BACKYARD RANCHES

A Horse Management Program

For San Diego County
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BIG HORSE COUNTY

San Diego County has well over 30,000 horses, although not as many in neighboring Los Angeles and Riverside Counties. The horse population continues to grow as human settlement increases in the county.

These horses are mostly for personal use although the climate is great for wintering race horses. Boarding horses is a growing business near cities and suburbs where landowners want to own a horse but haven’t enough land where there are city ordinance restrictions. Many are counted for show, polo, rodeo and breeding purposes.

"Backyard Ranches" can be seen in the back country but also in any area outside cities where enough private land is available.

The focus of this brochure will be to define environmental problems that are significantly horse related and the ways to respond to those problems in small lot situations – (2 to 20 acres) – usually called paddocks or pastures.

TWO ENVIRONMENTAL PROBLEMS

**Horse Wastes** - Horse wastes include manure, urine and expended bedding. While horse wastes can be disease or organism-bearing media, most authorities don't consider the public health problem of horse wastes comparable to problems associated with human sewage.

Horse wastes, however, are serious **environmental contaminants** in that horse wastes are a source of **nutrient pollution**. Unmanaged horse wastes become a part of surface runoff. The nutrient elements in the wastes enter wetlands and watercourses; pollute ponds, lakes, and reservoirs; percolate into the water table and groundwater thereby damaging and altering the water environment by "over-fertilization."

**Erosion and sedimentation** - Soil Scientists from the Soil Conservation Service (SCS) tell us that erosion by water is a major problem in San Diego County. The damage from sedimentation is the result.

Paddocks, corrals, riding rings, parking lots, bridle trails and pastures are, by the very nature of their use, continuously disturbed sites – under constant physical stress of horses’ hooves. The problem is accelerated when ranches are located on hillside slopes.

The sites are not stabilized; they lack a vegetative cover to hold the soil in place. The rain and wind erode the soils. **Sediment from these sites eventually finds its way downhill and into watercourses and wetlands.**

To further understand the environmental impact of the horse site, one might compare it with a building lot in a state of construction. When land is disturbed on a construction site developers must install and maintain erosion controls. These controls are temporary, for seeding and landscaping to eventually stabilize the disturbed land.
Permanent erosion and sediment controls are most often not characteristics of land on which horses are kept. Without controls, the horse site is a year round source of sediment generation.

PLANNED PROGRAM FOR SMALL ACREAGE HORSE OWNERS

Developing or Establishing a 'Backyard Ranch' - Look into zoning regulation and/or any other local restrictions that may affect construction of horse facilities, e.g. barns, stalls.

--- Determine the amount of space needed for open and fenced areas, roads, outside lots and corrals, and distance between building for pleasing appearance and fire protection.

--- Decide on the number of animals to be handled and how they'll be housed and managed.

--- Investigate methods and plan for inoffensive manure storage and disposal.

--- If needed and applicable, choose a barn or other building with a style that fits the site and is in harmony with the surroundings.

Site Preparation for Barn or Other Buildings (stalls, etc.)

--- Whenever possible, building site should be well drained, accessible and have a slope of about 5 feet per 100 feet distance away from building in all directions to assure good surface drainage.

--- Avoid sites near streams that flood and stay well above the highest flooding stage.

--- Consider the grading and filling that will be needed for a well drained site. Plan on using only clean soil, sand, gravel or crushed rock for fill.
PASTURES - TIPS FOR ESTABLISHMENT AND MANAGEMENT

Definition: An area that's developed to short or long term plant cover for providing a portion of the horses' feed requirement.

BENEFITS:

Health - Reduces the occurrence of diseases attributed to soil borne organisms found in dirt and dust. Helps horses increase stamina, state of mind and respiratory system.
Erosion Control - Reduces soil erosion with deep rooted cover.
Forage - Limited value on most small pastures.
Aesthetics - Grass looks better than weeds and bare ground.
Behavior - Prevents many bad behavior habits (cribbing and pacing.)

LIMITATIONS:

--Sufficient water source to water up good protective and feed producing cover.
--Good level of management is needed to successfully establish and maintain plant growth.

General Horse Facts Relating To Pasture Use

1. One acre of intensively managed pasture may support two or three mature horses through the growing season if it is irrigated. A non-irrigated pasture may require up to ten acres or more per horse.

2. A horse needs about 850 pounds of hay or dried forage per month (100 pounds of green forage equal about 25 pounds of dry forage). Fine-stemmed green forage does not provide adequate roughage for horses.
3. Overgrazing forces animals to eat undesirable (sometimes poisonous) plants. Many undesirable plants can replace desirable plants on overgrazed land.

4. Horses graze plants very close to the ground and weaken or destroy the roots of plants during overgrazing.

5. Trampling has an adverse effect on plants and soils.

6. RULE OF THUMB: Five to six gallons per minute is required to adequately maintain one acre of irrigated pasture.

**Key Recommendations to Keep Pastures Productive, Attractive and Non-Polluting**

1. Cross fence pasture to 2 or more units to control grazing under a rotation system of use.

![Irrigated Pasture Plan Diagram]

2. Limit grazing to a short period each day and feed with hay or feed in a stall or paddock. Urban area horse owners must figure that pasture will supplement the hay, not the hay will supplement the pasture.

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<td>I</td>
<td>R</td>
<td>G</td>
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**LEGEND:**

- D - DRY
- R - REST (10-day regrowth period)
- G - GRAZE
- I - IRRIGATE

**CONSIDERATIONS:**

1. Barn and paddock should be located uphill of pasture area for proper drainage.

2. House should be located downhill of pasture if an air-conditioning effect and fire protection are needed.

3. To reduce risk of hoof infection and minimize soil compaction do not turn out horses on wet ground.
4. Establish pasture at least 50 feet away from a natural water course to eliminate impact of water quality.

5. Where possible, fence off the least productive area of land for a paddock or exercise lot.

6. Let plant cover establish in spring before turning out horses - 6 to 8" for long term irrigated cover; 4 to 6" for dryland annual pasture.

7. Allow forage to set seed in 1st year then every 3rd year for perennial grasses and legumes; every other year for annual grasses and legumes.

8. Plan the exercise period (riding and trailing) each day just before turning the horse into the pasture. This will reduce running. Pasture running tramples forage and compacts soil.

9. If pasture(s) is used exclusively for exercising horses, consider low growing/sod forming ground cover that will effectively withstand the impact of their hooves.

Specific recommendation on what grasses and legumes to plant for pasture development will depend on:

--- Room in your backyard.

--- Breed/behavior of your horse.

--- Location and reliability of water source(s).

--- Time of year or season for maximum pasture use.

--- Type of soils.

The (SCS) can determine soil capability for planting by request from the Resource Conservation District (RCD) in your area.

RANGE

Definition - For larger parcels, an area with interspersed brush and grass cover on sloping terrain with limited potential for planting seed.

--- Be sure perimeter/boundary fence is in good shape to hold horses on property.

--- Where degree of slope is 30% or more and brush cover is 50% or greater, restrict use to develop riding trails for pleasure riding and not for a way to increase forage for more feed.

--- Where brush cover is minimal and soil is suitable for dryland seeding, cutting by hand or mowing is the preferred method of treatment for removal.
PADDOCKS

Definition - A non-grazable small pasture or exercise lot, 1 acre or less, that is used as a place to hold horses rather than as a source of pasture feed.

--Lot should be about 1/2 acre with a minimum size of 800 square feet per horse.

--Locate on high ground, above irrigated pastures, to avoid collection of irrigation runoff.

--Locate where there is proper drainage - but no more than 10% degree of slope.

--Provide suitable bedding materials such as gravel, wood shavings, sawdust, or straw.

--Keep clean to prevent foot and internal parasite infection.

NOTES:

--Keeps pen dry.

--Helps naturally drain urine and runoff from surrounding area.

--D.G. on top of gravel bed will serve as cushion and thereby avoid foot sores and lameness.
POISONOUS PLANTS

Poisonous plants cause significant problems with horses every year. Horse owners should be aware of those plants that can occur in the pasture/paddock or on the range. Keeping horses on good forage producing pastures and/or good feed ration will help ensure their sixth sense: Avoiding plants that are poisonous! Some of them are:

--Oleander - introduced as an ornamental shrubs for landscaping purposes. Leaves are highly toxic both in the green and dry condition.
--Yellow Starthistle - an annual weed and member of the large sunflower family. Although not widespread in the county, it has been reported to be poisonous to horses. It can produce a nervous symptom, "Chewing disease."
--Fiddleneck - Native of California and found as a weed in cropped (dry grain) and non-cropped (waste places) areas. Consumption of large amounts of seed can cause "Walking Disease."
--Locoweed - Perennial herbs with erect or spreading stems that occur on sandy soils of disturbed ranges. Symptoms include dullness, irregularity in gait and loss of normal muscle control.
--Tolguacha - A perennial that has become very prevalent in cropped and non-cropped areas because of its resistance to several widely used herbicides. Tolguacha or Sacred Datura is poisonous to all livestock. The seeds and the young leaves are the most toxic.

It is important to know that with few exceptions horses will not eat poisonous plants unless forced to by hunger.

HORSE WASTE MANAGEMENT SYSTEM - WATER QUALITY

What is a waste management system? - It's a coordinated set of recommendations for safely and economically collecting and disposing of the manure and waste water from horses.

Waste management systems are tailored to your needs. They take into account land available for disposal, type of horses, labor, equipment, and budget. They can help save money on fertilizer, improve soil, reduce labor, and avoid water pollution.
Who needs it? - Anyone who has more than a few head of horses needs a waste management system. Large numbers of horses confined in small areas such as paddocks or stalls produce large volumes of waste. It's important to control runoff in these areas and to dispose of this waste so that it doesn't pollute ground or surface water.

A. MANAGING BACKYARD RUNOFF - runoff from rainfall in the paddock/pasture or barnyard areas should be disposed of by the following methods whichever applies to your environment situation.

1. **Roof runoff** - Gutters and downspouts from barns or other structures to collect roof runoff to a safe discharge point - Underground drainage pipe or a graded lined ditch.

2. **Watershed runoff** - Intercept runoff outside 'Backyard Ranch' by a diversion ditch (low velocity channel) or grassed waterway and discharge to safe outlet beyond pasture/paddock area.

3. **Seepage areas** - Continual wetness can be a pollution problem in a paddock where an underground drainage system can be installed. Seepage water can be carried to a safe discharge site.

4. **Filter strip** - On sloping terrain a grass strip can be used as an intermediary collection area of runoff between the pasture/paddock and a sensitive riparian area or water course. Purpose would be to minimize impact of runoff and trap pollutants.

5. **Sediment basin** - A small basin can be constructed on the property where the watershed or drainage area upslope from the lot is significantly erosive to discharge excess sediment. It can serve as a safe outlet or discharge site of runoff if periodically cleaned of sediment throughout the year or after major rain storms.

Any one or a combination of these measures can be recommended to handle runoff depending on the topographical and soil characteristics of your property and your neighbors. An on site visit from SCS can be arranged for guidance on which measures are practical for the problem(s).

B. **MANURE HANDLING** - Check local regulations for storage and disposal recommendations. If regulation exist, follow them. In the absence of regulations:

1. Dispose of manure daily when possible.

2. Provide temporary storage for manure that cannot be disposed of daily - about 12 sq. ft. of fenced or enclosed storage per horse.

3. Locate the storage in an approved or safe area for convenient removal, away from any water source and out of natural drainage channels.

4. Empty the storage at least weekly during fly breeding season (spring temperatures above 65 degrees F until the first killing frost in the fall).

5. Drain the storage area away from surrounding facilities and lots.

6. Grade the area surrounding the storage to prevent all surface water from leaching into streams, ditches or groundwater.
C. **USE OF MANURE** - For those residences with a vegetable garden, fruit orchard, nursery etc., horse manure can be an important by-product as a fertilizer. As an organic fertilizer, it is rated at .7 percent Nitrogen (N), .3 percent Phosphorous (P205) and .6 percent Potassium (K20) - .7 - .3 - .6 ratio. Generally, horse manure has a higher content of organic matter in ratio to the level of nitrates (NO3) and/or salts when compared to poultry manure. In turn, the nitrates are used by bacteria in the soil to help breakdown the organic matter for better soil structure.

### NUTRIENTS IN SOLID MANURE

<table>
<thead>
<tr>
<th>Species</th>
<th>% Dry Matter</th>
<th>Animal weight</th>
<th>Total lbs per raw ton waste</th>
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<tr>
<td></td>
<td></td>
<td>Raw Manure Production*</td>
<td>Nitrogen (N)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Animal weight</td>
<td>Per year</td>
</tr>
<tr>
<td>Horse</td>
<td>46</td>
<td>9</td>
<td>2,044</td>
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The amount of N, P205, and K20 are average for horses. The nutrient value of manure varies with different feed and horse management systems. To determine the actual nutrient value on your farm a manure analysis is necessary.

*Raw manure includes feces and urine.

**BENEFICIAL:**

1. Mix manure with bedding straw as an ‘organic mulch’ and apply to the surface of disturbed soils on gently sloping banks or hillsides for erosion control.

2. Disc, roll, or shovel in manure to center of a riding arena, if available, or other exercise area to help increase soil organic matter. A ‘spongeeffect’ would be created to help rest tired horse's feet after a vigorous exercise period or training work out.

3. Add manure to drip line of fruit or windbreak trees for providing slow release of available essential nutrients.

4. Add manure as part of your personal composting or for larger area application, roll in with skip loader or manure cart.

5. For paddocks, stock pile manure with or without straw as an inner layer between the D.G. and the compacted gravel layers. (See paddock illustration, page 6.)

   While improving internal soil drainage, manure will also act as a ‘sponge’ to quickly absorb liquid waste. Added benefit will be the slow down of runoff percolating through the soil with minimal lateral movement to pollute streams or ponds.
6. Put up a sign, "free manure" or "free fertilizer" to offer manure to those residences with organic gardens. A small fee could be charged to haul by truck load if it is desired to limit traffic.

NOTES:

--Horse manure should not be applied to horse pastures because of the risk of spreading internal parasites.

--Horse manure has been shown to be very effective in promoting fast diameter and vertical growth of Eucalyptus Trees when planted as a windbreak. As mulch, it helps retain moisture around the tree.

--To avoid 'Hot Application' for potential harm to trees, let manure pile or windrow stand for 1 week. Follow by fanning it out to the base of trees.

--If residing in wind prone sections of the county, try to avoid manure application to bare areas (riding arena) during the peak 'Santa Ana' seasons - Spring/Fall. Manure dries up quickly and can blow away during severe wind storms.

ENVIRONMENTAL AND HEALTH PRECAUTIONS

When applying manure in large quantity, consider your soil limiting factors to absorb wastes and there by avoid percolation and discharge of nitrates and/or salts into your and community water system. Soils information is available from your local SCS office.
FLY PROBLEM

Care should be taken when using manure to prevent conditions for fly breeding. Problems may occur if:

1. Ground is excessively wet when manure is incorporated.
2. Manure is worked into the soil at more than 2" depth.
3. Piles or windrows of manure are allowed to stay out on the ground for too long a period.
4. Too many horses are confined in a small area.

Ways to Minimize Fly Breeding Environment

1. Spread thinly by discing or rolling in manure at preferable depth of 1". Benefits of this treatment will be to dry out layer and allow sunshine to generate enough heat to kill any fly larvae.
2. If fly maggots are suspected, lay out black tarp on prepared ground for a day or two and then follow up by respreading to thin out layer. As a result, enough heat is quickly generated to effectively kill the population.
3. When composting, turn pile over frequently every week to increase temperature and keep aerated.
4. If horses are kept in a barn or other shelter during fly breeding season, mix wood chips, sawdust or straw to manure to absorb excess moisture. Manure will dry up more quickly and thereby help avoid a potential fly problem.

EQUESTRIAN OR RIDING TRAILS

Horseback riding has increased significantly in recent years. Trails can be laid out and/or preserved on private acreage as part of a Community Plan to form and/or protect an existing trail system. Support for community action is provided by Federal Legislation under the National Trails Act of 1968 and the California Recreation Trails System Plan from the State Department of Parks and Recreation at the state level.

Communities with an orientation toward a rural, estate residential life style can benefit from the following recommendations:

Grade - Sustained grades should be dictated by good judgment while considering the topography and should not exceed 10 percent.
Width - Generally, minimum width should be 4 feet when laying out trail.
Drainage - Adequate drainage should be provided. A raised or elevated trail may be required for wet sites that cannot be drained. Culverts should be placed at drainage or stream crossings to safely pass rainstorm runoff.
Surfacing - If surfacing is required to 'firm up' sections of a trail, the surfacing material could be gravel, concrete, asphalt or other material that could withstand horses' hooves and the elements.
Safety - On sloping terrain, protection from slides and falling rock should be provided. Adequate directional and warning signs should be considered for placement as dictated by the site.
For more information on the Riding Trails Plan and Program in the county, refer to the Recreation Element of the San Diego County General Plan. The County Trails Council and the Trails Task Force in Jamul can furnish information to landowners and communities for the protection and maintenance of existing riding trails on privately owned land in the county. Horse owners may also become directly involved in riding trail preservation by joining a number of Trail Groups/Associations or Horse Clubs. Some of these organizations that are active in their communities include:

--- Pine Valley Horseriders
--- Ramona Trails Association
--- Campo Border Riders
--- Vallecito Riders, Valley Center
--- Lakeside Frontier Riders
--- Jamul Trails Council
--- Back Country Horsemen, Alpine

Contact the Southern California Riding Magazine business office at (619) 468-3342 for a complete directory of the county organizations.

LOT LANDSCAPING

**SPACING IN ROWS:**
- SHRUBS - 3-4'
- DECIDUOUS TREES - 8-10'
- CONIFERS - 6-8'

**PRIMARY WINDBREAK**

**SPACING BETWEEN ROWS**
10-20' DEPENDING ON SPACE AVAILABLE.

**REINFORCEMENT PLANTING**
SHRUBS/LOW HEIGHT TREES

**PREVAILING WINTER WINDS**

**SANTA ANA'S**
WINDBREAKS:

Rows of trees or shrubs can provide wind protection for your residence and/or horses. Trees should be chosen based on:

1. Their ability to survive and grow in San Diego's climate,
2. Their adaptability to the soils and the amount of water available at the planting area,
3. Desired qualities such as noise or visual screening, attractiveness to wildlife, or natural beauty.

[Diagram showing wind velocity and protection zones]

CRITICAL AREA SEEDING:

Steep slopes, gullies, disturbed areas, and highly erodible areas around the lot may need special treatment to establish vegetation. A firm seedbed must be prepared, by hand if necessary. The seed can be spread with a seeder or by hand, and should be raked in. On highly unstable areas contouring and mulching may be necessary to establish the grass or legumes. Introduced grasses may be chosen for the seeding, however, native grasses blend well into the surrounding natural vegetation and require little to no maintenance. Native grass plantings also will not be as green or dense as a well manicured introduced grass lawn with heavy fertilizer, water, and labor inputs.
Sample seeding rates for plantings of individual grasses on medium textured, non-saline soils:

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<tr>
<th>NATIVE GRASSES *</th>
<th>Lbs**/10,000 sq. ft. (½ acre)</th>
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<tbody>
<tr>
<td>'Zorro' Fescue</td>
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<tr>
<td>'Blando' Brome</td>
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<table>
<thead>
<tr>
<th>INTRODUCED GRASSES *</th>
<th>Lbs**/10,000 sq. ft. (½ acre)</th>
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<tbody>
<tr>
<td>Annual Ryegrass ***</td>
<td>7</td>
</tr>
<tr>
<td>Annual subclover varieties</td>
<td>6</td>
</tr>
<tr>
<td>Barley ***</td>
<td>45</td>
</tr>
<tr>
<td>Rose Clover</td>
<td>7</td>
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* It is very important that species selection be matched to soils. For assistance contact the SCS/RCD.
** Rates are for broadcast seeding. Use one-half this rate with a grass drill.
*** For temporary cover only.

A permanent, low water use cover can also be selected for landscaped site rehabilitation if sufficient water is available to establish planting in 1st year.

A CONSERVATION MESSAGE

In San Diego County, we still enjoy one of the highest quality environments in Southern California. However our private land is receiving increased pressures due to more people choosing to live in relatively unspoiled areas. Sometimes unknowingly "man" degrades the very thing he treasures most.

We hope this booklet will help the small landowners better manage their 'Backyard Ranches.' We have outlined some guidelines while identifying the critical problem and have pointed the way for more assistance.

The rest is up to you, the landowner in San Diego County. Good luck, for with you lies the responsibility of keeping the high quality environment we have come to enjoy.

THE CONSERVATION DISTRICT

The Resource Conservation District is unique in that it can serve any landowner, municipality, organization, or business requesting help in site analysis, soils interpretations, land use planning and water management. The District responds to problems associated with erosion and sediment control, drainage, and flooding.
For the horse owner, the district can:

-- Advise on land drainage, ground and surface water control.
-- Review site plans for environmental impact and permit requirements.
-- Advise on controlling erosion from horse sites.
-- Recommend acceptable manure management practices.
-- Provide technical assistance from USDA Soil Conservation Service on all the above.

Information and assistance is also available on horse care, feed requirements, establishing and managing irrigated pastures from your local Farm Advisor. Contact Cooperative Extension Service at:

5555 Overland Avenue
Building 4
San Diego, CA 92023
(619) 694-2845

Other free publications from the University of California Division of Agriculture Sciences, Cooperative Extension:

-- The Light Horse, Leaflet No. 2338
-- Horse Behavior, Leaflet No. 21002
-- Livestock - Poisoning Plants of California, Leaflet No. 21268

Following are priced publications:

-- Feed Requirements of the Light Horse, Priced Publication No. 4005.
-- The Common Parasites of Horses, Priced Publication No. 4006.
-- Irrigation Costs, Leaflet No. 2875
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United States Department of Agriculture, Soil Conservation Service, Job Sheets: Guidelines For Urban or Small Acreage Horse Management/Pasture Recommendations.

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