

The Governor Knowles State Forest, St. Croix Campground Trail Site Plan

Benjamin Elfelt
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This document outlines a proposal that aligns the public need for a mountain bike trail system with the unique characteristics, limitations, and environmental profile of the St. Croix Campground. It is the aim of the project to construct a single-track mountain bike trail system that will provide riders of different skill levels opportunities to explore and enjoy the St. Croix Campground. Although the campground has multiple hiking and multiuse trails, it does not offer an exclusive trail network for mountain bikers. Although it is discouraged, some bikers ride on the hiking trails, which poses a significant safety risk to hikers. The construction of several miles of single-track bike trails with different levels of complexity will provide riders with ample opportunities to explore the area while maintaining a safe environment for other types of outdoor recreation such as hiking. Through interviews with local riding enthusiasts and industry professionals it has become evident that this area of Wisconsin is lacking in these types of trail systems.

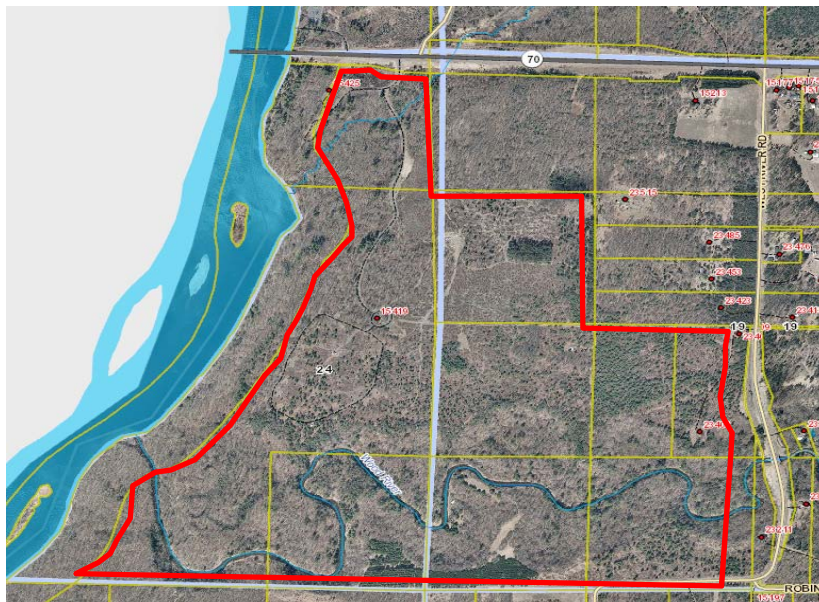


Example of an advanced single-track trail (Guidelines for a Quality Trail Experience, IMBA)

Site:

The Governor Knowles State Forest covers a large amount of land in west/central Wisconsin. This site, the St. Croix Campground, is 341 acres and located 8.5 miles west of Grantsburg, Wisconsin. The current site has a campground as well as hiking, biking, cross-country ski, and equestrian trails. The site is just south of WI State Road and east of the St. Croix River. The site offers 30 rustic campsites approximately 500 feet from the St. Croix River. The entire 341 acres of this site are under state ownership and management. This area is roughly 1.5 hours away from the Twin Cities in Minnesota, where many residents enjoy outdoor recreation such as mountain biking.

This site has a diverse environmental profile with many features unique to the St. Croix River Valley. This site has established communities of White and Red Pines, as well as Aspen, Northern Hardwoods, and Scrub Oak. Animal species are very diverse as well. The Wisconsin Department of Natural Resources database noted that there are 32 rare animal species that have been documented on or near the Governor Knowles State Forest (GKSF). The area topography offers patterns of slope and grade that will be advantageous when creating a mountain bike trail system. The variation in slope throughout the campground will provide fun and unique riding experiences for all levels of riders. Much of the site is comprised of sandy soils that will offer adequate drainage but may not withstand prolonged use as trail substrates. Trails in these areas will require specialized construction techniques that will be highlighted in *Plan* section of the document.



Area of Operations, St.
Croix Campground
(Red Outline)

570th St

Gravel Pit Rd

State Rd 70

Winter Winds

Traffic Flow

Traffic Noise

P

P






Summer Breezes

Summer Breezes

River Rd

Pinson Rd

N

Wetlands		Campground
Steep Slopes		One Way Traffic
Prairie Area		Multi-directional Traffic
Old Growth Pines		Parking
Wood River Crossing		National Park Service Land
GKSF Property Line		

This analysis was created after careful examination of the site assessment and project goals. The following image illustrates how the sites physical, environmental, geologic, and offsite influences will impact the mountain bike trail.

Throughout the assessment process sensitive areas have been discovered. These areas are may require avoidance or special considerations when constructing the trail. Wetland areas, in pink, should be avoided whenever possible. These step formations have wet, poorly drained soils with low weight bearing capacities and are at risk of rutting and flooding. Much of the site is comprised of sandy soils that will offer adequate drainage but may not withstand prolonged use as trail substrates. Trails that run along or through the Wood River Valley could be prone to slides, washouts, or gullyng due to their steep slopes and may require slope stabilizing modifications. The steep sloped areas shown in red are at risk of accelerated erosion and potential safety concerns. The one water crossing at the Wood River, shown in yellow, will need a bridge due to the silty nature of the river substrate at that point.

Much of the campground is on the plateau above the main river channel and his minimal slope and grade concerns. The diverse patterns of slope and grade will be advantageous when creating a mountain bike trail system. The variation in slope thought the campground will provide for a fun and unique riding experience for all levels of riders. Ideally, the steep slopes along the Wood River will be incorporated into the trail system but pose a challenge to trail construction sue to the weak structure of the sandy soils.

River valleys often are some of the most divers habitats in the area. This site is no exception. With established communities of White and Red Pines, as well as Aspen, Northern Hardwoods, and Scrub Oak this site offers many unique ecological niches. Animal species are very diverse as well. As previously noted, the Wisconsin Natural Heritage Inventory (NHI) database noted that there are 32 rare animal species that have been documented on or near the Governor Knowles State Forest (GKSF). Awareness of sensitive species and areas prior to and during construction, will help limit disturbance.

Users:

The Governor Knowles State Forest hosts a wide variety of uses pertaining to recreation and ecotourism. The mountain bike trail system will be designed as a network of shared and single-use trails. Shared-use trails could accommodate hikers, equestrians, trail runners, mountain bikers, and cross-country skiers. Whereas the single use trails will be limited to bikes. The majority of the trail system will be single-use, single-track mountain bike trails. The trail system will have varying levels of difficulty to suit different rider's abilities. For this reason, the site will have a network of shared and single-use trails that will be designed to maximize utility for all users. This site is projected to have high seasonal ridership because it is relatively close to the Twin Cities. At this time, this trail system would not be open during the winter months and its use would be limited to daylight hours.

The typical trail user objectives include: *nature, escape, solitude, challenge, risk, fun, play, exercise, variety, connectivity, socializing, safety, and efficiency*. Multiple interviews were conducted to gain a better understanding of local riders and what they desire in a mountain bike trail. Steve Hamlin and Gregg Kroll are both avid mountain bikers and were happy to share their insight.

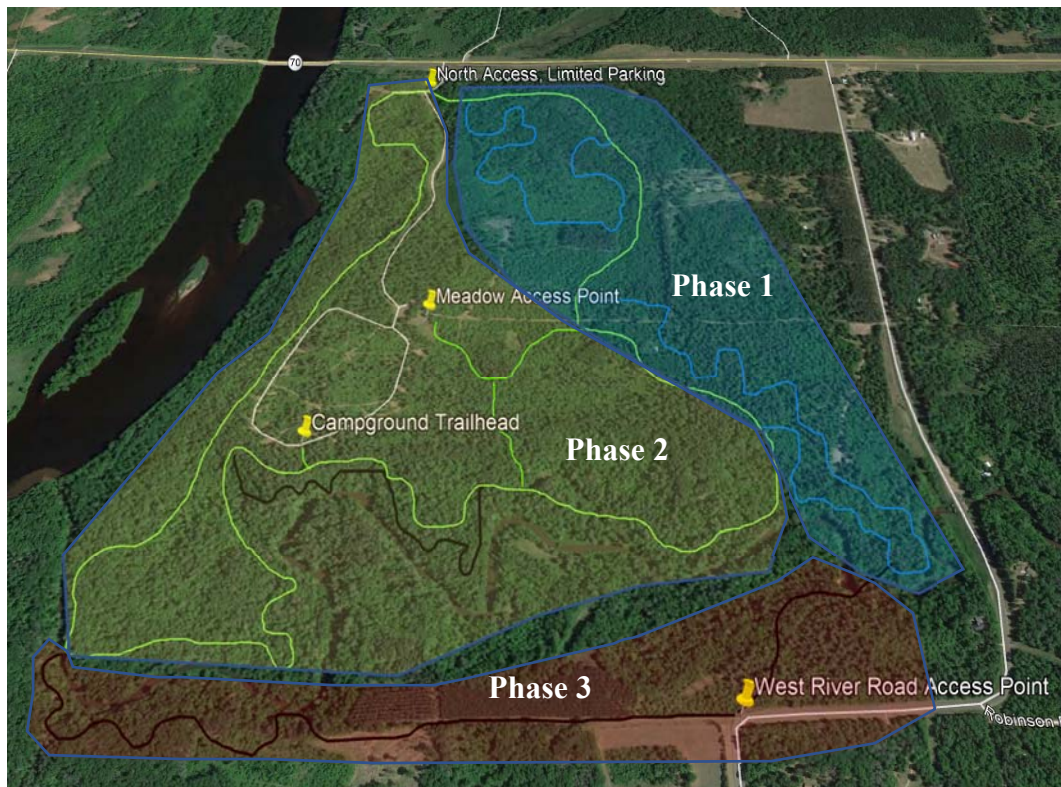
Steve Hamlin, owner of Cyclova XC bike shop in St. Croix Falls Wisconsin, had some great insight on 'how' riders ride. Steve said that most of the riders he knows like to go out for an hour or two, short but intense ride. He also mentioned the importance of keeping trails accessible and maintained. "Mountain biking is a great family activity, as long as everyone has a trail that suits them." -Steve

Gregg Kroll, is an 'all seasons' biker who tours the region competing in races and riding with friends. Gregg said "the trail needs to be challenging and interesting, with features like hard-banked turns and rock gardens." -Gregg

Both Steve and Gregg are probably not the typical rider. They are very advanced, whereas most riders fall more in the middle of the skill/experience levels. A large portion of users will be riding in groups of people with varying skill levels. According to the International Mountain Bicycling Association (IMBA), in 2007, the majority of riders that utilize single track trails are between 16-38 years old, 72% male and 28% female. IMBA also noted that recreational mountain biking is a fast-growing family hobby, with many families riding once or twice a week.

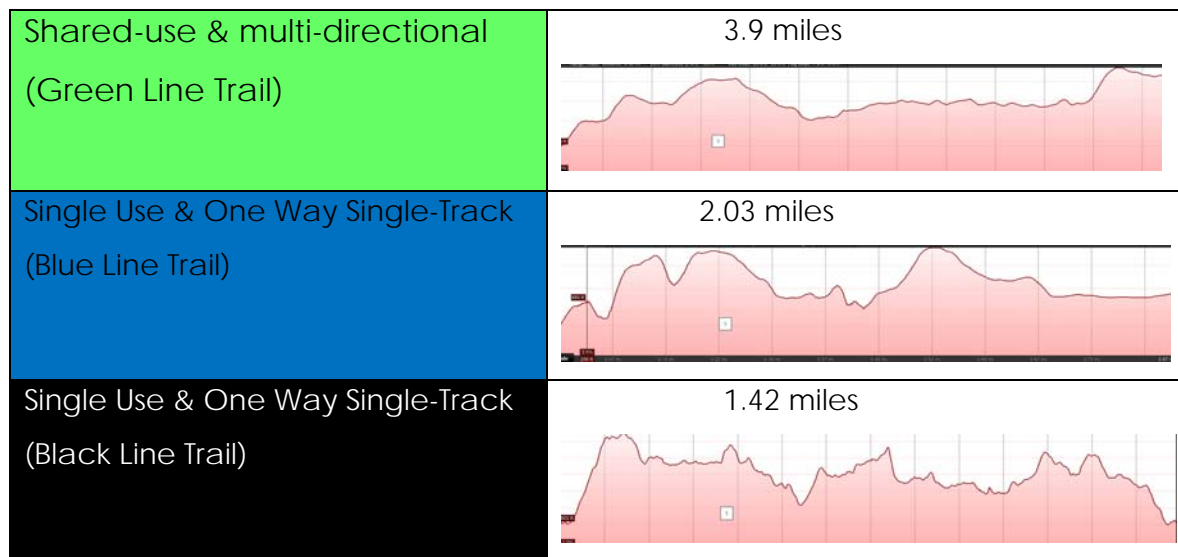
Proposed Trail:

The St. Croix Campground has the luxury of space. There is ample room for a network of trails that will be accessible from multiple points. This is a proposed layout of the trail network. The single-track trails (Blue and Black) will be marked 'one way' and the direction of travel will be specified, either North to South or East to West.



Access points will be limited to four points: North, Meadow, Campground, and West River Road AP. This will allow for maximum parking, easy traffic flow, uncongested trailheads and the campground management will be able to monitor use from these locations. There is no access point directly on State Highway 70 due to safety concerns.

Sustainable trail construction can be costly and time consuming. This network of trails has been developed in a way that allows for phased implementation. Through interviews with local riders and organizations it has been found that the largest percentage of the riders would use the intermediate trail (Blue Line). For this reason, it is recommended that in the event of a phase development plan that the Blue and Green Line trails be constructed first. The Black Line trails can be done as the trail network expands southward to the Wood River Valley. The following chart illustrates the different elevation profiles of each trail (not to scale).



The Green Line Trail will be a beginner type trail that will accommodate multiple uses. This will be the main trail and the other trails will spur off and back on to the Green Line. Both the Blue and Black Line trails will incorporate challenging terrain features, with the Blue line being an intermediate trail and the Black Line being advanced. These trails will give riders a safe way to enjoy the area and still be challenged.

There are many types of trail features that can be used in different ways to vary the level of difficulty and complexity of each trail. These features can also be used to preserve and protect natural land features such as wetlands, fauna, and geologic formations. The chart on the following page describes some features that IMBA recommends in trail construction and provides a list of benefits gained from each type of feature.

Feature and Description	Benefits
Natural Obstacles: Naturally occurring objects, such as roots and rocks	Makes the trail more challenging
Back Slope: For slopes >20%	Stabilize the soil and vegetation
Corral/Anchor: Objects used to define sides or turns of trail	Used to control speed, reduce trail widening, and prevent shortcutting
Filter: High-Skill obstacle (AKA Qualifier)	Demonstrates complexity of trail
Stone Pitching: Rocks are packed in trail	Stabilizes trail and adds challenge
Spacing of Features: Undulations and frequency in tread	Facilitates drainage and varies landscape
Raised Tread: Excavated trail filled with stone and capped with soil	Ensures good drainage and durable trail surface
Tread Clearance: Maintained area of trail	Provides for a safe but challenging experience

Examples of Trail Features and Construction Techniques



Filter at a Trailhead



Back Slope



Stone Pitching



Corral/Anchor

All images attained at Guidelines for a Quality Trail Experience, <http://gqte.imba.com>

Conclusion:

This trail system will be a great addition to the Governor Knowles State Forest. By adding network of trails, the Campground would become a local recreating hot-spot. The processes of site analysis, use and user profiles, and interviews have helped shape this trail design into one that provides unique opportunities for riders to explore and enjoy the St. Croix Campground. Through the use of sustainable trail construction and management techniques, the St. Croix Campground Trail can be lasting fixture in the area.

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Steve Hamlin, Cyclova XC, February 2018.

Gregg Kroll, February 2018

Max Elfelt, St. Louis County MN, April 2018