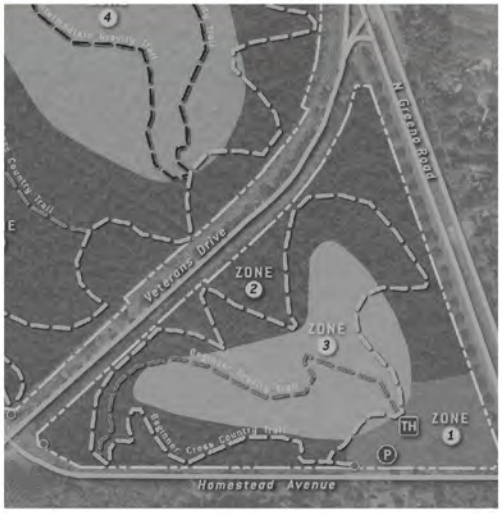
TRAIL AND MOUNTAIN BIKE FACILITIES FEASIBILITY STUDY

FAIRHOPE, AL

APRIL 2020

Prepared For: CITY OF FAIRHOPE ALABAMA

Prepared By: TRAIL SOLUTIONS IMBA



Prepared for: **City of Fairhope**

Department of Economic and Community Development

Fairhope, AL

Prepared by: **International Mountain Bicycling Association**

Trail Solutions Program

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ABOUT IMBA TRAIL SOLUTIONS

IMBA Trail Solutions (TS) is the international leader in developing trails, with experience in over 500 projects in North America, Europe, and Asia. Our staff excels at planning, design, and construction of trail systems that provide high-quality experiences for local riders and destination visitors while simultaneously minimizing environmental impacts.

Trail Solutions is a fee-for-service based arm of the International Mountain Bicycling Association (IMBA), a 501(c)(3) nonprofit organization. IMBA's mission is to create, enhance, and protect great places to ride mountain bikes. Based in Boulder, Colorado, and with staff distributed across the country and the world, IMBA meets its goal to create great mountain bike experiences through its Trail Solutions program. Trail Solutions employs approximately twenty professional trail planners and builders. In addition to being industry professionals and exceptional mountain bike riders, Trail Solutions staff hold a broad base of applicable skills and knowledge from planning, landscape architecture, engineering, and environmental sciences to GIS, CAD, and graphic design.

Our wealth of experience has allowed us to develop the gold standard guidelines for the creation of both sustainable and enjoyable singletrack trails. These guidelines have influenced all major federal land management agencies and a large number of state and local parks departments. We pride ourselves on the positive experiences Trail Solutions has provided to the millions of active trail users around the world and on the economic independence that communities have achieved through the development of destination trail systems.

PROJECT BACKGROUND

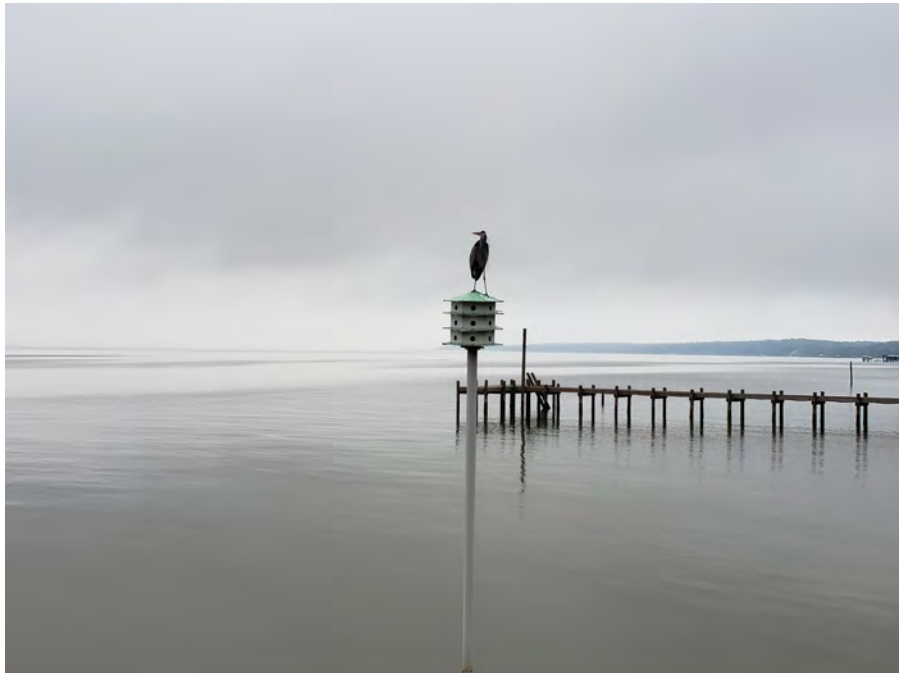
This study assesses the feasibility of developing mountain bike facilities within the city of Fairhope, Alabama. Two locations were identified as potential sites for the addition of mountain bike facilities with potential connecting bike routes between the parks to create a regional bike-based connectivity plan. This report outlines each sites' opportunities and constraints while providing site visit findings, conceptual bike facility plans, and recommendations for implementation. The addition of mountain bike facilities to the city of Fairhope would introduce an engaging activity that brings a community together, provide a healthy and fun activity for children, families, and residents, and attract visitors to the unique recreational amenities.

City of Fairhope

Fairhope is located on the eastern shore of Mobile Bay (Baldwin County), about a half hour from Mobile. The city is home to just over 15,000 residents. Fairhope's unique and interesting history help give the city its charm. Formed as a single-tax colony, the city grew up as lively and progressive place with an equally interesting populace. It retains this charm and sense of place to this day, which coupled with the picturesque bluff terrain along Mobile Bay and gulf coast weather; create a great place to live.

Nearly 20% of residents of Fairhope are under the age of 18, anecdotally the city is reporting more new residencies, especially families, in the last decade. With a growing number of children and teenagers, there is a need to provide engaging recreational activities that will interest all ages and encourage them to explore and enjoy the outdoors, build connections with each other and the community, and challenge themselves. In addition to providing for children, all residents need access to recreational activities that improve physical fitness and encourage healthy lifestyles.

According to the most recent Comprehensive Plan (2016) recreation and specifically bicycle recreation play heavily into the future city planning. The plan identifies East Fairhope multiple times, and explicitly says "*Work with the Fairhope Single Tax Corporation to fully develop the "nature park" as a recreational asset for "East" Fairhope.*"



The plan also notes "*Fairhope has a great opportunity to create a linear greenway and park systems by capitalizing on the creeks, floodplains, and wetland areas. These natural corridors can form the backbone of an off-road trail and recreation system connecting Fairhope through ways that otherwise would not be possible.*"

These statements have led to the Trail Solutions visit and this report.

Local and Regional Mountain Bike Facilities

Within the city of Fairhope, the existing bike infrastructure includes the Eastern Shore trail and a variety of shared lanes. No natural surface trails exist in Fairhope. The only trails within Baldwin County are at Historic Blakeley State Park about 30 minutes north of Fairhope. These are relatively new trails developed by volunteers, with only six miles currently. Most Fairhope mountain bikers travel to other systems, as the trails at Blakeley do not meet their goals. North of Mobile Chickasabogue Park has over 30 miles of traditional trails. The most popular place to ride according to local enthusiasts is the University of West Florida (UWF) trails near Pensacola, FL. The UWF trails are fairly traditional, only 45 minutes from Fairhope. None of these trail systems offer modern mountain bike optimized singletrack or gravity specific trail, nor the bike facilities discussed within this report.

Mountain bike trail systems in proximity to Fairhope
(Data source: Trailforks.com)

Site Visit

In February of 2020, Trail Solutions staff met with City staff, including Economic and Community Development, Planning and Zoning, and Parks and Recreation, to discuss the project's goals and visit the selected sites. During these site visits, TS staff assessed the existing condition and gathered data to be synthesized into recommendations for bike facility placement within each location. The assessed sites in this study include the Triangle parcels and Boy Scouts property (Colony Nature Park). During the site visit, an informational meeting with community advocates and residents was hosted to provide information about mountain bike amenity type, current trends, and to share preliminary findings from the park assessments.

PROJECT GOALS

#1 Develop trails and bike facilities that deliver high quality experiences to the community

With the closest trail experiences requiring a drive, Fairhope does not currently provide mountain bike or hiking facilities. The Triangle site has potential for the development of multiuse and bike-optimized trails. These features would provide diverse recreational opportunities that appeal to users of all ages and abilities. Mountain bike facilities considered in this feasibility study include tot and pump tracks, skills loops, and flow lines. These features are explained in the following section. High quality features are those that are well-designed and well-constructed to create a consistent experience.

#2 Create more connectivity in Fairhope

Many times, parks are inaccessible to children on foot or bike either due to distance or lack of safe routes to the parks. This greatly reduces the accessibly of parks to children and requires an adult to provide transportation to the park. The sites identified in this study are close to neighborhoods, schools, and community amenities. Therefore, the planned bike facilities are easily accessible and close to home with the intention that many of the amenities can be accessed by a short bike ride. During the site visit, Trail Solutions met with the National Park Service (NPS) Rivers, Trails, and Conservation Assistance program (RTCA) who are currently providing guidance and consultation for pedestrian and bicycle connectivity throughout the city. Many of recommendations within this study support the RTCA efforts.

#2 Provide healthy activities for residents with a focus on providing for youth-specific amenities

Numerous studies on physical activity have indicated that proximity to outdoor recreational facilities, such as trails and bike amenities, is a predictor for physical activity level. Simply put, if there are walking and biking trails nearby, then residents are more likely to use them and therefore be healthier. Physical health and exposure to nature also benefit mental health, reducing stress and increasing happiness. In addition, individual and community health translate to economic benefits by decreasing healthcare costs. Public trails and bike facilities also provide outdoor community spaces that encourage public engagement. Connection to nature is paramount to maintaining the health of the environment and making the outdoors relevant and accessible to all. Trails serve a diverse population and cultivate unity and stewardship in the community. By incorporating bike facilities trails into parks, Fairhope can help promote active and healthy lifestyles and promote social integration.

With today's distractions and increasing amount of time indoors and in front of screens, children are spending less time outdoors. Many times, programmed play equipment doesn't provide the challenge and reward that children are seeking. By incorporating a range of bike-specific play features, the parks can provide engaging activities that will encourage kids to get outdoors, increase socialization, and build confidence.

#4 Provide a training facility for NICA teams and bike-based programming

NICA, the National Interscholastic Cycling Association, develops mountain biking programs for student-athletes and coaches across the United States. In 2015, the Alabama Interscholastic Cycling League was formed and is currently one of the fastest growing NICA leagues in the country. Currently there are over 30 teams from across the state. A regional composite Gulf Coast team provides Fairhope students with racing opportunities. The Gulf Coast team has had moderate membership from Fairhope, more trails and facilities local to the city could help develop a local team or simply provide more training grounds for current members.

During our site visit, each site was assessed for its suitability as a potential NICA training area. A training venue requires the space and infrastructure to support skills development for a variety of riders. NICA race venues have lengthy needs, largest being parking and space for up to thousands of people. Therefore, race venues were deemed unfeasible for the selected sites. For additional and more detailed information on NICA and racecourse requirements, see the “NICA Training and Racing Facilities” section of this report.

#5 Become a regional mountain bike destination

As bike amenities and trails are added to the community, Fairhope would become known for their regionally unique features. A diversity of features will invite a wide range of riders from families and beginner riders to advanced riders seeking challenge.

Many mountain bike enthusiasts will travel significant distances for riding destinations. Alabama has a host regionally significant riding, including Oak Mountain in Birmingham and Coldwater Mountain in Anniston. During the community meeting, conversations with local riders revealed that many riders are traveling over an hour for singletrack trails. Fairhope and the surrounding municipalities have the opportunity to incorporate bike facilities throughout the eastern shore that will meet the needs of riders in this area and will attract riders to this region. With the existing and planned trails in the region, the area could continue to attract new residents and families that are seeking a greater connection to the outdoors and a variety of recreational amenities.

BIKE FACILITIES AND TRAILS

The types of mountain bike trails and facilities considered in this feasibility study are explained below. These narratives are meant to provide a brief description of the envisioned experience, the intended user, construction considerations, and approximate ranges of construction costs. The construction costs reflect the cost of retaining a professional trail contractor and are provided for financial planning purposes only. The cost ranges do not include planning, design, and permitting needed to develop the facilities, typically estimated at 10-20% of construction costs. It is important to consider ongoing maintenance costs of trails and bike facilities; these can range from 5-25% of the installation cost.

Trail Types

Modern trail systems use specific trail types as a way of managing users and providing them with the best possible visitor experience. Extensive planning and design should be dedicated to the goal of maximizing a visitor's trail experience while simultaneously balancing the demands of physical, environmental and social sustainability. This list is not exhaustive.

Traditional Shared Use Singletrack

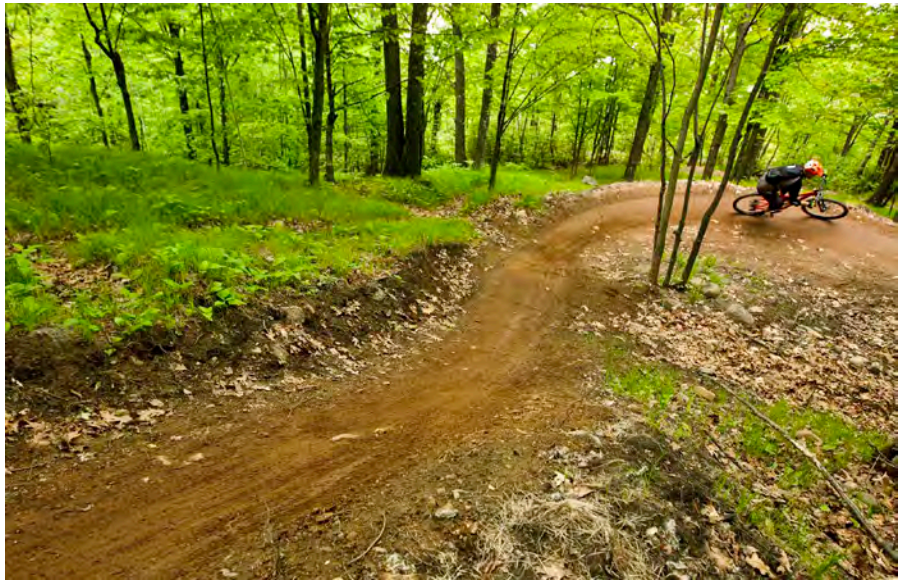
These trails can serve walkers, hikers, runners, cyclists, and equestrians. Trails should be constructed and maintained according to sustainable trail construction practices and employ techniques that minimize user conflict. Multiple user types travel these routes, therefore care should be taken to avoid obstacles such as jumps or water bars which may lead to undesirable trail experiences for some. Turns are constructed sustainably, but are generally not cambered like bike-optimized turns that improve cornering traction. Keeping trail grades within certain ranges ensures both a positive trail experience for users and proper stormwater drainage with minimized erosion. Depending on soil conditions, these trails may need surface hardening techniques to provide a durable four-season trail.

- Approximate Construction Costs: $30,000-$60,000 per mile

Mountain Bike Optimized Singletrack

These trails are purpose-built to optimize the experience of riding a mountain bike. The trails can either be unidirectional or bidirectional depending on the type of trail, preferred circulation of users, and management decisions. This type of trail is constructed with features such as rock gardens, berms, grade reversals, cambered turns (typically wider than turns on traditional singletrack trails), and modest jumps. These trails should make use of wheel-based momentum and forces, enhancing trail flow through rollers, camber, and optimized features. Bike-optimized singletrack can make use of gravitational forces, generally when directional, giving way to a unique trail experience. Flow, a specific sought-after riding feeling, is often attributed to these types of trails. These trails may need surface hardening to provide a durable four-season trail. They should be designed for a range of users from beginner to advanced skill levels. A range of riders can be accommodated within the same trail corridor by providing optional advanced features. This allows many skill levels to experience the full trail mileage, while providing for skill progression within a smaller trail footprint.

- Approximate Construction Costs $50,000-$100,000 per mile



Tot Track and Bicycle Playground

A tot track, essentially small versions of pump tracks, are designed for smaller bicycles and beginner ability level users. Built with reduced-sized rollers as well as low-angle bermed turns that can accommodate balance bicycles as well as regular bikes with short wheelbases. While dirt can be used, asphalt is the recommended surface material for tot tracks. Asphalt is more expensive to install, but greatly reduces maintenance costs. Most importantly, asphalt provides a consistent high-quality experience for the users.

Bicycle playgrounds incorporate play features such as prefabricated structures, rocks, berms, tunnels and other challenges to create a fun loop for children to practice skills and improve bike handling. The bicycle playground can range in size and configuration to best fit the site and desired features.

- Approximate Construction Cost $10-$25 per square foot (tot track)
- $8-$12/linear foot for trail surface (bicycle playground)
- $1000 - $5000 for prefabricated features (bicycle playground)

Mountain Bike Skills Trail

These are trails that have been specially designed for mountain bikers to develop the skills necessary for enjoying more challenging trails. This type of trail is built with different routes and features for a range of skill levels, allowing users to progress their skills with repetition and experience over time. Beginner riders and kids are especially fond of this type of purpose built bike facility. They are typically constructed on nearly flat or gently sloping terrain and take up relatively little space. Skills trails are often associated with more developed parks or facilities, versus a natural setting where singletrack is more appropriate. Features may include rocks, bridges, drops, rollers, and more. Typically, installed features include a mix of prefabricated structures and those built on-site with locally sourced materials.

Approximate Construction Costs

- $8-$12/linear foot for trail surface
- $1500 - $10,000 for prefabricated features

Pump Track and Pump Parks

A pump track is designed to encourage cyclists of all skill levels improve their riding skills in a manner that is fun and repetitive. Pump Tracks are typically a bidirectional closed circuit or series of closed circuits made up of rollers and berms. Pump parks have an open design with a larger area of hard surfaces that allow users to create their own multidirectional routes through the rollers, berms, and jump features. A pump park will foster more organic and creative riding that stimulates both novice and skilled riders. Riding these facilities is an extremely anaerobic activity, so it is recommended that suitable seating and shade structures be installed for users to rest between sessions. Like the tot track, pump tracks and pump parks are recommended to have asphalt surfaces instead of dirt. With an asphalt surface, the track will allow users to enjoy year-round recreation. Asphalt requires very little maintenance as opposed to the labor intensive traditional dirt tracks.

Approximate Construction Costs

- $15-25/square foot

Dirt Jumps

Riders looking to practice jump skills in a low-consequence environment enjoy bike parks and dirt jumps. These consist of beginner to advanced, skill progression-oriented, features through a mix of dirt jumps, berms, and prefabricated "slopestyle" features. These facilities are optimized for mountain bike and BMX riders of all levels. Dirt jumps are incredibly fun, a great workout, and an excellent practice area for building solid bike jumping skills.

Dirt jumps consist of features ranging in height from 3 to 6 feet, spaced to maximize a rider's ability to flow from one jump to the next without having to pedal. Dirt jump areas are designed with a start hill that provides enough gravity to propel riders into the jump lines. They are designed to be ridden in one direction, eliminating potential cross traffic conflicts. Dirt jumps require soil with a high percentage of clay (60-70%) that compacts very hard, minimizing rolling resistance while standing up to heavy use and high shear forces. Prefabricated lips can be utilized to reduce intensive maintenance needs, which can also improve risk management through consistent take offs.

Approximate Construction Costs

- $15-$20/linear foot

Bike Parks

The features explained to this point are designed and optimized for bike based experiences. A bike park combines all or a selection of these features to create an amenity that appeals to a wide range of riders and ability levels. The type and scale of features will be dependent on the community interest, ridership needs, goals of the project, the site's opportunities and constraints, and available funding. Bike parks range from small parks at 1-2 acres, medium sized parks of 5-15 acres in size, to larger parks over 15 acres. Bike parks serve local, regional, and destination ridership by offering a hub of activity to the cycling community and progressive facilities that are designed for riders to build skills and confidence while promoting a healthy, active lifestyle.

NICA Training and Racing Facilities

NICA, the National Interscholastic Cycling Association, develops mountain biking programs for student-athletes and coaches across the United States. Over 19,000 student-athletes in junior high and high-school participate in 31 state and regional leagues supported by over 9,000 volunteer coaches and 10,000 additional volunteers. Participant numbers continue to grow. In the last ten years, student-athlete participation has averaged 48% annual growth, and coach participation has averaged 75% annual growth.

The league's mission is to build strong minds, bodies, character, and communities through cycling with the values of fun, inclusivity, equity, respect, and community. Unlike some youth programs, there are no bench warmers. Every athlete participates, and the league offers a multitude of benefits: getting kids outside; promoting healthy lifestyles; exposing kids to cycling and outdoor advocacy; and providing social interaction, leadership opportunities, and life lessons such as self-awareness, discipline, success, failure, empathy, humility, and sportsmanship. In 2018, NICA launched GRiT (Girls Riding Together), a program focused on engaging more girls and women as student-athletes, volunteers and coaches. They also updated their Teen Trail Corps advocacy program to promote stewardship of the trails. Some leagues include Elevate programs for student-athletes with mental and physical challenges, making the sport more inclusive and integrated than many other high school activities. NICA is also helping to fuel more collegiate varsity cycling programs and clubs.

Beyond the many benefits for student-athletes, NICA leagues provide significant economic stimulus to their communities. As participation grows, so does the demand for trails and bike amenities. Teams need trails for training and racing. NICA racecourses require 4- to 6-mile loops of combined singletrack and double track with 300–600 feet of climbing per lap. Throughout the country, communities are building NICA racecourses from scratch or modifying existing trails. Along with the trails, the racecourses require venues that can accommodate, in some cases, thousands of spectators and participants who generate business in lodging, travel, restaurants, bikes stores, and other retail sales and services. This economic activity can support jobs, provide sustainable growth in rural communities, and produce tax revenue. The bottom line: Growth in NICA leagues doesn't seem to show any signs of slowing down, and that means an abundance of benefits for individuals and communities.

Experience Zones and Preferred-Use Trails

Experience zones and preferred-use trails are showing up in trail systems around the world. Experience zones divide management areas into special-use zones designed around specific activities: one zone may be preferred for mountain biking and another for accessible interpretive trails. Implementation of such zones can provide a variety of visitor experiences and recreational opportunities that reduce conflict between differing user groups while providing sustainable, long-lasting trails.

Single use challenges the notion that all trails must be all things to all people. In this case, land managers designate certain trails as “preferred” for certain activities. For example, a trail that is single use for mountain bikers might be designed to be fast and flowing through open terrain, with swooping turns and dips. Hiking-preferred trails, meanwhile, may be more about travel efficiency with stairs, tight switchbacks, short distances, or other qualities that would be less attractive to bikers and equestrians. Visitors will be drawn to routes that match their desired experience.

Each trail system should, of course, include a variety of trails. One way to include numerous types of trails is to have shared-use trails at the beginning of the network near parking lots, with preferred-use trails branching off farther along. The number of trails designated for each mode of travel should be based on the habits and needs of the user groups being managed. It is also important to consider connectivity and accessibility, sometimes shared use trails are needed to provide key travel corridors or access to other experience zones, trailheads, or points of interest.

APPROACH

The two sites selected for this feasibility study were the Triangle parcels and Boy Scouts property. These were selected for their proximity to neighborhoods, schools, downtown, and available space for the addition of mountain bike amenities. The two sites differ considerably, with the Triangle providing a natural wooded site and Boy Scouts property a traditional open park.

During the site visit, various features were observed to assess the suitability of the sites for the addition of mountain bike facilities. Existing recreational amenities were inventoried along with supporting infrastructure, such as parking areas and restrooms. Environmental considerations such as low-lying areas or evidence of past flooding, soil types, vegetation, and the slope/terrain of the landscape were observed. Trail Solutions researched a variety of plant and wildlife, hydrology, and cultural data to gain an understanding of regulated and important habitat on the sites. Adjacent land uses, proximity to neighborhoods, schools, and downtown were considered when considering appropriate locations for bike amenities.

After gathering the data and observations, this information was synthesized into recommendations and guidelines for developing bike facilities at both sites. Existing infrastructure, current uses, topography, environmental conditions, adjacent properties, and nearby community features were considered when identifying suitable locations for bike facilities and their appropriate size. The recommendations identify the most suitable areas for mountain bike facilities including: singletrack and flow trails, tot tracks, bicycle playgrounds, skills trails, pump tracks, jump lines, and bike parks. A mountain bike amenities concept plan is provided for each site to demonstrate the configuration of the amenities. Recommendations for next steps and implementation of the features are provided.

Connectivity

This study also analyzes the parks connectivity between one another and significant waypoints in town like schools, libraries, and the downtown core. The Eastern Shore Trail provides a route from the Triangle to downtown, passing by neighborhoods and the Fairhope Elementary school. The RTCA project is identifying more connectivity for pedestrians and cyclists, including better access from downtown to the Boy Scouts property. During the site visit Trail Solutions noted the extensive publically owned “gully system”, steep ravines throughout town that provide key stormwater management. The gullies also offer unique wooded pocket parks throughout the city that could be utilized for short trails which offer singletrack experiences and connectivity, creating a more well-knit off-road network of paths and trails. These trails would also provide short in-town nature outings, for instance dog walkers could quickly get off the street and unto the woods for a short walk each morning.

ASSESSMENTS AND RECOMMENDATIONS

TRIANGLE

Existing Conditions

The Triangle property is nearly 100-acres of undeveloped southern forest. The site is mostly oak-pine woods typical of the region. Two main parcels make up the property. The southern triangle is small (~30 acres) that is bounded by Route 98, Homestead Avenue, and Veterans Drive. The northern property is larger (~70 acres), with more elevation change (~70 feet). Veterans Drive is the dividing line between the two, the northern property is bounded in the north by Fly Creek, an important stream that provides unique habitat no longer abundant in Fairhope due to development.

Both parcels drain from south to north (Fly Creek) with an average slope of 10-15%. There are very few steep areas, only found in drainages that have incised and become quite deep. The southern property has a few social trails which appear to not be regularly used.

Currently there is no public access to the site. The closest possible trailhead location is the Fairhope Recreation Center, which would require a half-mile walk or ride along sidewalks. The Eastern Shore Trail passes on the western edge of the northern property. Veterans Drive and the roundabout at Main Street are known traffic problem spots, introducing more pedestrian and bicycle use would likely acerbate these issues.

Trail Suitability Assessment

The property features the largest forested slopes in Fairhope. The two parcels offer blank slates for trail development with little historical use. The slopes and elevation changes, along with tree canopy, make the Triangle an ideal location for a small trail system. The largest barriers to trail development will be access, as both sites are hard to reach safely in their current condition. The properties are an ideal location for shared and single use trails, offering the opportunity to get hikers, runners, and riders in the woods to appreciate nature, exercise, and recreate.

Existing Trails and Infrastructure

- No existing formal trails, a few social trails
- Fairhope Recreation Center ~0.5 mile by sidewalk

Key Opportunities

- Large forested site with slopes and elevation change; very rare for Fairhope
- Close proximity to existing recreation center, neighborhoods, and Eastern Shore Trail
- On one of the main driving routes to downtown, good visibility
- Fly Creek is a beautiful and rare waterway

Key Constraints

- Access is limited, a trailhead would have to be developed to provide accessibility to very young riders
- Drainage and vehicle traffic along Veterans Drive needs to be considered for any possible crossing to Triangle south
- The roundabout at Veterans Drive and Main Street has a history of accidents, pedestrian and bicycle use should be considered when redesigning these roads
- The site is nearly flat with clay based soils, unique and advanced construction methods must be utilized to create desired high quality experiences
- Fly Creek is an important and rare waterway, a minimum 50-ft buffer from the bank is recommended for any trail development

Possible Regulatory Compliance Needs

- State stormwater permitting
- Local land disturbance permitting
- Wetland Protection and Red Clay Ordinance
- Tree Protection Ordinance

Goals and Objectives

The Triangle properties has highly suitable terrain to create a variety of trail types and experiences. One of the main objectives of this project is to create a system of diverse trails that appeals to mountain bike enthusiasts of all ability levels, walkers, runners, and hikers. This objective will be accomplished by creating a network of purpose-built trails that invite all ability levels and interests. Trail options will include beginner and family-friendly shared use loops and a range of bike-optimized descending trails. The trail system is designed to allow users to progressively build their skills. New riders can learn on the beginner trails and loops near the planned entrance on the southern property and then graduate to longer and more challenging trails in the northern one.

A small trailhead is recommended to ensure young and new riders can directly access the trails and not use on-road routes. Gravel or dirt parking for up to 10 cars is ideal, with the only needed amenities being applicable trailhead signage.

In summary, the following project goals guided the development of the trail experience zones and trail segments:

1. Provide a diversity of trail difficulty types from beginner to intermediate trails.

2. Incorporate both traditional shared use and mountain bike optimized trails to serve all potential users.

3. Identify a suitable space for a small trailhead and parking area off Homestead Avenue.

4. Create advanced trail options as feasible to increase the range of potential visitors.

Trail Experience Zones

Zone 1 – Trailhead

This space was identified for potential trailhead and parking infrastructure. While the Triangle property is easily accessed from a variety of neighborhoods and the Fairhope Recreation Center via sidewalks and the Eastern Shore Trail, many young riders will not be physically ready for a few miles before and after the trails. To better grow and activate the trail system and community, a small lot is recommended that could hold a few cars and allow for a formal access point to the trails.

Additional amenities to be considered should be changing and restroom facilities. Riders and walkers coming from their homes will likely be ready for activity, but those driving in may appreciate the room and comfort. To really make the trailhead appealing and unique, a few small skills building features could be added to a short loop at the trailhead.

Entry signage, trail signage, and other necessary wayfinding signage should be provided to guide users though the trail network. An interpretive kiosk with trail system map should be provided to orient new visitors with, route planning information, any necessary safety information, user etiquette and park rules at the trailhead. All access points should also have adequate signage to inform visitors of trail options and potential risks. Please see the "Signage" section included in the Appendix for more information on other recommended sign types.

Zone 2 – Multiuse

The outer edges of both parcels is ideal to create shared use singletrack loops. The south parcel with its gentler slopes, smaller size, and better access is best for the entry level easiest trails. The northern parcel has more elevation gain and a larger area, making it better for integrating more-difficult trails. A beginner cross country style loop is planned around both parcels, giving two to three miles of opportunity.

An outer circuit of shared used means hikers and runners have access to the whole property with a loop option and connectivity. The northern parcel likely has room for an intermediate shared use singletrack, to offer some change to riders and hikers. Optional features or lines should be developed where ever feasible, especially in the northern parcel, to help draw riders through and give them skill building prospects and provide a unique character not found on close by trails.

Zone 3 – Beginner Gravity

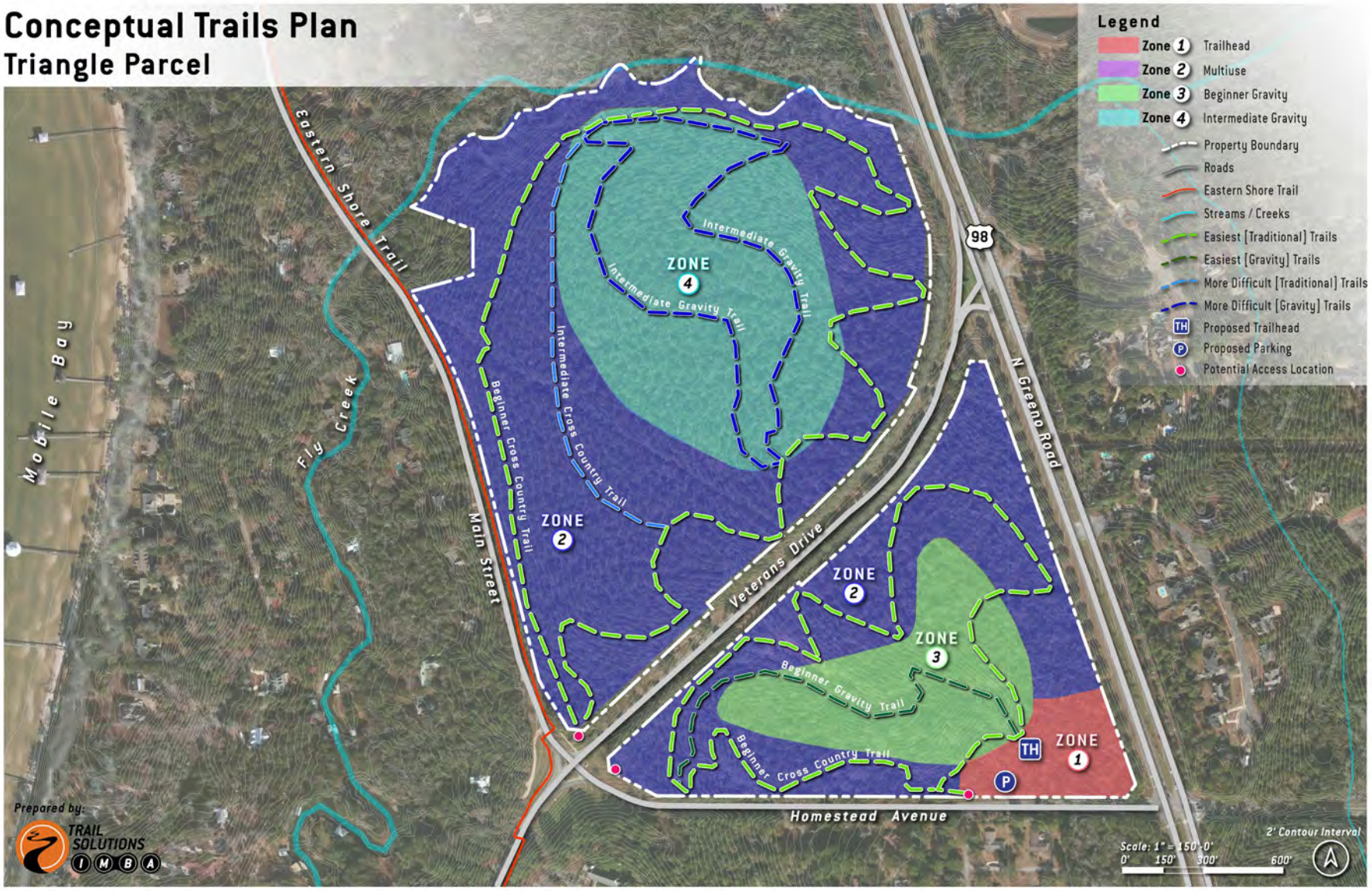
The inner zones left from the outer multiuse zone 2 are perfect for single use trail development. Zone 3 is the southern parcel inner piece. With its milder terrain and less elevation drop could likely be developed into a beginner gravity trail, probably not more than a half mile in length. This trail would provide modern diversity in a small site, and give young and new riders a fun way to explore the joys of riding in a more managed environment.

The zone 3 gravity trail should promote progression, giving riders slightly more challenge as it descends, but sticking to easiest trail guidelines. Small rollers and bermed turns will let riders carry momentum and feel the “roller coaster” thrill of going down a flow inducing trail. A trail of this type is sure to hook new people into the sport and give experienced local riders something new to enjoy.

Zone 4 – Intermediate Gravity

Building upon zone 3, zone 4 is the inner part of the northern Triangle parcel. This zone has slightly steeper slopes, some interesting terrain features, and more elevation drop than zone 3; making it better suited for intermediate downhill runs.

This zone could likely provide one or two bike specific gravity trails up to a quarter mile in length. These feature rich experiences should provide the next level of challenge and fun from zone 3; giving riders a bit more air, speed, and flow. The potential for natural or prefabricated features to enhance the experience is high and should be considered during community input and design.


Conceptual Trails Plan
Triangle Parcel
Legend
Zone 1 Trailhead
Zone 2 Multiuse
Zone 3 Beginner Gravity
Zone 4 Intermediate Gravity
Property Boundary
Roads
Eastern Shore Trail
Streams / Creeks
Easiest [Traditional] Trails
Easiest [Gravity] Trails
More Difficult [Traditional] Trails
More Difficult [Gravity] Trails
Proposed Trailhead
Proposed Parking
Potential Access Location
Mobile Bay
Eastern Shore Trail
Fly Creek
Main Street
98
N Greeno Road
Veterans Drive
Homestead Avenue
ZONE 4
ZONE 2
ZONE 2
ZONE 3
ZONE 1
Intermediate Gravity Trail
Intermediate Gravity Trail
Intermediate Cross Country Trail
Beginner Cross Country Trail
Beginner Gravity Trail
Beginner Cross Country Trail
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TRAIL SOLUTIONS IMBA
2' Contour Interval
Scale: 1" = 150'-0"
0' 150' 300' 600'

BOY SCOUTS

Existing Conditions

The Boy Scouts property is nearly 400-acres of minimally developed park land. Through the central part of the park flows Cowpen Creek, the associated low lying wet areas are almost 12-acres in size. The site has slight elevation and short trees in the southwestern corner. The park is a half mile from the large new Fairhope Soccer Complex and a mile from Fairhope High School. There are plentiful nearby neighborhoods, some with direct access and others via sidewalks.

There is a small parking area off of Twin Beech Road. No infrastructure is found on site, the Boy Scouts own a house that is just off property, and make use of the park for various scouting endeavors.

Bike Facility Suitability Assessment

The property is an open park without much tree canopy or elevation change. The gulf coast has especially intense and high precipitation events, trails or dirt features in the open are highly susceptible to wear and erosion. This means additional maintenance burdens and loss of intended experiences.

The open nature of the park and proximity to residencies and other key points means the Boy Scouts property is more suited to hard surface and built structure bike facilitates. These features and components will make better use of the limited space and while capital costs are greater than trails, maintenance is significantly less.

Additionally, these recommendations are very unique, with no regionally similar places in Baldwin County. This type of development will be great for developing skills, meaning NICA racers, beginner riders, and those looking to polish their abilities will have a managed facility for this specific need.

Existing Trails and Infrastructure

- No existing formal trails, a few social trails
- Fairhope Soccer Complex ~0.5 mile by sidewalk
- Fairhope High School ~1 mile by sidewalk
- Small gravel parking area

Key Opportunities

- Open space ideal for skills trails, tot and pumptracks
- Small hill is ideal for short flow trail development
- On one of the main driving routes in Fairhope and close to many neighborhoods, good visibility
- Bike facilities maintenance is in better alignment with traditional parks tasks

Key Constraints

- Cowpen Creek can flood and much of the property is low lying
- Limited tree canopy means limited trail opportunity, flow and multiuse trails may require imported material for surface hardening to provide long-term durability
- Skills and flow trail features may be better implemented as prefabricated items to reduce maintenance burden

Possible Regulatory Compliance Needs

- State stormwater permitting
- Local land disturbance permitting
- Wetland Protection and Red Clay Ordinance
- Tree Protection Ordinance

Goals and Objectives

The Boy Scouts property has highly suitable terrain to create a variety of bike facilities. One of the main objectives of this project is to create recreational offerings that appeal to youth and provide training for NICA racers and others. This objective will be accomplished by creating a variety of bike specific infrastructure at the park.

Pumptracks, skills loops, and flow trails should be the focus for the park. These features will create a regionally significant place for riders to practice skills and have fun. Connector trails should be developed as needed to create good accessibility for all neighborhoods.

In summary, the following project goals guided the development of the trail experience zones and trail segments:

1. Provide a paved tot and/or pumptrack to create a regionally significant park.

2. Incorporate skills features into all multiuse connector trails as feasible, ensure one small loop is dedicated to beginner skills development.

3. Develop a small flow zone to give riders a place to practice catching air.

Trail Experience Zones

Zone 1 –Skills Area

Skills loops and features can be provided in a number of locations. Near the current parking under the large trees would create a nice shaded area with a handful of features which new and young riders could play on. The multiuse trails suggested as connectors could also play host to reasonably spaced skills building features. Prefabricated or natural skills features are recommended. While rock is sparse along the Mobile Bay, it is normal on many trails, incorporating some rock features would help riders gain the skills and confidence for riding other areas.

Zone 2 – Pumptrack

A tot and/or pumptrack is recommended near the current parking area. This track should be asphalt, to reduce maintenance costs long-term. An asphalt pumptrack would be a large regional draw if big enough. During the community outreach meeting, the children in attendance were unanimous in their desire for a paved pumptrack.

Pumptracks teach many valuable skills for riding on trails, but they also offer fun and challenge for all sorts of riders. Paved pumptracks are suitable for all wheeled types of recreation, scooters, balance bikes, and skateboards are all excellent choices for asphalt pumptracks.

Zone 3 – Trails

Multiuse trails should provide connectivity on the southwestern quarter of the site. This area has the only gradient on the site, and could offer great modern shared use trails for walkers, runners, and riders. These trails would likely see a lot of use from neighbors, but the open fields provide good sightlines and signage would complement shared use management.

A flow zone could be developed to provide jumping, pumping, and cornering practice. These couple short runs would appeal to a variety of riders, having difficulty level progression means riders can slowly build into the next step and continually challenge themselves.


Conceptual Trails Plan
Boy Scouts Parcel
Legend
Zone 1 Skills Area
Zone 2 Pump Track
Zone 3 Trails
Property Boundary
Streams / Creeks
Easiest [Traditional] Trails
Easiest [Gravity] Trails
More Difficult [Traditional] Trails
More Difficult [Gravity] Trails
Proposed Trailhead
Proposed Parking
Potential Access Location
ZONE 1
Beginner Skills Trail
Pump Track ZONE 2
Beginner Cross Country Trail
Intermediate Cross Country Trail
Cowpen Creek
Beginner Flow Trail
ZONE 3
Intermediate Flow Trail
Beginner Cross County Trail
Prepared by:
TRAIL SOLUTIONS IMBA
Scale: 1" = 100'-0"
0' 100' 200' 400'
2' Contour Interval

RECOMMENDATIONS AND PHASING

1) One of the first steps to any new trail development is to initiate a professional survey of the boundaries, identifying property corners and limits. This information is vital for the development and construction of trails to ensure trail locations and intersections are within the property boundary. Both properties should be surveyed prior to design.
2) Trailhead design and construction should begin prior to final trail development. Trailheads can trigger various permits and regulatory compliance, and as major infrastructure can require more funding. Therefore, trailhead development is important to start early in the process. The Triangle property needs access, so a trailhead should be developed according to recommendations above. The Boy Scouts property could use slight improvements for traffic and parking.
3) Along with trailhead design at Triangle, traffic engineering and improvements will be required to create a lower risk environment for the eventual trail visitors crossing between the two Triangle properties and for all on-road connectivity from throughout Fairhope.
4) Trail and facility design is required prior to construction. Design will include the flagging of trail alignments and the identification of features and alignments for facilities. Design can typically average one mile of flagged corridor per day in standard terrain. During design Trail Solutions will collect detailed data about all flagged alignments, including unit quantities, exact terrain conditions, and global position system (GPS) tracks. Unit quantities vary depending on the project site and trail types. Design for the entire Triangle property should occur with one site visit, to provide cost savings and create a holistic layout. The Boy Scouts property can benefit from phased design, and much of the design can be done via desktop (i.e. pumptracks and skills loops).
5) The Triangle property offers some of the easiest wins for mountain bikers and the community. Trails benefit scores of people, these would be the first within Fairhope. The beginner multiuse trails in Zone 2 should be the priority for the first phase of trails construction. These trails offer the easiest implementation by giving both riders and walkers new recreational offerings.

6) The Boy Scouts property should be designed and permitted during or just after the first trail construction at the Triangle. The pumptracks and skills loops are simple features that offer a big bang for the buck. These should be the first facilities developed at the Boy Scouts property.
7) After the development of the multiuse trails, zone 3's beginner gravity trail is next on the list. Zone 3 should be developed prior to Zone 4, to ensure riders have progression in the trail system to build their skills up prior to the intermediate descents in Zone 4.
8) The trails within Boy Scouts Zone 3 should be some of the last bike facility development from this plan. The singletrack connector trails should be built first, and the flow zone slowly integrated much like the Triangle property, with beginner lines built before intermediate.

IMPLEMENTATION

Community Outreach and Visioning

The conceptual site plans reflect the identified suitable locations for bike facilities and trails. The proposed locations work in tandem with existing recreational amenities and are located based upon the assessment of opportunities, constraints, nearby supporting infrastructure, and community amenities. These concept plans are preliminary at this point in the planning process. In order to move forward to implement these bike facilities, an understanding of each parks' goals and coordination with future plans is necessary to integrate the bike facilities into the future development and visioning of the park. Public outreach, such as community and stakeholder meetings, is necessary to gather input on the concept plans. This outreach is paramount to ensure residents are engaged during this process. This will generate excitement and support for the plans, create a stewardship base of future trail users, and a sense of ownership and pride of the bike facilities. In addition to reaching out to residents, communication with local bike groups and other mountain bike enthusiasts will help build an understanding of the existing ridership, their interests and concerns while creating relationships. These mountain bike enthusiasts can share local knowledge of trails, construction experience, and lessons learned on past projects.

Since many of the bike facilities presented in this study would be a new type of recreational amenity to the area, the facilities and their benefits may be unfamiliar to residents, stakeholders, and community leaders. Continued education, through community meetings, field trips to trails and bike facilities, and demonstration projects will help residents understand the potential of these facilities and generate support for future projects.

While the scope of this feasibility study focused on the two properties, other opportunities for bike facilities may exist throughout Fairhope and Baldwin County. Coordination between the individual municipalities and Baldwin County will be necessary to identity other sites of interest and create a unified vision for bike amenity development. One of the largest possibilities lies in partnering with Auburn University, who operate the Gulf Coast Research and Extension Center. This property has some of the largest forested land in Fairhope with considerable elevation change.

To create a regionally significant destination, coordination early on with the tourism bureau and community development organizations will help generate a plan for future development, assist with the necessary branding, create the content and platforms to spread the word of the bike facility development. By coordinating with the larger region, the eastern shore could grow into a regionally-significant destination that will keep meet the needs of gulf shore and eastern shore residents and visitors.

Funding

The availability of funding for the bike facilities will vary. Planning for these amenities in yearly recreational budgets will begin the process of designating funds for bike facility projects. Some municipalities employ a voter-approved recreational and trails sales tax to generate funding specifically for recreation improvements. In addition, a range of federal, state, and local grants are available that support trail development and recreational amenities. Coordinating with local organizations with allied interests may offer financial support and increase the base of supporters.

Risk Management

As the bike facilities would introduce a new type of recreation with unknown liability concerns to Fairhope, an assessment and clear understanding of recreation protections, laws, and precedents is necessary to ease concerns and create a plan to mitigate risk. Professional legal advice is recommended to ensure all liability concerns are understood and create a plan to mitigate risk. Warnings of the inherit risk of mountain biking should be clearly provided on park signage and should be reviewed by a legal professional.

Bike Facility and Trail Development

Once the park concept plans are further refined based upon community input and coordination with future park plans, development of construction plans with specifications and details is necessary to guide and communicate the construction. Based upon the facility type and conditions, permitting plan sets may be necessary. For the development of all trails and bike facilities, we recommend a professional trail designer/builder field flag the trail alignments, construct the trails or bike facilities, and provide training for staff and volunteers. The construction of the pump track and other asphalt features will require the services of a specialized designer and builder. For the construction of the flow zones and gravity trails, we recommend an experienced rider/builder to provide consultation services and oversight during construction to ensure the proper design, spacing, and scale of features. When retaining a professional trail building firm, we recommend having a qualified construction manager experienced with mountain bike trail development provide oversight during the construction progress, perform inspections, and provide quality assurance services.

Maintenance

Trails should be managed according to recommended difficulty guidelines, trail type guidelines, and respective trail narratives. Design will provide these detailed guidance documents. Maintenance is an ongoing cost and should be planned for. Typical annual maintenance budgets for traditional and mountain bike-optimized trails are 10%-15% of the installation cost, and gravity trails can be closer to 20%-25% of the construction cost. Some of the annual maintenance for all trails can be performed by adequately managed and trained volunteers. These tasks will include corridor trimming, downed tree removal, general clean up (branches, leaf litter, etc.), and minor drainage work

Professional assistance will occasionally be required. The frequency will depend upon ongoing maintenance as well as weather patterns and use. Typically for cross-country trails, professional maintenance will be required every 10-20 years and will involve small reroutes, major drainage work, or other large tasks. Gravity trails can be expected to need professional help every 5-10 years as trails wear through weather and use. This will typically come in the form of rebuilding large dirt features and upgrading trails to provide slightly new experiences which help continue to draw regional riders, give locals something new, and help all riders progress in their skills.

Bike facilities such as pumptracks and skills features can typically be maintained by traditional parks staff. Maintenance can include seal coating, grass cutting, checking fasteners, and wear/tear on wood. Increasingly, destination mountain bike trail systems are funding and hiring part- or full-time staff to provide maintenance to trail systems. Ensuring a quality, consistent riding experience is key to attracting visitors and keeping a local riding community satisfied and growing.

Programming

To fully activate and create a community around outdoor recreation and mountain biking, certain programming is necessary. With the popularity of the Alabama NICA program, Fairhope could start to develop their own teams. Beyond high-school racing, many other programs can activate the community. The trails could be programmed with guided and interpretive hikes and outdoor education. Mountain bike skills clinics and/or scheduled and guided rides can be provided to help introduce the sport to new riders and help them improve skills. Having scheduled volunteer days keeps the community engaged, invested in their local trails, and helps improve the conditions of the trails while reducing the maintenance workload of land managers. Many times, local clubs and bike shops will schedule weekly rides that can be tailored for beginners, intermediate, or advanced riders. These rides encourage mountain bikers to connect with the local riding community.

Riding or running races, charity events, and bike festivals would greatly attract riders. Hosting a race regularly can attract visitors year after year. The bike facilities, especially the pump tracks and jump lines, could host local or regional competitions. Events and programming could help keep visitation numbers high throughout the year.

CONCLUSION

Next Steps

To bring these concepts and ideas into fruition, the next step is to share the findings of this report with the appropriate city officials and staff to gather their feedback, strategize the next steps, and identify funding sources. This coordination will help identify the key areas of need and prioritize projects. Next, public meetings with community leaders, residents, adjacent property owners, local riders, and other stakeholders will help refine the plans. After considering feedback, the concept plans should be refined during design and construction documents produced. Continued education of residents, key community leaders, and stakeholders through public meetings and outreach events will help build project support that may open new funding opportunities. Coordination efforts between Baldwin County and surrounding municipalities can begin to create a region-wide visioning plan.

Summary

This document presents the feasibility, key opportunities and constraints, and recommendations for the development of bike facilities within the selected properties in Fairhope. The terrain, supporting infrastructure, and surrounding amenities of the parks offer highly suitable conditions for the incorporation of bike facilities.

These two properties work in tandem to provide an immense amount of high quality bike-based recreation in a relatively small space. The Triangle and Boy Scouts properties work in tandem to offer a diverse variety of bike recreation. Trails in the Triangle property will be the first in Fairhope, quickly becoming popular with everyone from dog walkers to kids learning to ride through the established mountain bike enthusiast.

The Boy Scouts park development will be the first of its kind around Mobile Bay. The unique and modern attraction of pumptracks, skills courses, and a flow zone will likely increase the quality of life for many nearby residents. This type of recreation will offer kids who don't play traditional sports a chance to get outside and stay active; while learning vital skills such as balance, confidence, independence, and more.

Fairhope is growing and the demographics are shifting, with more young people and families wanting the benefits of a small town with big amenities. The quaint downtown, scenic bluffs, existing parks and greenways, and commitment to excellence will only strengthen any bike related development. The RTCA connectivity plan will work with this report, to help ensure all residents and visitors can better access these amenities. This will help create a cohesive outdoor culture and community in Fairhope.

APPENDIX A: COST OPINION TABLE

Appendix A: Fairhope Complete Conceptual Cost Opinion Table											
Zone	**Subzone**	**Phase**	**Area (acres)**	**Estimated Lengths**	**Design**	**Permitting**	**Construction**	**Signage**	**Total Subzone Costs**	**20% Contingency**	**Total Zone Costs**
1 - North Triangle	Multiuse	1	16	0.5 to 1.5 miles	$2,500	$1,000	$60,000	$1,500	$65,000	$23,000	**$138,000**
	Gravity	1	12	0.25 to 0.5 miles	$2,500	$1,000	$45,000	$1,500	$50,000		
2 - South Triangle	Multiuse	2	35	1 to 2 miles	$3,000	$2,000	$100,000	$1,500	$106,500	$37,600	**$225,600**
	Gravity	2	25	0.5 to 1 miles	$3,000	$2,000	$75,000	$1,500	$81,500		
3 - Colony Nature Park	Singletrack	3	15	0.5 to 1 miles	$3,000	$1,000	$40,000	$1,500	$45,500	$82,400	**$494,400**
	Flow	3	3	1000 to 2000 feet	$3,000	$1,000	$45,000	$1,500	$50,500		
	Pumptrack	1	0.5	NA	$10,000	$2,500	$250,000	$1,000	$263,500		
	Skills	3	1.5	1000 to 2000 feet	$5,000	$1,000	$45,000	$1,500	$52,500		
Totals	**N/A**	**N/A**	**108**	**3 to 6 miles**	**$32,000**	**$11,500**	**$660,000**	**$11,500**	**$715,000**	**$143,000**	**$858,000**

APPENDIX B: GENERAL TRAILS PLANNING AND DESIGN GUIDELINES

The following are guidelines for the construction and maintenance of trails. The natural environment is dynamic and unpredictable. The nature of recreational trails and roads, the desired user experience, and the constant forces acting on natural surface trails and roads make strict standards untenable and undesirable. As such, the guidelines below are simply that: best management practices that should be followed within environmental constraints.

Trail System Design

Mountain Bike-Optimized Trails and Preferred Direction Trails

Mountain bike-optimized singletrack trails are designed and constructed to enhance trail experiences specifically for mountain bikers. Mountain bike-optimized trails might differ from traditional trails in several ways: enhanced tread shaping, directional or one-way travel, and the addition of man-made technical trail features (TTFs). Bicycles move differently along a trail than other modes of transportation. The movement of the wheel, the use of gravity and friction, the transfer of energy from the rider to the wheel – these offer both opportunities and constraints for trails and trail features that may differ from those of other users.

Mountain bike-optimized and one-way trails that harness gravity are a growing area of interest for mountain bikers. These trails can be designed and built at any level, from beginner friendly flow trails to extremely difficult race-oriented downhill trails. Riders cherish the feeling of flight that a bicycle provides while coasting through a succession of bike-optimized features from top to bottom. A consistent trail is not necessarily a boring or easy trail (though it can be), it's one that is designed such that a preceding section of trail prepares users for the subsequent sections. This is a hallmark of flow trails and can be particularly important for beginner trails, as well as for higher speed trails with gravity features, such as jumps and drops.

As trail systems grow and become congested, one-way trails help to take the pressure off popular shared-use trails. Riders looking for speed, thrill, and challenge will have their own designated areas, and users travelling at slower speeds will have their own trails. Well-designed mountain bike-optimized singletrack and gravity singletrack are exciting for mountain bikers but are also designed to help manage risk and minimize user conflict.

Rolling Contour Design

Providing consistent climbs and extended descents is a design priority. Trails may contour gently up or down for consistent lengths to maximize climbs and descents. This is known as rolling contour design. All shared- use trails should be of rolling contour design to minimize impact and sedimentation in the watershed.

Stacked Loops

A stacked-loop system is a series of loops somewhat like links in a chain. The loops can vary in length and difficulty. In a stacked-loop system, the loops that are closest to the trailheads are more inviting to novice riders, and the loops further out cater to more advanced riders. This creates a progression of experiences and challenges as users explore the trails in more depth.

Progressive Hubs and Clusters

A trail system of hubs and clusters looks more like spokes radiating out from a central junction and intersecting at various points. A trailhead or major intersection is a hub. A cluster is a concentration of trails radiating out from the hub. Like a stacked loop system, hubs and clusters are designed with skill level progression in mind. Hubs and clusters give users more trail options for varying skill levels at each hub, allowing for skill level diversity. At many intersections, riders have the option to change trail difficulty or continue on the same difficulty level.

With progressive trail features, a mountain biker may become a better rider by gradually moving up in trail difficulty. This practice also spreads out visitors and helps reduce trail user conflict. This is also a proven risk management tool. Signage shows difficulty levels at every hub and wherever necessary in the trail system to help users choose trails based on their skill levels and desired experience. Giving riders the option to warm up before hitting more technical segments provides a level of safety in the system.

Loops and clusters are often favored over out-and-back routes because they offer variety. People love the adventure of starting down one path and returning to the same point by way of a different trail. With loops or clusters in a trail system, visitors can choose a short route, a combination of routes, or a long outer route.

Progressive design and construction also allow users of different levels to ride the trails in the same system, so families and groups can enjoy being together in one place and riders can find a trail that matches their skills and progress.

Trail Difficulty Rating System

In order for a trail system to provide the varied riding experiences and skill progression which trail users seek, the trails must be built to provide relatively specific challenges and riding characteristics. For the purposes of this conceptual trail plan, the difficulty rating system has been simplified into three levels:

- Easiest Trails, Green Lines (green circle) – For beginners, these trails have a smoother and wider tread, lower trail grades, and less exposure.
- More Difficult, Blue Lines (blue square) – For intermediate riders, these trails can be steeper, more technically difficult, or longer.
- Very to Extremely Difficult Trails, Red Lines (black diamond or double black diamond) – For advanced riders, these trails offer a combination of difficult trail tread, technical features, and long distances for those looking for challenge and endurance-oriented experiences. Generally, they have significant exposure and have less predictable surfaces.

This system was adapted from the International Trail Marking System used at ski areas throughout the world. Many trail networks use this type of system, most notably resort-based mountain biking trail networks. The system applies well to mountain bikers and is also applicable to other visitors such as hikers and equestrians. These ratings should be posted on trail signage and in all maps and descriptions. Following is a summary of criteria to be considered when implementing a trail rating system.

Tread Width

The average width of the active tread or beaten path of the trail.

Tread Surface

The material and stability of the tread surface is a determining factor in the difficulty of travel on the trail. Some descriptive terms include hardened (paved or surfaced), firm, stable, variable, widely variable, loose, and unpredictable.

Trail Grade (maximum and average)

Maximum grade is defined as the steepest section of trail that is more than approximately 10 feet in length and is measured in percent with a clinometer. Average grade is the steepness of the trail over its entire length. Average grade can be calculated by taking the total elevation gain of the trail, divided by the total distance, multiplied by 100 to equal a percent grade.

Natural Obstacles and Technical Trail Features

Objects that add challenge by impeding travel. Examples of natural obstacles include rocks, roots, logs, holes, ledges, drop-offs. The height of each obstacle is measured from the tread surface to the top of the obstacle. If the obstacle is uneven in height, measure to the point over which it is most easily ridden. Technical trail features are objects that have been introduced to the trail to add technical challenge. Examples include rocks, logs, elevated bridges, teeter-totters, jumps, drop-offs. Both the height and the width of the technical trail feature are measured.

Trailheads

Well-placed trailheads and parking lots contribute to a successful trail system. Trailheads should be located in areas of lower elevation, as most trail users prefer outbound climbs with inbound descents back to the parking area. This also helps mitigate risk by allowing fatigued riders an easier route back to their starting point. This is especially true for mountain bikers, and necessary for families and beginners. Trailheads should offer information useful for the trail users, including trail maps, location information, emergency contact details, and volunteer information.

Sustainable Trails

A sustainable trail balances many elements and is designed to have little impact on the environment. Sustainable trails resist erosion through proper design, construction, and maintenance and blend with the surrounding area. A sustainable trail also appeals to and serves a variety of users over many years. It is designed to provide enjoyable and challenging experiences for visitors by managing their expectations effectively. Following sustainable trail design and construction guidelines allows for high-quality trail and education experiences for users while protecting the land's sensitive resources. For additional trail design, construction, and maintenance techniques, refer to *Trail Solutions: IMBA's Guide to Building Sweet Singletrack*. These guidelines are appropriate for any hike, bike, or equestrian trail.

Signage

The development of a mountain bike trail network requires the development of a comprehensive system of signs. Signs are the most important communication tool between land managers and trail users. A well-implemented and maintained signage system enhances the user experience by helping visitors navigate the trail network and providing information about the area. Signage also plays a critical role in managing risk and deploying emergency services.

Recommended signage for the trails should be simple, uncluttered, and obvious with a sign at every major intersection to help users stay on track. Signs should meet the needs of all users, from the daily trail user to someone who is experiencing the trails for the first time. In order to serve the variety of visitors, sign placement should be strategic and frequent. Because signs can intrude on the natural outdoor experience, too much signage can be unsightly. Balancing competing interests is key to developing a successful signage program.

Sign Types

A variety of signs can be created to help users identify trails and their location, select routes, remain confident in their trail choices, find destinations and key points of interest, and understand regulations and allowed uses. Signage can also be interpretive, helping visitors learn about responsible recreation, trail etiquette, and resource protection, as well as how to reduce risk and hazards.

Informational signs

Usually positioned at the trailhead and major intersections, informational signs provide details such as trail length and difficulty. These include signs that identify a trailhead from a road, signs at a trailhead kiosk, trail intersection signs, waymarks, difficulty rating signs, and trail length or elevation gain and loss signs.

Regulatory signs

These types of signs delineate rules, such as prohibited activities, direction of travel, or other restrictions.

Directional signs

Directional signs provide navigational information.

Warning signs

Often incorporating highly visible designs, these signs warn trail users of upcoming hazards or risks. These include visitor rules and regulations, allowed activities, road and trail intersections, and emergency signs.

Educational signs

Educational signs can provide a variety of information for trail users, such as guidelines for responsible recreation, descriptions of natural or cultural resources, trail etiquette, and bike skills.

APPENDIX C: BENEFITS OF MOUNTAIN BICYCLING TRAILS

Promoting Active and Healthy Lifestyles

The benefits of mountain biking may start on the trails, but they don't end there. Learning to ride a bike is a rite of passage. Bikes and the sport of mountain biking provide a multitude of opportunities to teach children valuable lessons that will carry into adulthood.

Obesity is at a high, while activity levels among Americans are plummeting. With its progressive nature and way of stimulating the senses, mountain biking is appealing, especially to youth, and provides an excellent form of recreation for reversing the trend toward poor health. Since riding a bike provides excellent cardio conditioning, improves strength and coordination, and burns several hundred calories an hour, it is an activity as appealing to parents as it is to kids.

The unstructured play that mountain biking provides inspires people to explore and appreciate the natural world, leading to positive associations with outdoor activities and exercise.

Mountain biking allows individuals to advance at their own pace, so kids looking for a challenge can have just as much fun as children who are more interested in exploring the scenery. Riding in nature provides an environment where children can work on their skills, have fun, and pedal their bikes without parents having to worry. Mountain biking is a cross-generational endeavor, accessible to all ages and levels of physical fitness. Going for a trail ride is an excellent way for parents to do more than support their children's activities, it's a way to share the experience. Every ride is an opportunity to create a healthy lifestyle and pass on lessons that are best learned through experience.

Several studies on physical activity have indicated that proximity to recreational facilities, such as trails, is a predictor for physical activity. Simply put, if there are walking and biking trails nearby, then residents are more likely to use them and therefore be healthier. Physical health and exposure to nature also benefit mental health, reducing stress and increasing happiness. In addition, individual and community health translate to economic benefits by decreasing health care costs.

Contributing to Economic Growth

A well-designed trail system can stimulate economic growth by increasing activity within the local population as well as attracting visitors from outside. Trails can generate business in retail sales and services, support jobs, provide sustainable growth in rural communities, and produce tax revenue. Access to trails also correlates to a higher quality of life, thus making the community more desirable and capable of attracting new businesses and workers to an area.

IMBA assists local communities in increasing mountain bicycling tourism as a sustainable, renewable source of economic development. A mountain biking destination is one that attracts tourists to an area for the benefits of the mountain biking experience; provides visitors with all of the amenities needed to compliment, ease, and enhance their visit; and in turn creates word of mouth about the community that will draw new and repeat visits.

According to the Outdoor Industry Alliance, mountain bicyclists represent approximately 3.4% of the U.S. population, or nearly 10.6 million participants. IMBA's own research indicates that enthusiasts, who represent a portion of this overall number, travel extensively within a four-hour range and will typically devote one week per year specifically to travel to reach mountain bicycling destinations. Same-day visitors spend approximately $35 per day in local communities while destination visitors spend closer to $193 per day (due in part to lodging and increased meal purchases).

While mountain bicyclists are certainly willing to travel to ride, they will only do so if their destination contains a key ingredient: high-quality trails. These trails must be of a sufficient length and contain a variety of experiences, such as traditional singletrack, bike-optimized singletrack, bike parks, and shuttle options. The competition for these destination-quality locations is slowly increasing over time

A case study in Cable, Wisconsin, clearly illustrates how a community can benefit from offering a world-class bicycling experience. Construction of new bicycle trails in Cable resulted in:

- Increased property values.
- Increased spending on bicycle related goods.
- 35 jobs created annually, adding $523,000 to total employee compensation.
- Nearly $1.3 million impact related to spending from mountain bicyclists.

Fostering Community Pride and Identity

Involving community members in the planning, building, and maintaining of trails fosters community pride. In order to maintain sustainable trails, care of the trail system should be managed by local enthusiasts and rely on an organized membership base. Volunteering to help with trails provides an opportunity for area residents to connect with each other and with the terrain and land that surround them. IMBA members donate nearly one

million volunteer hours to trails throughout North America every year, making volunteerism a large part of mountain bike culture.

Trails and parks also provide informal opportunities for people to meet and interact with others in a natural setting. Connection to nature is paramount to maintaining the health of the environment and making the outdoors relevant and accessible to all. Trails serve a diverse population and cultivate unity and stewardship in the community. Trails can even revitalize blighted areas, for example, turning landfills into bike parks or gravel pits into trailheads.

Preserving Open Space

Trails make communities better places to live by preserving and creating open spaces for recreation. Greenways function as hands-on environmental classrooms for people of all ages, providing opportunities to enjoy nature close up. With its abundant plant life, open spaces can decrease pollution, protect water quality, and reduce soil erosion. Economic growth and property values are also tied to open space as buyers are generally willing to pay more for property located close to parks and open space. The recreation, health, economic, and environmental benefits of trails can contribute to an overall enhanced quality of life in nearby communities.

Encouraging Positive Recreation Use to Displace Negative Use

Without a plan, undeveloped areas are often haphazardly transformed by users creating unauthorized sites to suit their personal wants. Purposefully designing trail systems can help create diverse recreational opportunities, encourage safe use, and meet the needs of the entire community. Unauthorized trail building and dumping or other unacceptable activities can damage ecology, cause safety hazards, and leave behind debris that is both unsightly and illegal. The best way to encourage positive use is to displace negative use. A well-planned trail system can discourage and displace destructive activities with healthy recreational use that attracts visitors of all ages.