

October 2023

USPC BROOKFIELD LAND CONSERVATION AWARD APPLICATION
Misty Morning Farm USPC Riding Center Water Runoff Mitigation



A Birds Eye View of Misty Morning Farm in Brooklyn, Wisconsin

Introduction

Mimi Levinson, Izzy Marini, and Lauren Werner are members of Lake Shore Region's Misty Morning Farm Pony Club Riding Center (MMFPCRC), a farm located in Brooklyn, Wisconsin. In September 2023, we earned our HB certification. Our land conservation projects incorporated the creation of runoff reservoirs around the barn. We noticed how water runoff was impacting two key areas around the barn: the outdoor wash rack and the end of the aisle where water buckets were dumped out. As a group, we made a conscious decision to create two separate Land Conservation Projects aligned to solve both areas of issue. Izzy and Lauren decided to install a raised flower bed at the west end of the barn, while Mimi created a rain garden adjacent to the outdoor wash stall on the east side of the barn. Although the projects were carried out separately, the planning and researching were performed as a group.

Our Land Conservation Projects are due for consideration for the USPC Brookfield Land Conservation Award because they protect the watershed by reducing runoff, maintaining the health of the land. These efforts conserve the land used for the paddocks, outdoor arena and the Sugar River watershed.

Background Information

In October 2021, Misty Morning Farm moved locations from a 9 acre rural, rocky farm in the Driftless area of Wisconsin to a former dairy farm, consisting of 73 acres adjoining the Sugar River. The fertile river valley has attracted both dairy and grain farmers to this area of South

Central Wisconsin. The owners of the farm and MMFPCRC members have cleared old pastures adjacent to the river, and also created riding trails along the river banks.

The Sugar River, like most rivers surrounded by agriculture and housing, is susceptible to runoff and accompanying sediments. Runoff from nearby fields can increase nutrients in the water, which in turn alters the ecosystem in a negative way. Particulates in the water absorb sunlight and release the energy as heat, warming the water. These changes can be detrimental to many fish and macroinvertebrates that call the river home. In short, one way to keep the Sugar River healthy is to decrease the runoff from fields and homes built in the Sugar River watershed.

Outcomes of the Combined Projects:

- Wastewater from two different sources is reused and diverted into soil to contribute to the healthy growth of native plants
- Decreased runoff of organic material and increased health of Sugar River Watershed
- Creating awareness of natural methods to reduce water pollution by Pony Club Members
- Identification of native plants by Pony Club Members
- Awareness of the HB process, land conservation project, and its connection to land conservation by Pony Club Members

Lauren and Izzy's Land Conservation Project 2023

Introduction:

Lauren and Izzy made a container garden from a concrete slab at the end of the barn. Previously, water buckets were dumped outside the barn onto the ground, which eroded the sand and soil of the dry lot, and was a missed opportunity for repurposing the water. The completed garden helps conserve water, stop erosion, repurpose horse manure, and adds beauty to the barn. The plants help improve the environment by producing oxygen, releasing nutrients to keep the soil fertile, reducing runoff from the property, and catching airborne pollutants.



Who benefits:




The Misty Morning Farm and Pony Club Riding Center benefits from the project because it conserves well water that is being used on the property and stops the erosion of the dry lot which is partly used as a paddock. The riders at the barn benefit from the greenery the flowers bring every time they walk by to grab their horse. The garden can also be used as a teaching tool for pony club members to learn about toxic plants, why the garden is important to land conservation, and why land conservation is important.




The project was purposely completed during MMFPCRCs 2024 Camp Week. The camp had eighteen campers. Many curious campers stopped by during the construction of the garden. Lauren and Izzy explained the project, why they were doing it, and why land conservation is




important. The project was completed before the end of camp, so campers could dump their dirty water buckets into the garden.

Photos

<p>Photo A</p>		<p>The area before the garden was planted, after morning chores were completed.</p> <p>The area was used to store miscellaneous objects. Water runoff is evident.</p>
<p>Photo B</p>		<p>Creating the garden bed from scrap lumber.</p> <p>The uneven surface of the concrete on the bottom, and the space (about 1 inch) between the frame and the concrete walls allows drainage for the garden.</p>

<p><i>Photo C</i></p>		<p>The completed garden frame before dirt was added.</p>
<p><i>Photo D</i></p>		<p>Lauren adding a mixture of manure and topsoil to the garden.</p>
<p><i>Photo E</i></p>		<p>The garden filled halfway with topsoil and aged manure.</p>

<p><i>Photo G</i></p>	 A group of four people, including children and an adult, are gathered around a raised garden bed. One child is pouring water from a large orange bucket into the garden. The garden bed is filled with soil and some green plants. The background shows a red wooden building with a doorway.	<p>A group of campers testing out the garden with their dirty water bucket.</p>
<p><i>Photo H</i></p>	 A raised garden bed filled with a variety of colorful flowers, including purple, red, and yellow blooms. The garden is situated against a concrete wall and a corrugated metal fence. A small informational card is visible on the side of the garden bed.	<p>The completed garden (photo taken roughly four months after being planted)</p>
<p><i>Photo I</i></p>	 A large pile of dark brown, moist manure and straw. A person's shadow is cast on the pile, and a red building is visible in the background under a clear blue sky.	<p>After 200 pounds of manure were taken from the manure pile</p>

		
<p>False Indigo Blue</p>	<p>The Woods Purple Aster</p>	<p>Paprika Yarrow</p>

Mimi’s Land Conservation Project 2023

Mimi was motivated to create a rain garden on the property because she noticed water from the farm’s wash rack ran down the slope into the outdoor arena.

Rain gardens are small, shallow gardens landscaped with native plants. After a rainfall, the water fills up the garden and slowly soaks into the ground. The roots of plants in the garden can reduce pollution that would otherwise end up in waterways. Native plants typically have deep root systems, which help encourage water infiltration. By redirecting the water to the garden, uncontrolled runoff is reduced. Flowering plants may attract pollinators, and the landscaping adds to the visual appeal of the property.

The shed built on the edge of the concrete pad (seen below) does not have gutters, so rain water falls to the surface below. The farm’s wash rack is located on the north end of the concrete pad, and additional wastewater is generated when horses are bathed. Water runs off the northeast edge of the concrete pad. The ground is sloped towards the arena, and runoff from the concrete pad creates mud.

The plants were chosen to be native and non-toxic to horses. Mimi consulted Dane County and the City of Madison Streets Division suggested lists of rain garden plants to identify native plants that would thrive in our region. The United States Pony Club Manual, and other resources confirmed toxicity levels.



Plants in the garden are non-toxic to horses and provide varying height, color and time of bloom, offering visual appeal from early spring through later summer.



Arrows show direction of runoff



Before: Surface water runoff after several horses were bathed.

			
<p>Little Bluestem <i>Schizachyrium scoparium</i> Height 3 feet (approx)</p>	<p>Pennsylvania Sedge <i>Carex pennsylvanica</i> Height 8 inches</p>	<p>Golden Alexander <i>Zizia Aurea</i> Blooms April-June Height 3 feet</p>	<p>Anise Hyssop <i>Agastache foeniculum</i> Blooms June-September Height 3 feet</p>

	
<p>Completed garden</p>	<p>Garden in use after five horses were bathed.</p>

Conclusion

The Misty Morning Farm and Pony Club Riding Center would pledge the awarded amount to be used to extend the rain garden. The funds would offset necessary funds required to install gutters along the west side of the shed. The water would be diverted into the rain garden, thereby reducing additional erosion in the paddock.

References

“Achillea millefolium ‘Paprika’ Yarrow.” Gardenia, Opened 24 July 2023 <https://www.gardenia.net/plant/achillea-millefolium-paprika-yarrow>

American Society for the Prevention of Cruelty to Animals. (n.d.). Toxic and non-toxic Plant List - horse. ASPCA. <https://www.asPCA.org/pet-care/animal-poison-control/horse-plant-list>

“Are False Indigo Plants Poisonous?” Plant Addicts, Opened 24 July 2023. <https://plantaddicts.com/are-false-indigo-poisonous/#:~:text=All%20parts%20of%20False%20Indigo,blurred%20vision%2C%20vomiting%20and%20vertigo.>

“Aster ‘Woods Purple’”. Missouri Botanical Garden, Opened 24 July 2023. <https://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=258939&isprofile=0&>

Cointreau, Maya. “Heal Your Horse With An Herbal Pasture.” Equine Wellness Magazine, Opened 24 July 2023 [https://equinewellnessmagazine.com/herbal-pasture/#:~:text=Yarrow%20\(Achillea%20millefollium\)%20leaves%20](https://equinewellnessmagazine.com/herbal-pasture/#:~:text=Yarrow%20(Achillea%20millefollium)%20leaves%20)

“Calculate weight of compounds and materials per volume.” Opened 24 July 2023 <https://www.aqua-calc.com/calculate/volume-to-weigh>

College of Veterinary Medicine and Biomedical Sciences – Colorado State University. (n.d.). Guide to poisonous plants – College of Veterinary Medicine and Biomedical Sciences – Colorado State University. Guide to Poisonous Plants. <https://poisonousplants.cvmbs.colostate.edu/>

Horse DVM LLC,. (n.d.). Plants poisonous to horses database. <https://horsedvm.com/toxicfinder.php>

Madison Area Municipal Stormwater Partnership. (n.d.). Free rain garden designs. Rain Gardens - Planting Plans | Ripple Effects. <https://www.ripple-effects.com/Rain-Gardens-Planting-Plans>

“Plants and Climate Change.” National Park Service, Opened 24 July 2023. <https://www.nps.gov/articles/000/plants-climateimpact.htm#:~:text=Oxygen%3A%20Through%20photosynthesis%2C%20plants%20use,nutrients%20to%20keep%20soils%20fertile.>

City of Madison, Roger Bannerman Rain Garden Initiative (n.d.) Full sun DIY plant guide. <https://www.cityofmadison.com/engineering/documents/FULLSUN.pdf>

Rutgers, The State University of New Jersey. (n.d.). Best management practice demonstration horse farm. CONSTRUCTION OF A RAIN GARDEN.

<https://animalsciences.rutgers.edu/tour/page-6-rain-garden.html>

Weedon, J. (2022, November 2). Rain Gardens are beneficial for farms. Farm and Dairy.

<https://www.farmanddairy.com/columns/rain-gardens-are-beneficial-for-farms/743477.html>

“Woody Aster Poisoning In Horses.” Wag!, Opened 24 July

2023. <https://wagwalking.com/horse/condition/woody-aster-poisoning>

“Yarrow.” Horse DVM, Opened 24 July 2023. <http://www.horsedvm.com/poisonous/yarrow>

“Yarrow Poisoning In Horses.” Wag!, Opened 24 July

2023. <https://wagwalking.com/horse/condition/yarrow-poisoning#:~:text=Causes%20of%20Yarrow%20Poisoning%20in,>)