



T R A I L S:
THE GREEN WAY FOR AMERICA

Equestrian Trails: Sustainable Design and Access

Presenters:

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Part 1: Equestrian Campground Design & Management

Clay Nelson





Go to www.sustainablestables.com to download a pdf version of this presentation



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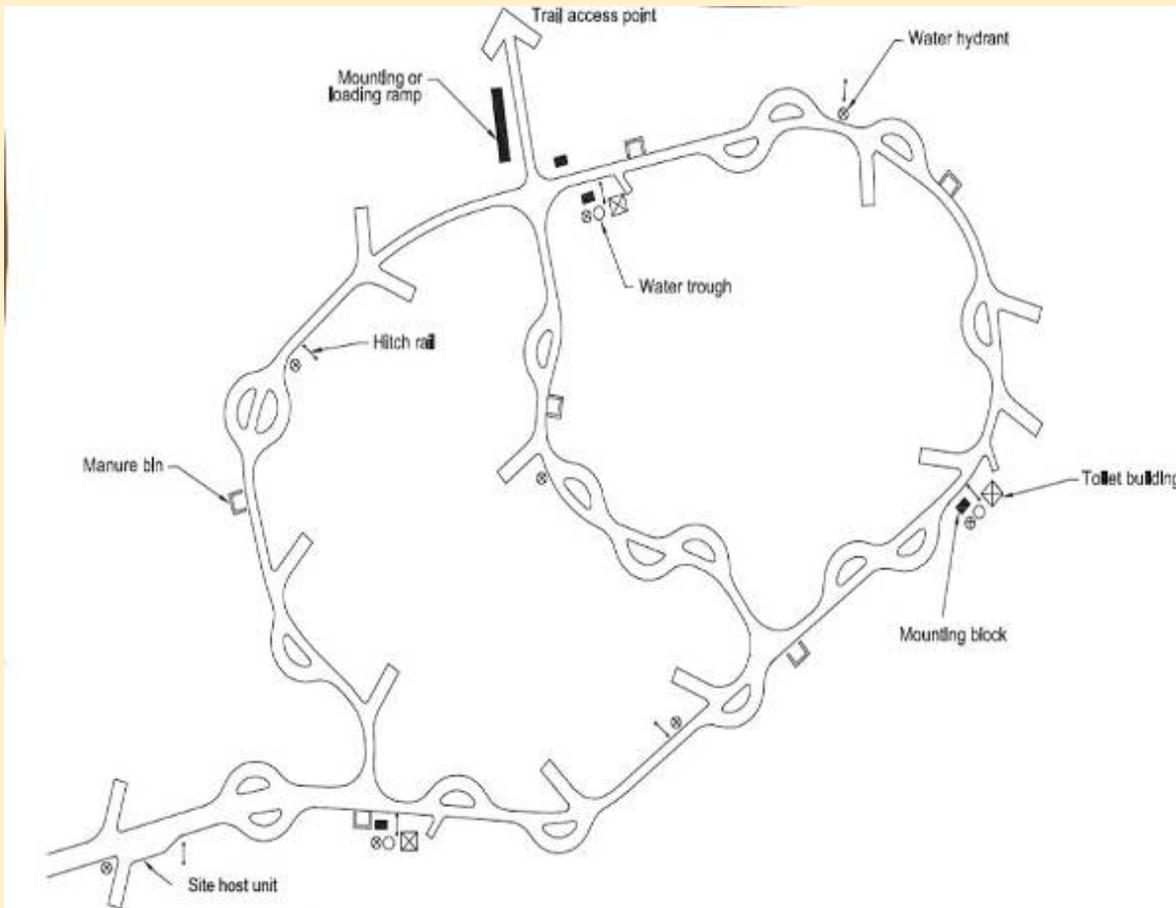


Figure 7-7—Suggested locations for facilities at a single-party equestrian camp unit with a moderate level of development.

Table 7-1—Suggested recreation facilities at equestrian trailheads and campgrounds.

Facility	Basic	Often provided	Optional
Trail access	X		
Water sources*		X	
Toilet building	X		
Shower building (campground only)			X
Wash rack			X
Mounting ramp**			X
Loading ramp			X
Mounting block		X	
Manure disposal***		X	
Highline or corral		X	
Hitch rail	X		
Arena or round pen			X

* In some areas, recreationists bring their own water.

** Mounting ramps must be accessible, if they are provided.

*** Manure disposal is not required in all areas of the country.

Typical well-designed horse campground



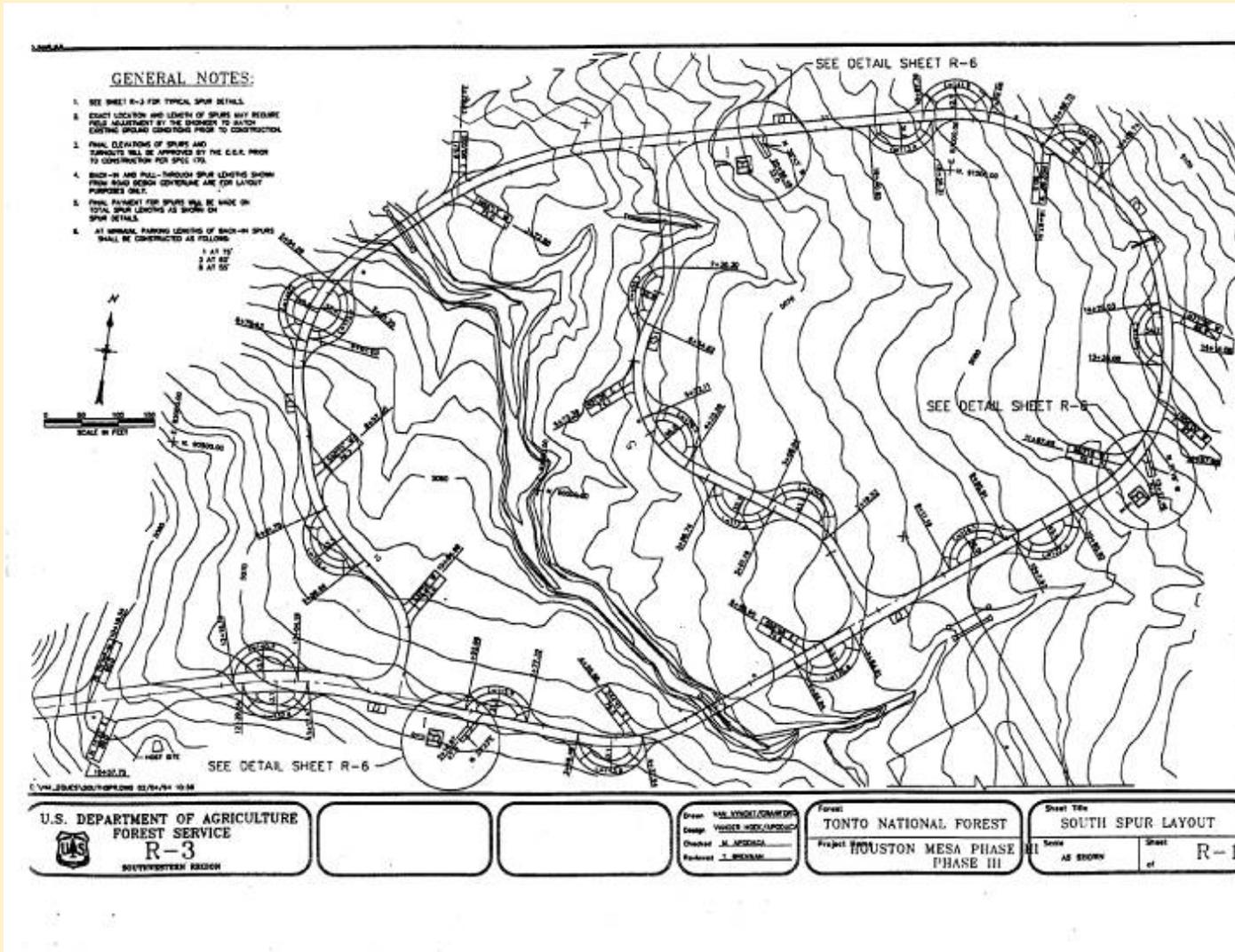
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**Well-designed
campground space**



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Site selection is critical



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1. Manure

2. Mud/erosion

3. Water

**Equestrian campground
challenges & solutions**



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1. Manure

2. Mud/erosion

3. Water

**Equestrian campground
challenges & solutions**



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**Collect and spread
manure**



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Actively-managed compost



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Aerated compost system

Picture courtesy of Prince William Soil & Water Conservation District, VA



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Emerging technology: Convert
manure into energy
(electricity, heat, and hot water)



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5 horses can power one average U.S. home

Anaerobic Digester

Picture courtesy of SEaB Energy Ltd.



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1 horse can heat ~ 675 sq. ft. of indoor air

Incinerator

Picture courtesy of Swebo Bioenergy



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1 horse can heat ~ 400 sq. ft. of indoor air

Heat Extractor

Picture courtesy of AgriLab Technologies Inc.



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1. Manure

2. Mud/erosion

3. Water

**Equestrian campground
challenges & solutions**



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Typical heavy use area

Picture courtesy of TerraFirm Enterprises



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Typical heavy use area at horse campgrounds – high line



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Typical heavy use area at horse campgrounds – hitching post



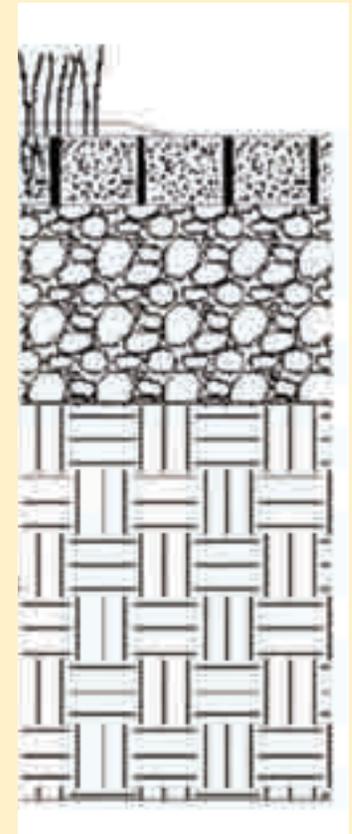
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**Typical heavy use area at horse
campgrounds – corral**



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Plastic pavers can reduce mud and erosion

Picture courtesy of TerraFirm Enterprises



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Typical heavy use area

Picture courtesy of TerraFirm Enterprises



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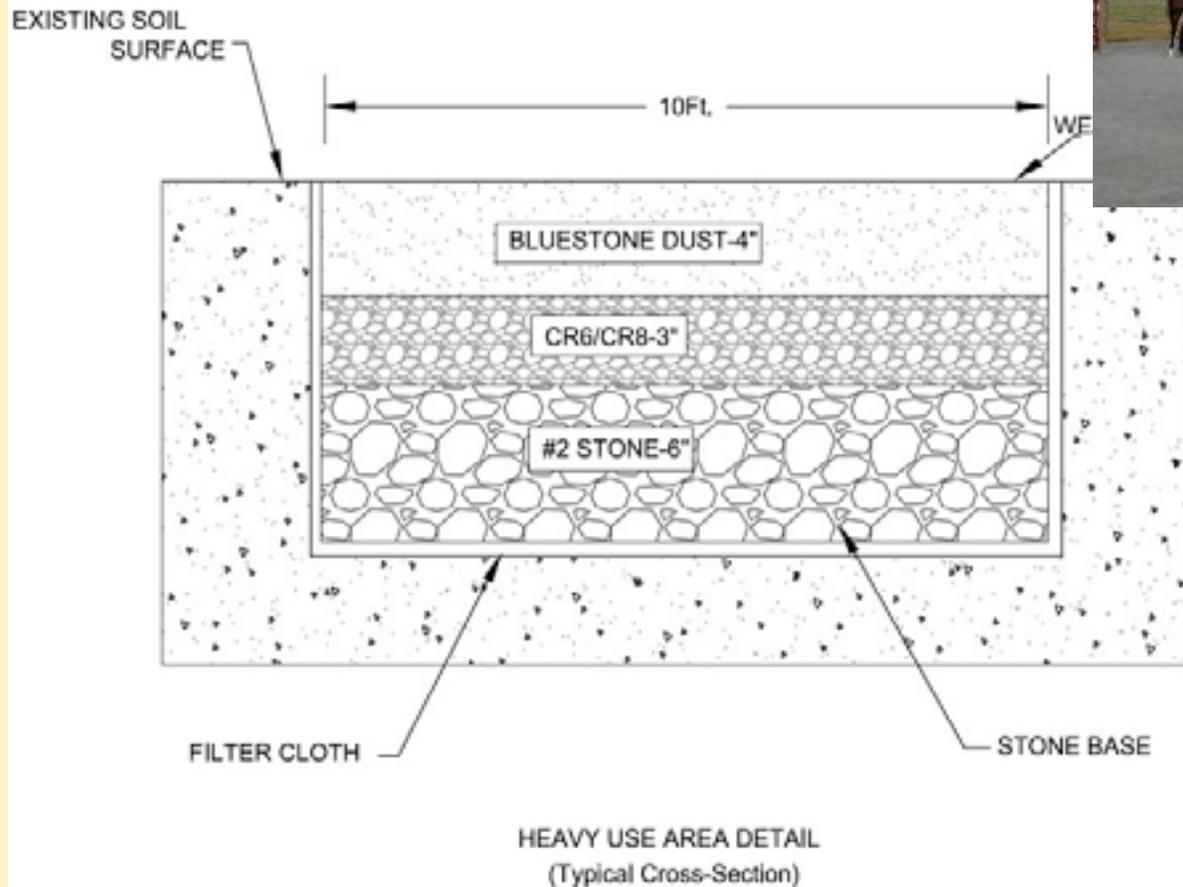


Heavy use area with EcoGrid pavers installed

Picture courtesy of TerraFirm Enterprises



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Typical heavy use paddock design

Diagram courtesy of Maryland Horse Outreach Workgroup





More about high lines



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Use hobbles to prevent pawing



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1. Manure

2. Mud/erosion

3. Water

**Equestrian campground
challenges & solutions**



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**A heavily eroded
"watering hole"**



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Minimize opportunities for defecation near streams



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**Provide an alternate
water supply**



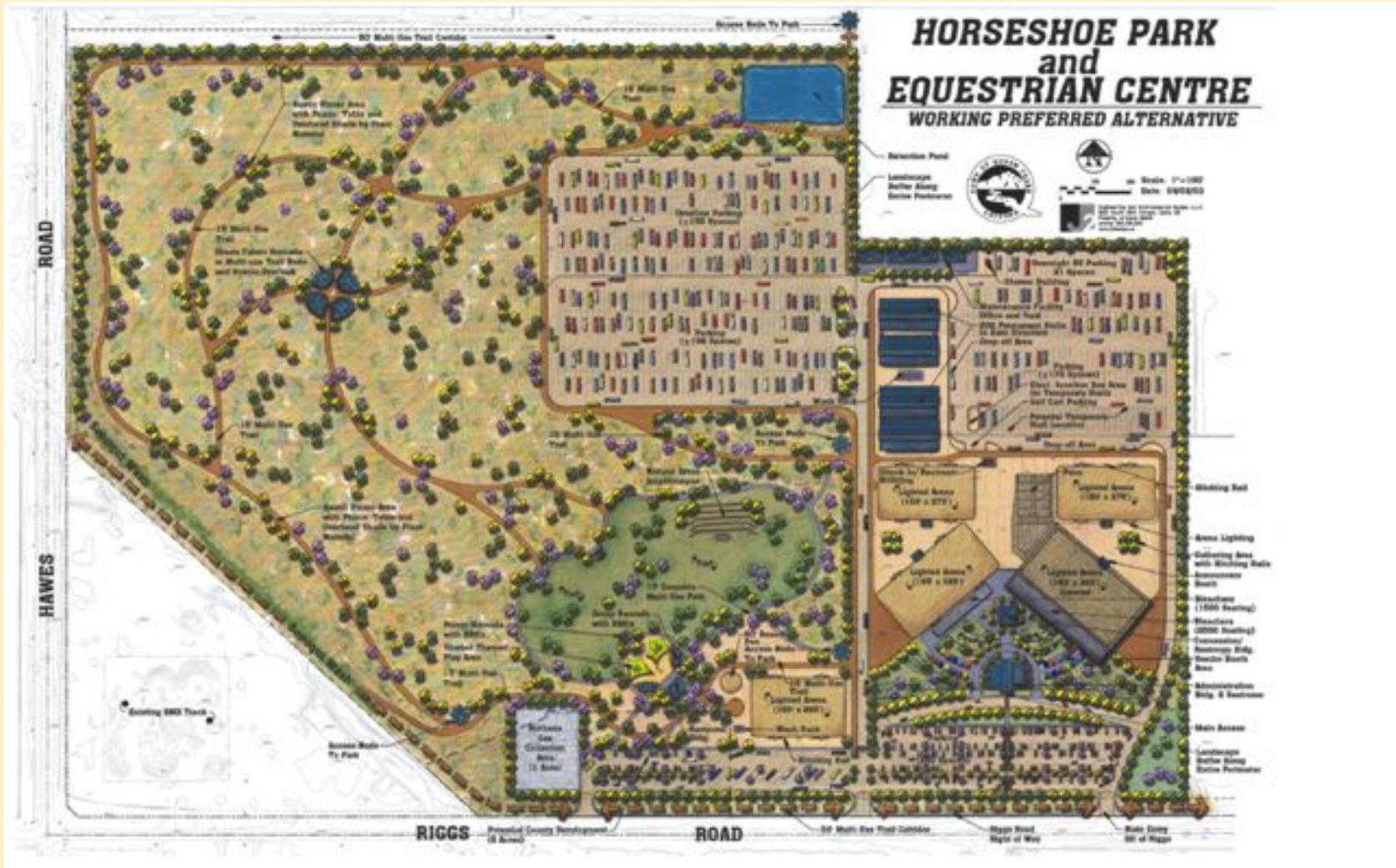
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Examples of sustainable design & management



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Horseshoe Park & Equestrian Center in Queen Creek, AZ



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THE SUSTAINABLE SITES INITIATIVE™



**GUIDELINES AND
PERFORMANCE BENCHMARKS
2009**

American Society of Landscape Architects
Lady Bird Johnson Wildflower Center
at The University of Texas at Austin
United States Botanic Garden

**New model in sustainable
landscape design**



Pilot Projects

[Go to bottom of page](#)

To learn more about the individual projects, click below.



- Mixed Use
- Transportation corridors/Streetscape
- Commercial
- Open space - Garden/Arboretum
- Institutional/Educational
- Residential
- Open space - Park
- Governmental complex
- Industrial

SITES: Pilot Program



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What would an equestrian
campground designed
following SITES criteria look
like?



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Environmentally-sensitive site planning



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Use rain gardens to control runoff

Picture courtesy of Dr. Carey Williams, Rutgers Equine Science Center, NJ



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*I'm doing my part using
Recycled Rainwater with*

 **FREEFLO**
WATER RECYCLING SYSTEMS

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GO GREEN

**Harvest rainwater to reduce
potable water use & runoff**



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**Use native landscaping to
create wildlife habitat**



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**Use local, sustainable
building materials**



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Use recycled materials



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**Use solar lighting & minimize
light pollution**



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Facility	Basic	Often	Optional	Green
Trail access	X			
Water sources		X		
Toilet building	X			
Shower building			X	
Wash rack			X	
Mounting ramp			X	
Loading ramp			X	
Mounting block		X		
Manure disposal		X		
Highline or corral		X		
Hitch rail	X			
Arena or round pen			X	
Stormwater control				X
Native vegetation				X
Green building materials				X
Composting				X
Renewable energy				X
Reduced light pollution				X
Soil restoration				X
Stream rehabilitation				X

The Challenge



1. Manage the “big three”

- Manage manure as a resource
 - Compost
 - Energy
- Design heavy use areas to prevent mud and erosion and protect vegetation
- Provide an alternate water supply

2. Create a new model that goes beyond the “big three” to create a truly **green** equestrian campground.

Take Home Messages

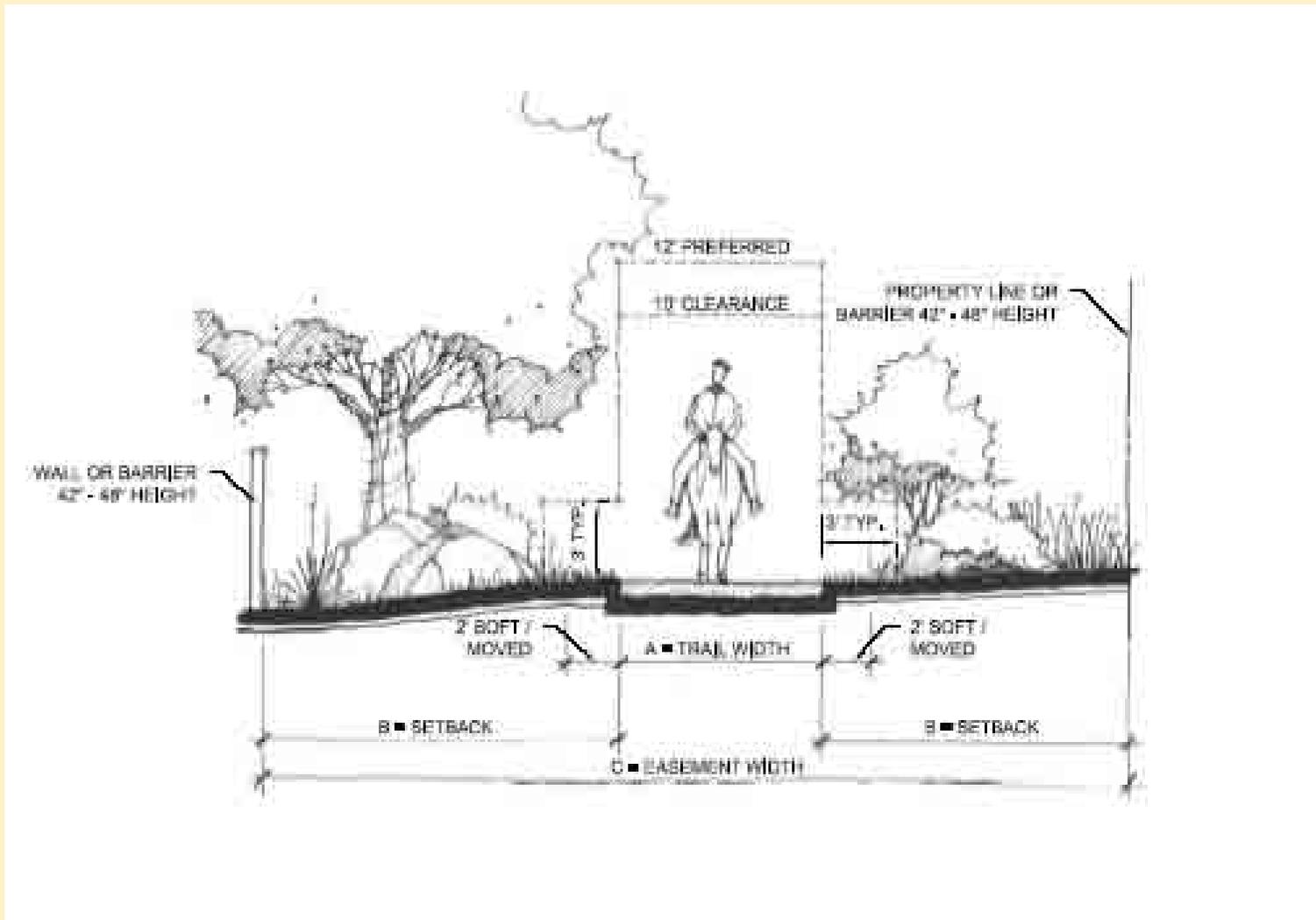


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Part 2: Sustainable and Environmentally Sensitive Equestrian Trail Design

Jan Hancock





Typical equestrian trail corridor



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Loop trail systems are environmentally efficient



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Approx 5'- 0"



**5 ft between hooves and wheels
a similar trail turning radius**



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5-foot minimum turning radius

**Plan space for climbing turns
and switchbacks on slopes**



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**A tight turning radius and steep incline
cause environmental impacts**



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**New and improved
switchback design**



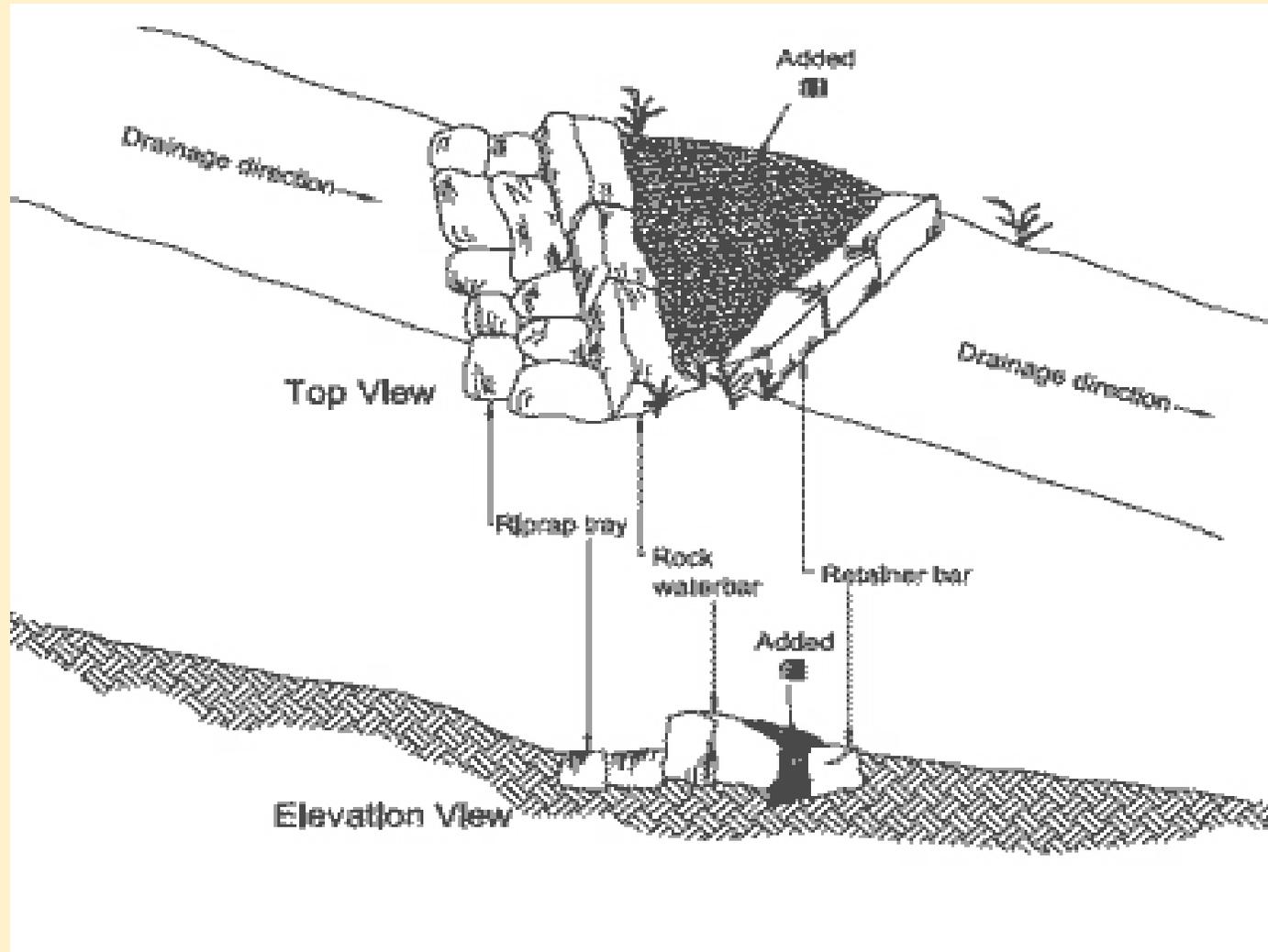
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Objects placed in the apex of the turn prevent cutting corners



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Water bars on horse trails are ineffective – horses go around them



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Grade reversals are better trail designs than water bars on slopes



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**Knicks at bottom of grade reversals
channel water off the trail**



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**Typical rock swale to help
prevent erosion**



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Typical vegetative bioswale



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**A trenched, eroded, and
braided trail**



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Large groups of riders can create environmental impacts



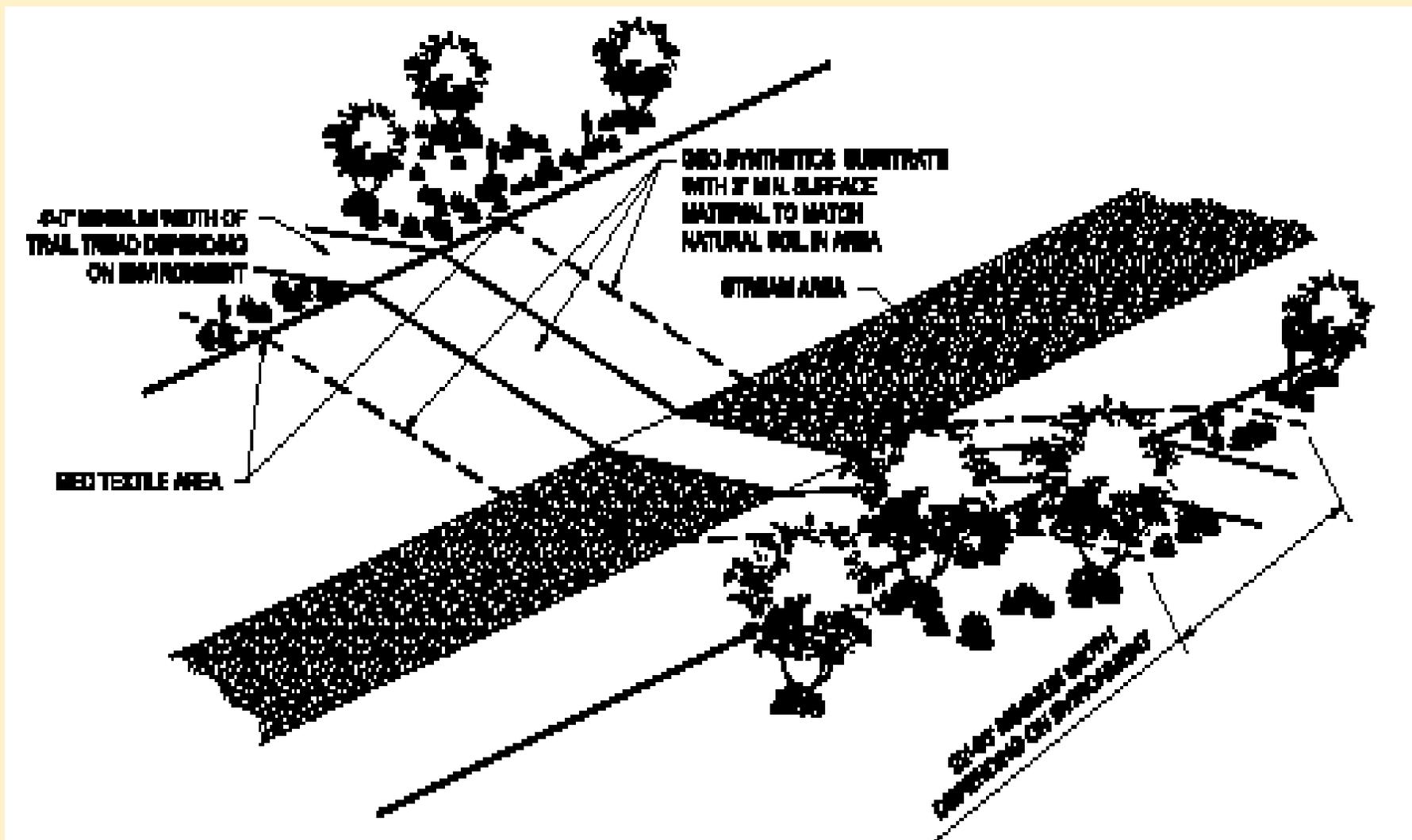
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**Plan rocky areas for
stream crossings**



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Reinforce stream edges with geosynthetics



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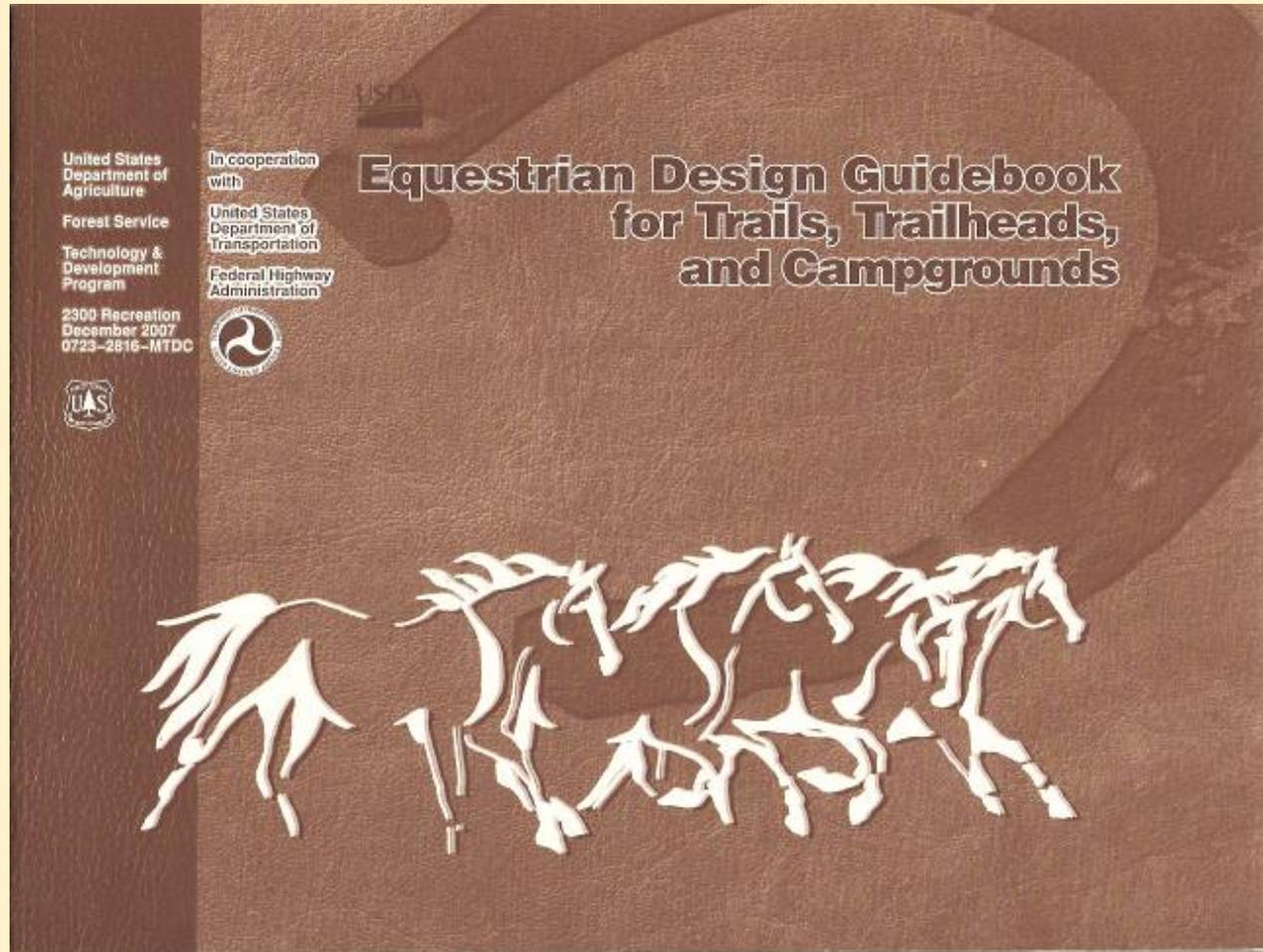


Two layers of
geocell

**Use geocells to prevent
erosion**



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**Free copy available from
FHWA and also online**



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