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LIVESTOCK AND LAND

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Healthy Management of Land and Livestock

Water Quality Site Evaluation & Plan for Horse and Livestock Facilities
Self-Assessment Worksheet

Originally developed by the Alameda County Resource Conservation District
Edited for the Livestock and Land Program by Ecology Action

GENERAL PROPERTY DESCRIPTION

Watershed:_____

Nearest Creek (name):_____

Distance from property line: _____

Name/Ranch:_____ Date:_____

Street Address:_____

City:_____ State:_____ Zip Code:_____

Total number of acres: _____

Number of years at property: _____

Number of years livestock present: _____

Livestock	
Type	**Total**

Plans for future livestock? (circle one) Yes No If yes, describe below:

_____

_____

Does the property allow for additional livestock? (circle one) Yes No

Has the property historically housed livestock? (circle one) Yes No

If yes, describe: _____

_____

_____

Do you have a site map? (circle one) Yes No
(If No, please draw or print a site map)

Describe your property:

A. ***What best describes the general/overall slope of your property***?

- ☐ Flat or nearly flat land (slope less than 3%)
- ☐ Slightly sloping (slope 3% - 5%)
- ☐ Moderately sloping (slope 6% - 10%)
- ☐ Steep slope (above 10%)

B. ***Soil Type(s)***:

☐ Fine Sand	☐ Very Fine Sand	☐ Loamy Sand
☐ Sandy Loam	☐ Very Fine Sandy Loam	☐ Silt Loam
☐ Clay Loam	☐ Silty Clay Loam	☐ Silty Clay
☐ Compacted Base		

C. Waterways (streams, ponds, storm drains, drainage ditches etc.) on or adjacent to your property – Please note if they have seasonal or year round flow and distances from property line:

_____

_____

D. Are the above identified on your site map? (circle one) Yes No
(If No, please include on your site map)
Useful Tip: Include known or estimated distances on map

E. Number of and Size/Dimensions of:

	Total #	Dimension	Dimension (if applicable)	Dimension (if applicable)
a. ***Pastures***				
b. ***Corrals / Turnouts***				
c. ***Paddocks***				
d. ***Stalls***				
e. ***Arenas***				
f. ***Wash areas***				

F. Are the above identified on your site map? (circle one) Yes No
(If No, please include on your site map.)
Useful Tip: Outline all roofed areas on map

G. Do you have an identified manure storage area? (circle one) Yes No

a. Is it identified on your site map? (circle one) Yes No
(If No, please include on your site map)

H. Do you have a manure management plan? (circle one) Yes No
(If yes, please attach a copy to this document)

I. Do you have a dust management strategy? (circle one) Yes No

Please describe. _____

_____

_____

K. Do you have a mud management strategy? (circle one) Yes No

Please describe. _____

_____

_____

Technical Assistance Documents/References:

- http://www.livestockandland.org/Publications_and_Links/index.html
- Conservation Measures to Reduce Non-Point Source Pollution at Horse Facilities
- Conservation Practices for Horse Owners
- Horse Paddocks: Designed and Managed to Protect Water Quality
- Fall in Place: A Checklist for Preparing Your Horse Property for Winter
- 20 Things Every New Horse Owner Should Know

Identified items to be addressed/corrected:

Landowner management goals for property and natural resources:

Short term goals

Long term goals

MANURE

OBJECTIVE 1: Manage stockpiled, accumulated, spread or stored manure to reduce/eliminate potential pollutants to local watersheds, surface water or groundwater.

Things to remember:

- Divert surface runoff (stormwater) and clean water away from manure and manure storage areas.
- Locate manure storage areas away from drainages and environmental water sources.
- Prevent leaching from manure into soil – especially in areas where groundwater protection is a priority.
- Cover manure.
- Make access to storage areas convenient, size them adequately and have a contingency plan for when waste volume exceeds capacity.

Manure Storage Areas

1. What is the calculated **volume of manure** in pounds AND cubic yards produced on site on a monthly basis?

Calculated:

A. Pounds: _____ (# of horses) x 45 lbs/day* = _____ x 30 days/month = _____ lbs/month

# of Horses x 45 x 30 = Lbs of manure/month

B. Cubic Yards (yrd^3): _____ (# of horses) x 0.75 ft^3/day* = _____ x 30 days/month =

_____ ÷ 27 ft/yrd^3 = **_____ yrd^3/month**

ANSWER #1

# of Horses x 0.75 x 30 ÷ 27 = Cubic yards of manure/month

C. Actual (if known):

Pounds:_____ lbs/month Cubic Yards:_____ yrd^3/month

Note: The average 1000 lb horse produces approximately 45 lbs of manure/day. Spatially that equates to approximately 0.75 cubic feet/day.

2. What is the calculated **volume of bedding** produced on site on a daily, weekly or monthly basis?**

Calculated:

A. Cubic Yards: _____ (# of horses) x 30 days/month ÷ 27 ft/yrd³ = [_____ yrd³/month]

ANSWER #2

# of Horses x 30 ÷ 27 = Cubic yards of bedding/month

B. Actual (if known):

Cubic Yards:_____ yrd³/month

Note: The average bedding usage is 1 cubic foot/day/horse.

3. What is the calculated **total volume of waste** generated Manure (Answer #1) and Bedding (Answer #2) on a monthly basis?

Calculated:

A. _____ yrd³/month Manure (ANSWER #1) + _____ yrd³/month Bedding (ANSWER #2) = _____ yrd³/month

Total volume Manure(Answer 1) + Total Volume Bedding (Answer 2) = Total volume of waste/month

B. Actual (if known):

Cubic Yards:_____ yrd³/month

4. ***How often are the following areas cleaned***:

Stalls:

2x Daily ☐ Daily ☐ Weekly ☐ Other: _____

Paddocks, corrals and/or turnouts:

Daily ☐ Weekly ☐ Monthly ☐ Other: _____

5. What is the capacity of your manure storage area(s)in cubic feet? _____ ft³

6. How many days, weeks or months worth of manure can the storage area contain? _____

7. How frequently will you need to empty out the storage area(s)? _____

8. Do you or will you use dumpsters or other waste hauler containers or drop boxes to store your manure and spent shavings until they are hauled off site?

☐ No – Skip to question 9 ☐ Yes - Please answer A – E

A. Type of containers: _____

B. Container capacity: _____

C. Frequency of removal:

Weekly ☐ 2x Weekly ☐ Monthly ☐ Other: _____

D. Name of Hauler/Service Provider: _____

E. Is there all-weather access? ☐ Yes ☐ No

If yes, describe access.

If no, describe your contingency plan for loss of access due to weather, or to other causes (hauler unavailable):

_____

_____

_____

9. Is manure and spent bedding stockpiled?

☐ No – Skip to question 10 ☐ Yes – Please answer A – S

C. Stockpile Area Specifications:

Area 1	Area 2 (if applicable)
Length:_____ft Height:_____ft	Length:_____ft Height:_____ft
Width:_____ft Capacity:_____ yrd^3	Width:_____ft Capacity:_____ yrd^3

D. ***Is the storage area covered by a roof***? ☐ Yes(answer below) ☐ No(skip to D)

E. Does the roof drain water away from the storage area? ☐ Yes ☐ No
i.e. Roof run-off does not drain through storage area

F. Is a temporary cover (i.e. tarp) utilized during months with precipitation? ☐ Yes ☐ No

G. ***Is the storage area located on an impermeable surface*** (i.e. concrete, engineered lined surface)?

☐ Yes – Skip to question J ☐ No – Please answer F – I

H. How deep is the water table under or near the pile? _____

I. Is groundwater protection a concern in the area? ☐ Yes ☐ No

J. What is the soil type and depth under or near the pile ?

Soil Type:_____

Soil Depth:_____ft

K. How will you ensure that pollutants will not leach downward into the soil and groundwater? _____

_____

_____

L. Is runoff near storage area diverted around or drained away from the area in a non-erosive manner? Describe

_____

_____

_____

M. Where and what does this water drain into? How does it get there? (drainage ditches, pipes etc)

_____

_____

_____

N. ***What best describes the area where your manure is stored***?

☐ Flat or nearly flat land (slope less than 3%)

☐ Slightly sloping (slope 3% - 5%)

☐ Moderately sloping (slope 6% - 10%)

☐ Steep slope (above 10%)

O. Is your manure storage area located near a drainage way, spring, pond, creek or other waterbody?

☐ No – Skip to Q ☐ Yes – Please answer N – Q

P. ***How far is the nearest natural water source***? _____

Q. Is there a vegetated filter strip between the storage area and the water? ☐ Yes ☐ No

R. Describe different slope, soil and vegetation conditions between the storage area and the water.

_____

_____

_____

S. What, When, Where and How of managing storage area:

Frequency of removal:

☐ Weekly ☐ Monthly ☐ Every ____ Months ☐ Other:_____

When:

☐ Full ☐ Compost Completed ☐ Hauler Scheduled

☐ Other:_____

Material removed from area via:_____

Is necessary Equipment Available? ☐ Yes ☐ No

T. Where is manure/bedding taken when the storage area is emptied?

_____

U. Describe contingency plan(s) for storage area if you exceed capacity.

_____

_____

_____

10. List other manure stockpiling/storage plans not identified above:

_____

_____

_____

_____

11. Do you plan to spread manure on site?

☐ No – Skip to question 12 ☐ Yes – Please answer A – L

A. How will it be spread? ☐ Raw ☐ Aged ☐ Composted ☐ Other:_____

B. Spreading:

Location(s):_____

Frequency:

☐ Daily ☐ Weekly ☐ Monthly ☐ Other:_____

Method:_____

C. Manure spread as: ☐ Fertilizer ☐ Soil Conditioner ☐ Both

D. Will it be disked in? ☐ Yes ☐ No

E. Type of vegetation present where manure is to be spread:

_____

F. Number of years manure has been spread in same location: _____

G. Describe contingency plan if your storage capacity is exceeded before manure can be spread.

_____

_____

_____

H. Are manure spreading areas identified on site map? (circle one) Yes No
(If No, please include on your site map)

I. Is there a vegetative buffer strip or grass filter strip between spreading area and drainage ways, wells or water bodies to trap pollutants?

☐ No – Needs to be addressed ☐ Yes – Please answer J – L

J. How wide is/are the strip(s)? _____

K. Are they identified on the site map? (circle one) Yes No
(If No, please include on your site map)

L. Filter Strip Condition:

Slope:_____%

Soil Type:_____

Vegetation Condition in Filter Strip:_____

_____

12. Are horses maintained in unroofed/uncovered areas such as paddocks, turnouts, corrals, pipe pens, arenas etc.?

☐ No – Skip to question 13 ☐ Yes – Please answer A – J

A. How often are paddocks, corrals, arenas etc. cleaned?

☐ 2x Daily ☐ Daily ☐ Weekly ☐ Other: _____

B. How are they cleaned? What equipment do you use?

_____

_____

C. Approximate slope of confinement area(s):_____%

D. Is there surfacing material applied to these areas? ☐ Yes ☐ No

What kind in each area?

Area	Surfacing Material

E. Is there adequate drainage in these confinement areas, or does water puddle or pond during and after storms?

☐ Yes – Drainage is adequate (No ponding or puddling)

☐ No – Drainage is inadequate

F. Does water run through or into confinement areas from adjacent hillsides, adjacent roofs or other adjacent water sources?

☐ No ☐ Yes – Identify the sources

_____

_____

_____

G. Can this excess water be diverted away from the confinement areas?

☐ No ☐ Yes – Describe how

_____

_____

H. Describe measures implemented to prevent puddling or ponding of water in confinement areas.

_____

_____

_____

I. Does water run off the confinement areas? ☐ Yes ☐ No

J. Does water drain to a drainage way, seasonal waterway or year round waterway?

☐ No – Skip to question 13 ☐ Yes – Please answer K – P

K. How far is the confinement area from the drainage way, creek, stream, pond or other waterbody? _____

L. Is there a grass filter strip between the confinement area and drainage way to trap manure and soil particles?

☐ No – Skip to P ☐ Yes

M. How wide is the filter strip? _____

N. Is it shown on your site map? (circle one) Yes No
(If No, please include on your site map)

O. Filter Strip Condition:

Slope:_____%

Soil Type:_____

Vegetation Condition in Filter Strip:_____

_____

P. Describe measures implemented to prevent confinement area manure and soil particles from draining into waterways.

_____

_____

_____

_____

13. ***Which best describes your overall current manure management***:

☐ Infrequent Removal, No cover on pervious surface
☐ Removed 2 times/week, Tarp cover on a pervious surface
☐ Removed 2 times/week, No cover on impervious surface
☐ Removed every other day, Tarp cover on impervious surface
☐ Removed 1 time/day, Permanent roof on a pervious surface
☐ Removed more than 1 time/day, Permanent roof on impervious surface
☐ Other, describe below:

_____

_____

Technical Assistance Documents/References:

- http://www.livestockandland.org/Publications_and_Links/index.html
- Composting Horse Manure
- 5 Easy Steps to Compost
- Horse Manure Management
- Using Manure in the Garden
- 5 Great Ways to Conquer Mount Manure

Identified items to be addressed/corrected:

Site improvement/development goals:

Identified changes/recommendations to management practices:

DRAINAGE

OBJECTIVE 2: Keep waste water from horse facilities out of drainage areas, storm drains, surface water and ground water.

Things to remember:

- Keep clean water clean. Do not mix with waste water.
- Minimize the volume of waste water generated.
- Drain waste water into septic systems, sewer systems or designed and designated vegetated filter strips for treatment.
- Do not discharge waste water directly into storm drains, drainages, creeks, ponds etc.

Horse Wash Areas

1. Do you have designated horse wash areas at your facility?

☐ No – Skip to next section ☐ Yes – Please answer A – F

A. Is the horse wash facility at your site located near a drainage way, creek or pond?

☐ No ☐ Yes – Approximate distance: _____

B. Does the wash area have a hard surface with a drain?

☐ No ☐ Yes

C. Where does the wash water drain into?_____

D. Is the wash water "treated" (discharged into a grass filter strip, settling pond etc.) on site?

☐ No ☐ Yes – How?_____

_____

_____

E. Filter Strip Condition:

Slope:_____%

Soil Type:_____

Vegetation Condition in Filter Strip:_____

_____

F. Are the wash area, drainage and filter strips identified on your site map? (circle one) Yes No
(If No, please include on your site map)

Stall Cleaning

1. Do you have indoor stalls with impermeable solid flooring (not soil or other permeable surface materials)?

☐ No – Skip to next section ☐ Yes – Please answer A – D

A. Do you wash out your stalls with water containing soap or other chemicals?

☐ Yes ☐ No

B. Where does the wash water drain?_____

C. Is there a plan for treating the dirty water? ☐ Yes ☐ No

If so, please describe:_____

_____

_____

D. List the frequency of and reason for stall washing:

Frequency of cleaning:

☐ Daily ☐ Weekly ☐ Monthly ☐ Other: _____

Reason(s) for stall washing:

_____

Roof Drainage

* Note: There is approximately 7.5 gallons of water in a cubic foot. Therefore 100 square feet (10 foot x 10 foot) of impervious area, such as a roof, will capture/yield approximately 62.5 gallons of rainwater with each inch of rainfall. This statistic may prove helpful in evaluating your current runoff management from barn and stall roofs.

1. Do you have gutters and down spouts on all barn, stall and paddock roofs? ☐ Yes ☐ No

2. Do the down spouts tie into a drainage system that keeps the clean water away from potential contaminants such as manure, urine or bare ground? ☐ Yes ☐ No

3. Where do the gutters outlet? _____

_____

_____

4. If you do not have gutters, how is clean water kept out of potential contaminated areas (areas with manure, urine or bare ground)?

_____

_____

_____

5. ***Stable/Covered stalls or roofed areas***:

Area: _____ft^2

Property Drainage

1. Do you have drainage systems installed on your property? ☐ Yes ☐ No

2. Do you have a backup plan in case of a system failure? Explain.

_____

_____

_____

3. Is entire drainage system identified on your site map? (circle one) Yes No
(If No, please include on your site map)

4. Does the drainage that carries effluent water outlet into a filter area? ☐ Yes ☐ No

Explain:

_____

_____

_____

5. Do you combine your clean and dirty/soiled water into the same outlet area? ☐ Yes ☐ No

   Explain:

   _____

   _____

   _____

Paddock / Hardened Turnout Areas and Pens

1. ***Area***: _____ft^2

2. ***Soil type***

   ☐ Fine Sand ☐ Very Fine Sand ☐ Loamy Sand
   ☐ Sandy Loam ☐ Very Fine Sandy Loam ☐ Silt Loam
   ☐ Clay Loam ☐ Silty Clay Loam ☐ Silty Clay
   ☐ Compacted Base

3. ***Organic Matter***

   ☐ <0.5% ☐ 2% ☐ 4%

4. ***Slope***: _____%

5. ***Type of cover***:

   ☐ None ☐ Native Vegetation ☐ Grasses

Technical Assistance Documents/References:

- http://www.livestockandland.org/Publications_and_Links/index.html
- Conservation Practices for Horse Owners
- Conservation Measures to Reduce Non-Point Source Pollution at Horse Facilities
- Stormwater Runoff Management at High Use Areas

Identified items to be addressed/corrected:

Site improvement/development goals:

Identified changes/recommendations to management practices:

PASTURES

OBJECTIVE 3: Prevent grazing livestock from overgrazing pastures, eroding creek banks and damaging riparian (streamside) vegetation.

Things to remember:

- Maintain a minimum height of four (4) inches of grass on pastures (can be dry grass at the end of the season) to protect soil from erosion and to maintain plant vigor.
- Fence out livestock from creeks and ponds when possible; provide other sources of drinking water.
- Practice rotational grazing; divide up pastures and move livestock from one to another to allow pastures to rest and recover.
- Confine livestock in paddocks when pastures are wet or when forage is no longer available in pastures. Keep livestock out of the pastures during wet months.
- Develop water sources to attract livestock to remote portions of pastures.
- Manage weeds.

* Note: In this worksheet "Pastures" are considered to be areas where grass is grown for forage for livestock and maintained to prevent erosion; pastures are distinguishable from "Paddocks" in that paddocks are smaller in size and are considered confinement areas with little to no vegetative cover.

1. ***Area***: _____ft^2

2. ***Soil type***

☐ Fine Sand ☐ Very Fine Sand ☐ Loamy Sand
☐ Sandy Loam ☐ Very Fine Sandy Loam ☐ Silt Loam
☐ Clay Loam ☐ Silty Clay Loam ☐ Silty Clay
☐ Compacted Base

3. ***Organic Matter***

☐ <0.5% ☐ 2% ☐ 4%

4. ***Slope***: _____%

5. ***Type of cover***:

☐ None ☐ Native Vegetation ☐ Grasses

6. Do livestock graze in pastures located on your property? ☐ No ☐ Yes

7. Do you board livestock kept in pastures full time that do not have access to stalls or a paddock?

☐ No – Skip to question 3 ☐ Yes – Please answer A – B

A. How many? _____

B. What is the size of the pastures? _____

8. Does the livestock have direct, unlimited access to drainage ways, stream channels or ponds? ☐ No ☐ Yes

If no, please explain:

_____

_____

9. Do you have more than one pasture? ☐ No ☐ Yes

A. Do you practice rotational grazing? ☐ No ☐ Yes

B. Do you irrigate any of your pastures? ☐ No ☐ Yes

10. Are livestock moved away from pastures, when necessary, to protect pastures from erosion and damage to the grass? (i.e. when the soil is saturated or when they have grazed it to four (4) inches or lower) ☐ No ☐ Yes

11. Do you confine livestock to paddocks or turnout areas in order to protect the pastures from excessive trampling or compaction? ☐ No ☐ Yes

12. ***Which best describes current condition of exclusionary fencing***:

☐ No fencing
☐ Exclusion w/fenced stock crossing in water
☐ Fenced buffer to water way: 10’ or less
☐ Fenced buffer to water way: >30’ buffer
☐ Exclusion w/fenced stock crossing over culvert
☐ No access to water: >50’ setback / buffer
☐ Other, describe below:

_____

_____

13. Please list any additional measures or practices you employ to protect your pastures from overgrazing and/or erosion?

_____

_____

_____

14. Do you manage your pastures to limit or control weeds? ☐ No ☐ Yes

If yes, please explain:

_____

_____

_____

15. ***Which best describes current conditions of pastures***:

- ☐ No vegetation and no drainage controls
- ☐ Drainage controls with no vegetation
- ☐ Patchy/Sparse vegetation with no drainage controls
- ☐ Vegetation with no drainage controls
- ☐ Patchy/Sparse vegetation with proper drainage controls
- ☐ Significant vegetation year round and proper drainage controls
- ☐ Other, describe:

_____

_____

Technical Assistance Documents/References:

- http://www.livestockandland.org/Publications_and_Links/index.html
- Dryland Pasture for Horses
- Pasture Management
- Five Keys to Better Pastures
- Creating and Using a Sacrifice Area for Horses
- Natural Solutions for Fertilizers, Weed Control and Pest Control

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Identified items to be addressed/corrected:

Site improvement/development goals:

Identified changes/recommendations to management practices: