a road building project than a bike trail. Also, the large areas of muskeg this road would access are not appropriate for mountain bike trail building. Although this

connection would clearly be of value to the Nordic skiing community, the terrain was not appropriate for the construction of a road of this size. The construction process would be very difficult and extremely expensive. We would recommend further exploration of different terrain before a project of this magnitude is contemplated. This project would not have any value to the mountain bike community in its currently proposed location.

12.5 COPE PARK

Already a popular location for young families, the area around Cope Park has some great potential to add bite-sized mtb recreation opportunities for the community. Within the trees or open areas there is ample space to construct a dirt or asphalt pump track that would be appropriate for a wide range of ages and ability levels. Although Gravity Logic doesn't design or build pumptracks, we would strongly suggest contacting Velosolutions with regards to installing an asphalt pumptrack. https://vimeo.com/95581654

Additionally, although the area is quite limited, it may be possible to construct a short excavated "skill building" trail to introduce new riders to the sport. https://vimeo.com/95581654

13.0 NEXT STEPS

The Gravity Logic team recommends a follow up discussion to outline any possible questions or concerns regarding this document. The next logical step is to refine realistic goals and the completion of a detailed master plan that would include the specific design and location of all potential mountain bike trails and offer a detailed breakdown of the phases of the construction process.