CITY OF MALIBU

Environmental Sustainability Department



HORSE BEST MANAGEMENT PRACTICES

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The City of Malibu Horse Best Management Practices Manual is a resource to help horse owners and facilities manage stormwater runoff. This manual focuses on common activities and areas of concern at equine properties, and is written in a non-technical format. For information on design, sizing, and urban agriculture regulations, contact the Planning Department at **310-456-2489, ext. 485** or **MalibuCity.org/Planning.**

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CH.1
MANURE MANAGEMENT

A horse typically generates about 50 pounds of manure each day. Managing manure is a critical activity for all horse facilities, regardless of their size. Manure is not only a source of stormwater pollution, but it can also impact the health of the animals if not managed properly. The best practice is to clean manure from corrals and stalls daily.

STORING PRACTICES

Using these recommended storing practices can improve animal health and protect stormwater that flows into creeks and the ocean from being polluted:

- Locate manure away from drainage paths.
- Cover manure to prevent stormwater contact.
- When temporary stockpiles of manure are placed directly on soil, relocate them at least once each year.
- Place permanent stockpiles of manure on concrete or asphalt and cover with a permanent structure to prevent stormwater runoff.

Manure Management References:
Equestrian-Related Water Quality Best Management Practices, A Cooperative Effort among Private and Public Entities in Orange and San Diego Counties, California, June 2004.
Pennsylvania State University, College of Agricultural Sciences, Agricultural Research and Cooperative Extension, Horse Stable Manure Management, 2009.
Texas AgriLife Extension Service, Lone Star Healthy Streams: Horse Manual, July 2012.



This manure storage area is properly located on concrete. A best practice is to cover the pile.



This is an example of a well-designed manure storage area.

MANAGEMENT PRACTICES

Several practices are available to manage manure.

- Composting (highly recommended)
- Haul Away (recommended)
- A combination of these approaches

COMPOSTING

Composting is the best manure management practice because it:

- Transforms manure into a valuable material
- Improves the health and well-being of the animals
- Saves money
- Reduces stormwater pollution

Composting involves blending manure with other organic materials, and with the help of water and air, allows the manure to decompose naturally over several weeks into a stable, fertile product called humus. As the manure decomposes, the volume is reduced by about half, harmful parasites are killed, and odors are eliminated. Composting also kills fly eggs, protecting horses from nuisance flies, painful bites and potential transmission of diseases. Contact your solid waste hauler for information regarding composting and recycling options in your neighborhood. View a list of Malibu permitted Haulers at: MalibuCity.org/Haulers



HAUL AWAY

An alternative to composting is to haul away the manure for recycling or pay a company to pick it up. This is a good option for sites that do not have enough space for composting. This practice also reduces pollution and is good for the health of the animals. Only send manure to the landfill if there are no recycling options.

SPREADING

Spreading is **NOT** a recommended practice for manure management. Although spreading for manure management has been in use for a long time, it can have an adverse impact on animal health as well as water quality. Fresh manure contains more pathogens than composted manure.



As a last resort, spreading is best done in the spring during the growing season so plants can use the nutrients. It involves the collection and spreading of manure over a large vegetated area or an area to be planted. If not done correctly, the manure can be a significant source of bacteria and nutrient pollution for receiving waters. Do not spread manure near drainage courses, on sloped areas, or if rain is predicted.

MANURE MANAGEMENT PLAN

Develop a Manure Management Plan based on the recommendations in this manual to ensure your horses and nearby waterways remain healthy.



CH.2
DIRT ACCESS ROADS AND TRAILS

Dirt access roads and trails can be a significant source of sediment and other pollutants as uncontrolled runoff erodes the surface of the road or trail. This damages the roads and trails and affects the quality of downstream waterways. This damage can be costly to repair and can result in dangerous conditions for animals, people, and vehicles. The best practice to reduce erosion is to stabilize access roads and trails and locate them at safe distances from waterways.

MANAGEMENT PRACTICES

- Location and Design
- Runoff Management
- Construction, Maintenance, and Repair

Dirt Access Roads and Trails References:
Florida Department of Agriculture and Consumer Services, Best Management Practices for Florida Equine Operations.
Florida Department of Agriculture and Consumer Services, Water Quality/Quantity Best Management Practices for Florida Equine Operations, 2011.
Natural Resources Conservation Service, Conservation Practice Standard: Animal Trails and Walkways (Code 575), June 2011.
New Hampshire Department of Agriculture, Markets, and Food, Manual of Best Management Practices (BMPs) for Agriculture in New Hampshire, June 2011.



There are several recommended best practices for dirt access roads and trails.

LOCATION AND DESIGN

- Locate access roads and trails at least 25 feet from waterways, lakes and wetlands.
- Do not let trails exceed 10% grade. If a trail must be built on a steep grade, have the trail switch back and forth down the slope.
- Design roads or trails that must cross streams and creeks to be stabilized using engineered rock crossings, culverts, or bridges.

RUNOFF MANAGEMENT

- Build trails such that water sheet flows across the trail.
- Construct berms to direct stormwater away from the trail.

CONSTRUCTION, MAINTENANCE AND REPAIR

- Minimize the amount of vegetation that is cleared when constructing roads and trails.
- Maintain vegetative cover along the sides of roads and trails.
- Inspect and maintain road and trail surfaces.
- Re-grade roads to smooth the surface, prevent rills from expanding, and maintain the designed grade and dimensions.

CH.3 ARENAS AND PADDOCKS

Arenas and paddocks are continuously compacted under constant physical stress from horses' hooves. Arenas and paddocks have the potential to release excess sediment, which can damage receiving waters like creeks and the ocean. Erosion within arenas and paddocks increases maintenance costs by requiring the surface material to be replaced more often. The best practice is to divert runoff around arenas and paddocks and separate the arenas and paddocks from waterways using vegetated buffer strips.

MANAGEMENT PRACTICES

- Runoff Management
- Maintenance and Inspection

RUNOFF MANAGEMENT

Runoff management results in:

- Improved water quality
- A drier barnyard
- A healthier horse environment
- Better working conditions

Arenas and Paddocks References:
County of San Diego Watershed Protection Program, Equine Facilities Stormwater Best Management Practices, June 2013.
Equestrian-Related Water Quality Best Management Practices, A Cooperative Effort among Private and Public Entities in Orange and San Diego Counties, California, June 2004.
Florida Department of Agriculture and Consumer Services, Water Quality/Quantity Best Management Practices for Florida Equine Operations, 2011.
Massachusetts Department of Natural Resources, A Horse Owner's Guide to Protecting Natural Resources, 2014.

Runoff management involves diverting surface runoff around arenas and paddocks using berms, ditches, underground pipelines or other methods. It is advisable to locate arenas and paddocks at least 200 feet away from creeks, steep slopes, and floodplains. Research the limits of local floodplains through FEMA or the City's Public Works Department at 310-456-2489, ext. 339 or MalibuCity.org/PublicWorks. Separating arenas and paddocks from waterways with vegetated buffer strips will filter sediment and absorb nutrients in runoff.

Infiltration and drainage in and around arenas and paddocks can be improved by using base rock and sand or other similar materials. Paddocks with a gravel or sand bottom will allow for percolation and natural filtration of water and pollutants when built in areas with less than a 10% slope. Sand can be kept within the paddocks and arenas by using boards around the perimeter.

When there is evidence of sheet flow from the arena or paddock, berms can be constructed downgradient to slow the movement of water and reduce the transport of sediment.



MAINTENANCE AND INSPECTION

Inspect arenas and paddocks after each rain event for signs of erosion. Any damaged areas should be repaired.



CH.4
STOCKPILES

Stockpile management practices are designed to reduce air and stormwater pollution from stockpiles of feed, hay, soil, manure, sand, green waste, and other materials. Improper management can spoil supplies and release pollutants into the waterways. Piles of old, unused equipment should also be managed as stockpiles.

The best practice is to divert runoff around stockpiles and cover stockpiles when not in use.

Refer to Chapter 1 (pg. 1) for specifics on manure stockpiles.

MANAGEMENT PRACTICES

- Runoff Management
- Storage Design

RUNOFF MANAGEMENT

Protect stockpiles from run-on and prevent stormwater runoff by using perimeter sediment barriers, including dikes, berms, ditches or gravel bags. Provide additional support along the downstream perimeter of a stockpile. Locate stockpiles at least 50 feet from concentrated flows of stormwater and drainage courses.

Stockpiles References:
California Stormwater Quality Association (CASQA), Stormwater Best Management Practice Handbook: Construction, July 2012.

STORAGE DESIGN

Cover stockpiles using either a permanent covered storage area or temporary covers such as tarps. Select cover materials based on anticipated duration of use. Tarp material that is resistant to degradation from sunlight may need to be replaced less often than others. If stockpiled materials are bagged, place them on pallets and under cover.



CH.5
HORSE WASH RACK DRAINS

Horse wash water can potentially contain urine, manure, detergents, bacteria and pathogens. These pollutants can cause adverse health effects to humans and animals. The best practice to prevent pollution from wash racks is to contain the wash water and connect the drain to the sanitary sewer or a specially designed onsite wastewater treatment system (OWTS, aka septic system). If this is not practical, the wash water can discharge to a French drain or mulch basin as long as it doesn't reach a drainage channel, stream, or waterbody. All wash water must be contained onsite.

MANAGEMENT PRACTICES

Several options are available to manage horse wash rack areas.

- Permanent wash area connected to sanitary sewer (highly recommended, but only possible in areas with a sewer)
- Only specially designed onsite wastewater treatment systems should be connected to the wash water drainage. A normal residential septic system is not designed to handle these additional wastes.

Horse Wash Rack Drains References:
County of San Diego Department of Environmental Health, Land and Water Quality Division, Graywater Frequently Asked Questions, 2010.
County of San Diego Watershed Protection Program, Equine Facilities Stormwater Best Management Practices, June 2013.
Equestrian-Related Water Quality Best Management Practices, A Cooperative Effort among Private and Public Entities in Orange and San Diego Counties, California, June 2004
Florida Department of Agriculture and Consumer Services, Water Quality/Quantity Best Management Practices for Florida Equine Operations, 2011.



- Permanent wash area discharge to French drain or mulch basin (recommended)
- Temporary wash area discharge to a vegetated area

PERMANENT WASH AREA

An appropriate permanent wash area:

- Consists of a concrete slab with a rough finish or permeable gravel or pavers
- Elevated from the surrounding ground
- Located at least 50 feet from waterbodies, wells and 15 feet from domestic septic tank drain fields

Connected to Sanitary Sewer

If possible, connecting permanent wash areas to the sanitary sewer is preferred because it contains and treats the wash water. This prevents wash water and associated pollutants from entering storm drains or receiving waters. Connecting to a sanitary sewer also prevents wash water from flowing over other parts of the site, causing damage and muddy conditions.

Most Malibu properties are on septic systems, and are not connected to a sanitary sewer. Septic systems need proper maintenance to prevent back-ups and overflows that can lead to pollution of sensitive waterways, watersheds, and groundwater. Only specially designed onsite wastewater treatment systems are able to receive wash water.

Discharge to French Drain or Mulch Basin

A French drain is a trench filled with gravel or rock that also contains a perforated pipe to redirect water away from an area. Pre-manufactured French drain systems are also available for easy installation.

The wash area should contain a slab drain that discharges to a French drain or a mulch basin. If there is no slab drain, the next approach is to pitch the slab so that water gently runs off and is collected by a French drain or mulch basin at the lowest point of the slab.

TEMPORARY WASH AREA DISCHARGE TO VEGETATED AREA

Locate temporary wash areas at least 50 feet from waterbodies, wells, and domestic septic tank drain fields. Temporary wash areas can be rotated using established turf areas to prevent mud and sedimentation problems. Any temporary wash areas should direct runoff to a pervious, well-vegetated area, instead of discharging wash water to storm drains, creeks, ponds, or seasonal drainages.

CH.6 VEHICLE MAINTENANCE

Vehicle maintenance areas can expose nutrients, organics, oil, and grease to stormwater. Vehicle maintenance practices are designed to prevent stormwater pollution by maintaining a clean and dry site. The best practice is to perform maintenance activities offsite; when this is not practical, designate a maintenance area that provides cover for any materials stored outside and allows for containment of leaks and spills. Keep a spill kit with an absorbent onsite to immediately clean up spills or leaks.

MANAGEMENT PRACTICES

- Runoff Management
- Leak and Spill Control
- Inactive Vehicle Storage

RUNOFF MANAGEMENT

If maintenance must happen onsite, use a designated area that is located at least 50 feet from waterways and drainage courses. Protect the area from run-on by using perimeter controls such as dikes or berms.

Vehicle Maintenance References:
California Stormwater Quality Association (CASQA), Stormwater Best Management Practice Handbook: Construction, July 2012.

LEAK AND SPILL CONTROL

- Use drip pans or absorbent pads during vehicle maintenance work that involves fluids.
- Keep a spill cleanup kit handy in the designated maintenance area.
- Use absorbent materials on small spills. Remove the materials promptly and dispose of properly.
- Segregate and recycle wastes, such as greases, used oil or oil filters, cleaning solutions, batteries, hydraulic and transmission fluids. Provide secondary containment and covers for these materials when stored onsite.
- Never place used oil in a dumpster or pour into a storm drain or watercourse.
- Do not bury used tires. Contact a hauler to pick up tires to be disposed of offsite.
- Inspect vehicles daily at startup for leaks and make repairs.
- Keep vehicles clean to prevent excessive build-up of oil and grease.
- Use less toxic products. These products are often sold under an "environmentally friendly" label.
- Take waste to an appropriate recycling center. Find a mobile event or permanent collection center at CleanLA.com

INACTIVE VEHICLE STORAGE

- Place drip pans under inactive vehicles or drain inactive vehicles of fluids.
- Store inactive vehicles under permanent cover or cover with a sturdy tarp.



CH.7
HOUSEKEEPING AND SITE MANAGEMENT

By cleaning active horse areas daily, you can enrich animal health, improve chore efficiency, enhance aesthetics, improve safety and reduce flies.

Always collect and properly dispose of trash and debris. Do not allow trash or debris to leave the site or reach nearby waterways.

SITE DESIGN

Reduce maintenance costs and protect water quality by placing roads and structures away from waterways. As much as is practical, do not disturb the natural topography, drainage patterns, and vegetation onsite. Prior to building and site design, contact the City's Planning Department for setback requirements from property lines and other restrictions.

EXCLUSIONARY FENCING

Exclusionary fencing is used to prevent horses from accessing specific areas. When areas become clear of stabilizing vegetation, exclusionary fencing will allow the areas to be re-vegetated. It can also keep horses from accessing unstable slopes or stream banks. Benefits of exclusionary fencing include decreased health risks associated with horses standing in muddy areas, decreased injuries associated with horses climbing steep and unstable stream banks, and reduced erosion of stream banks caused by trampling or overgrazing.

PEST MANAGEMENT

Use Integrated Pest Management (IPM) techniques to reduce the amount of chemicals, pesticides, fertilizers and herbicides used onsite. IPM is an ecologically based pest control strategy that focuses on long-term prevention and control of pests. IPM involves:

- Pest identification
- Reducing/removing the pest habitat
- Using natural enemies or resistant plant varieties
- Weed removal by mechanical means

Visit IPM.UCDavis.edu/PMG/menu.house.html for more information.

After a trail ride, check your horses' lower legs, hooves and shoes for New Zealand Mudsnails which pose an ongoing threat to our native fish populations. If you find any, place them in a bag inside the freezer or in the dryer to terminate this volatile invasive species.



TRAINING AND EDUCATION

Training and education are key components of any successful management practice. The people onsite daily need proper training for the best practices identified in this manual to become common practice. Refer to Chapter 8 (pg. 21) for educational materials and more information.



CH.8
RESOURCES

Integrated Pest Management
City of Malibu
Environmental Sustainability Department
310-456-2489
MalibuCity.org/PoisonFree

UC Davis Integrated Pest Management
IPM.UCDavis.edu/PMG/menu.house.html

West Nile Virus, Flies, and Vector Control
County of Los Angeles
Department of Public Health
213-240-7941
PublicHealth.LACounty.gov/acd/Vector.htm

Household Hazardous Waste Collection
County of Los Angeles
Department of Public Works
1-888-CleanLA
DPW.LACounty.gov/epd/CleanLA

City of Malibu
Anti freeze, Batteries, Oil, Paint
310-456-2489
MalibuCity.org/EnviroCalender

Graywater
City of Malibu
Environmental Sustainability Department
310-456-2489
MalibuCity.org/Graywater

Keep It Clean, Malibu Project
KeepItCleanMalibu.com

Grading, Clearing, Setbacks, and Urban Agriculture Zoning Issues
City of Malibu
Planning Department
310-456-2489, ext. 485
MalibuCity.org/Planning

Local Floodplains
City of Malibu
Public Works Department
310-456-2489, ext. 339
MalibuCity.org/PublicWorks

Dust and Air Pollution
South Coast Air Quality Management District
Orange County, urban areas of Los Angeles, Riverside and San Bernardino counties
909-396-2000
AQMD.gov

California Stormwater Quality Association
CASQA.org

Permitted Haulers
City of Malibu
Environmental Sustainability Department
310-456-2489, *MalibuCity.org/Haulers*

SPECIAL THANKS

- County of San Diego Watershed Protection Program
- Mini Therapy Horses