Building your "green" barn-land management

by John Blackburn, Equine Architect

Photo courtesy of Blackburn Architects.

Creating a truly sustainable horse farm means considering more than just the barn. It also means taking a look at site planning for best management practices.

Taking a horse out of his natural environment and keeping him in captivity can be a recipe for trouble in many ways. For example, he loses his ability to choose and now must rely on you for his health and safety. Keeping and properly caring for a horse (or any livestock, for that matter) can also have a significant impact on the environment.

When I design a barn, I make a conscientious effort to incorporate elements and materials that reduce the structure's overall environmental impact and carbon footprint while preserving and contributing to the animal's health and safety. By utilizing a combination of eco-friendly resources and passive design strategies, such as day-lighting and planning the building's orientation to take advantage of the locale's seasonal wind patterns to improve ventilation, we are able to provide a strong foundation from which farm owners can begin to build sustainable horse farms.

SITE PLANNING AND LAND MANAGEMENT

Unfortunately, constructing a "green" barn isn't enough. Land management has a significant role in how "eco-friendly" a farm or horse operation can be. Realizing and accounting for the impact horse farms can have on the environment is an important step in creating a sustainable farm. When considered holistically, proper site planning and design can help.

In the wild, horse herds meet their grazing, water and waste needs over a large swath of land. By covering so much area,

their environmental impact is dispersed over greater distances and is managed naturally. Horses in captivity concentrate their impact in a much smaller area and disturb the land much more frequently, slowing down the land's ability to recuperate. Proper site planning and land management can proactively address some of these issues and reduce their effects over time.

The following best management practices (BMPs) may not always be feasible given a site's unique circumstances, but it's important to implement what you can, where you can, as often as possible. While we cannot completely erase the environmental impact of animal husbandry, as it currently exists, we can make efforts to reduce it.

PLANNED PASTURE MANAGEMENT

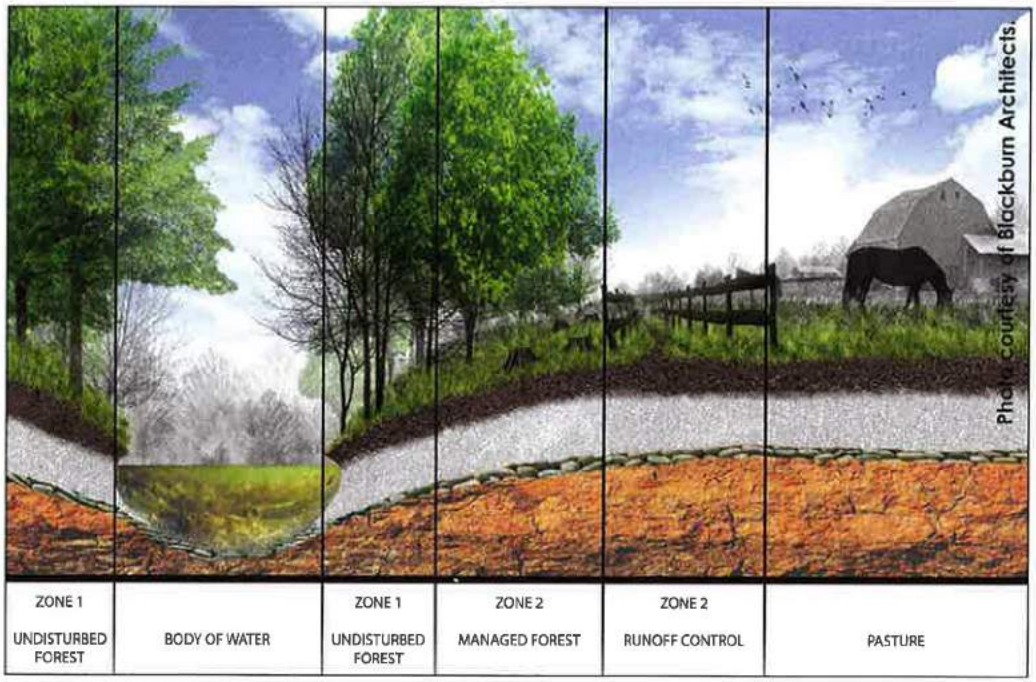
When developing a horse property, it's important to plan for regular pasture rotation to prevent soil erosion, compaction and overgrazing. It's commonly recommended to have at least one acre of open space per horse.

Though grazing can supplement a large percentage of a horse's diet, a single pasture may not be able to sustainably support constant equine activity. Ideally, you'll want two or more pastures to rotate between to prevent these issues. Once pasture grasses are chewed down to roughly 2" to 4", it's time to move the horses and "deactivate" that pasture for 18 to 21 days while it recovers (some types of pasture grass may require shorter or longer periods of recovery, and the durations may also be affected seasonally by climate).

Pasture rotation also cuts down on erosion and compaction. A 1,000-pound animal walking over the same spaces for a long time deteriorates the soil and contributes to the loss of porosity in the sediment, making the soil more densely packed and reducing air-flow and fertility. Pasture planning must also take this into consideration. Travel paths should not be planned along areas that are particularly prone to the damaging effects of erosion (i.e. steep slopes, storm water drainage swales, etc.). Over time, the damage from erosion can result in soil nutrient loss, and animal waste runoff into local aquifers and/or nearby waterways. It can even lead to the permanent cessation of pasture growth. By reducing prolonged "trampling", you can keep the pasture space healthy and productive longer.

In the wild, horses graze up to 18 hours a day! That kind of grazing year round on a small parcel of land could quickly render

the space barren and unrecoverable. Consider carving out space for a sacrifice paddock(s) for inclement weather and in-between pasture rotations when grass isn't readily available for grazing. Sacrifice paddocks help alleviate the damage endured by active paddocks and prevent overgrazing. Sacrifice paddocks should be designated to an area with good drainage and reinforced with compacted gravel or stone dust to further prevent muddy conditions and runoff from forming.



PROTECTING WATERWAYS

Runoff is incredibly problematic if your property bumps up against natural water sources such as lakes, streams or ponds. While nitrogen and phosphorus are necessary nutrients for healthy soil, they're detrimental to water-based ecosystems. These elements are often introduced into waterways through animal waste, fertilizer and pasture runoff. Too many of these nutrients can encourage algal blooms resulting in fish kills, and in extreme cases toxicity to drinking water. Good site planning can help position pastures away from these systems, but for existing properties, the development of vegetative buffers along riparian areas can help manage and filter harmful nutrients before they reach the water.

Mismanagement of pastureland, water resources and waste disposal in horse husbandry are among the greatest detriments to the environment, and it is up to owners and farm property managers to mitigate these effects as much as possible.

WASTE MANAGEMENT

The average 1,000-pound horse produces between 35 and 50 pounds of waste (or "muck") a day. That's nearly nine tons of muck a year per horse! Disposing of this waste properly is imperative to preventing waste-based pollutants from infiltrating the air and adjacent water bodies. Smart site planning will help organize the circulation of farm activity to conveniently dispose of waste in a central location while keeping it securely contained and away from vulnerable water resources.

Composting is a hugely beneficial method of waste management. When conducted properly, it can be used to naturally fertilize pastures, flowerbeds and other crops. Spreading compost throughout your pastures one or two times a year will nurture healthy pasture growth and protect the land from harmful parasites.

Although composting is a useful solution, it's important to determine if you're able to safely and effectively reuse all the waste produced by your animals. They may produce beyond

your farm's actual needs. One solution to this is "manure sharing" – working with local gardeners, farmers and landscapers to make use of the excess compost. Using locally composted materials can help promote healthier biodiversity, as well as reduce the environmental impact and carbon footprint associated with long-distance removal/disposal of muck and/or compost.

Before putting these methods into practice, you will need to determine which ones will work for your property given its site demands and your project goals. Check with local regulatory bodies to see what incentives may be in place for horse owners seeking to implement some of these BMPs. There may be regionally specific policies and procedures you'll need to adhere to before getting started. If you're planning to work with a professional farm planner, make sure they are familiar with BMPs and can help you select or develop your property to make the most out of the techniques suggested. Get involved with your state horse council or equine support network to connect with other equestrians also working towards more sustainable farm goals. The more BMP practitioners there are, the better!

BEST MANAGEMENT PRACTICES FOR SUSTAINABLE FARMS

When we talk about **"sustainable farming"**, we aren't suggesting there is a way to make a farm **100% sustainable**. We are instead referring to an established set of best management practices (BMPs). BMPs help farm owners and managers become better stewards of the land by implementing cost-effective actions to reduce the amount of pesticides, fertilizers, animal waste, and other pollutants entering our water resources through runoff.

BMPs are especially helpful to horse properties as they help protect the land and aid in conserving water, which is crucial as we begin to see longer and more frequent **"dry"** spells impacting farmlands. Mismanagement of pastureland, water resources and waste disposal in horse husbandry are among the greatest detriments to the environment, and it is up to owners and farm property managers to mitigate these effects as much as possible.

BMPs begin with thoughtful site planning. The demands of your property will dictate where the barn should be placed and will help to arrange the flow of operations. It's important to consider not only the purpose of the facility and your goals as the owner/manager, but also the impact your choices may have on the neighboring natural **amenities** and **resources**.

John Blackburn and his team used green building principles to develop Blackburn Greenbarns™, a line of pre-designed horse barns that provide aesthetics and functionality while emphasizing the safety and health of horses, humans and the environment. They are naturally lit and ventilated, use low VOC paints and finishes, recycled materials and FSC-certified lumber. They also offer additional green add-ons, such as solar panels and hot water tanks, and rainwater collection systems (*blackburnarch.com*). Blackburn's book, *Healthy Stables by Design*, can be ordered through *Amazon.com* or *healthystablesbydesign.com*.