

Utah Farmstead Assessment for Ground Water and Surface Water Protection



Water is Life : Quality Matters



HOW TO MANAGE A LIVESTOCK YARD AND PROTECT YOUR WATER

Fact Sheet 8
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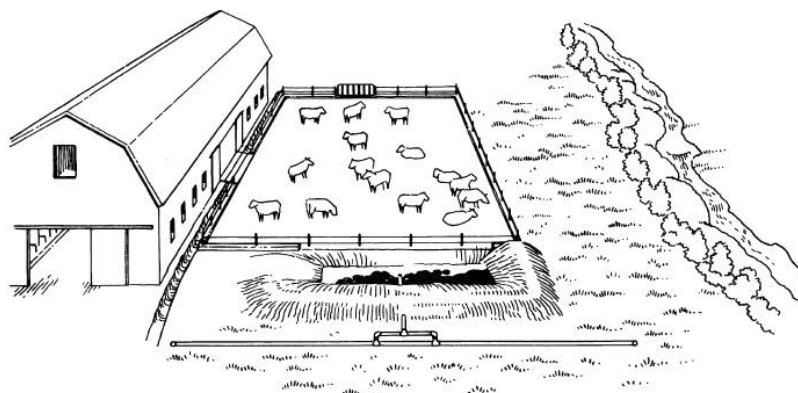
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CONTACTS & REFERENCES

GLOSSARY

Proper management of livestock yards helps reduce potential contamination of surface and ground water. Utah now requires that all animal feeding operations (AFOs) control runoff to surface waters (see glossary for definition of an AFO). Even if your yard does not meet the legal definition of an AFO, good management of the yard will help protect our waters and also can improve herd health and improve the quality of milk and/or meat production.

For additional information or reading materials, refer to the contacts and references section at the end of this fact sheet.



LOCATING A LIVESTOCK YARD

Livestock yards should be located to avoid any possible contamination of ground or surface water from drainage or seepage. Yards should be downslope of all wells to avoid contaminating your well with runoff. Although Utah code does not specify a minimum separation between livestock yards and wells, a distance of at least 200 feet is recommended to protect your drinking water. Runoff from yards must also be controlled to avoid drainage to irrigation ditches, canals or streams.



Site Characteristics

Soil characteristics, such as both surface and subsoil texture, soil depth, permeability and drainage, are important considerations when locating a livestock yard. The best sites have deep clay soils, although sites with well-drained silt loam/clay loam soil with low permeability can also serve as a good base.

Groundwater contamination risk is particularly high on earthen sites with high infiltration and percolation rates, such as sandy soils or other soils with good drainage, or areas with a shallow water table. Surface water contamination risk is high on sites that are close to surface water and are steeper than about 3%.

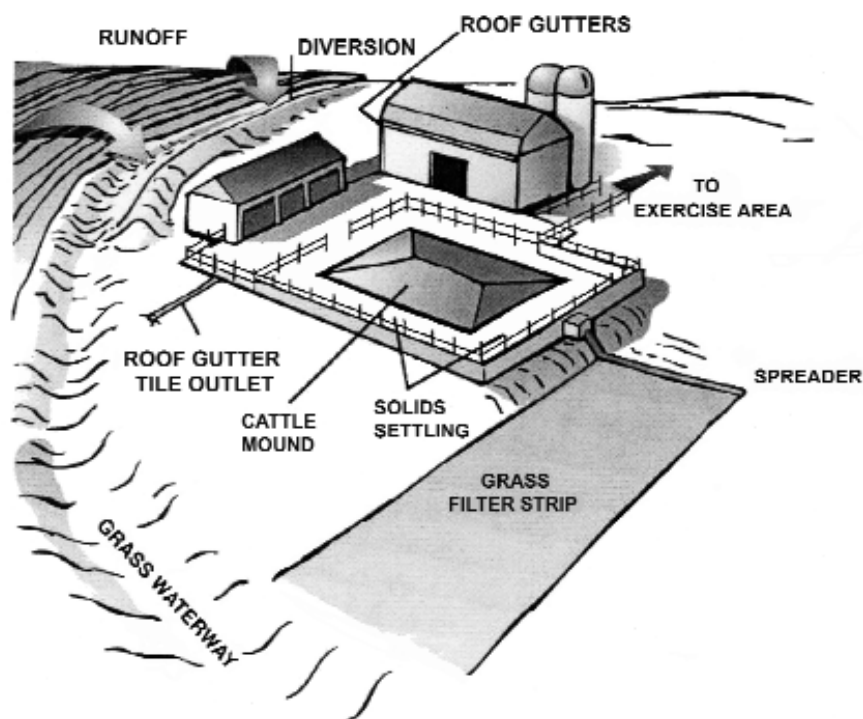
TAKE ACTION!

Install a runoff control system to reduce the potential for contaminating water resources, or relocate your yard to a site that protects water resources.

A runoff control system reduces the potential for contaminating surface or groundwater. These systems collect livestock yard runoff, settle out manure solids and direct the remaining water to storage areas away from streams, ditches, waterways and areas of permeable soils. The collected runoff water can be used for land application at a later time.

A livestock yard without a runoff control system typically has an earthen surface compacted by animal traffic. Decaying manure typically is mixed into the soil by animal traffic. Contaminated runoff from an active feedlot may percolate through the soil and threaten groundwater quality or enter irrigation ditches, canals or streams.

For existing livestock yards on poor sites, the best options for protecting groundwater could be eliminating the yard and switching to either total confinement of livestock or providing paved yards and liquid-tight basins to store yard runoff.



CLEAN WATER DIVERSION

One way of reducing pollution from livestock yards is to reduce the amount of clean water entering the yard.

- Waterways, small terraces and roof gutters can be used to direct water away from livestock yards.
- An earthen ridge or terrace constructed across the slope upgrade from a livestock yard will prevent runoff from entering the yard.
- If a diversion terrace is not practical, a catch basin with a tile outlet installed above the livestock yard will prevent clean water from entering your yard.

YARD AREA

The minimum area required per animal for reducing the risk of ground water contamination depends on the type of lot surface and type of animals. The amount of concrete surface area needed is much less than that required for an earthen lot, and is determined by a balance between traffic on the lot and the resting area for animals. Too large an area results in manure freezing to the surface for long periods, while too small an area results in animals having difficulty moving around.

A combination of yard surfaces can offer the most flexibility in adapting to weather conditions.

For dairy operations, the greatest protection for ground water is provided by confining animals to a free-stall barn or roofed yard. Where an open yard is needed, direct runoff water with curbs or ditches the area into a storage facility.

RECOMMENDED SPACE REQUIRED PER COW FOR AN OPEN YARD:

Concrete surface:	75 square feet of fenced concrete
Earthen Surface:	400 square feet of earthen surface

An exercise area should provide roughly 2,000 square feet.



YARD CLEANING OR SCRAPING

Clean livestock yards regularly. The amount of manure which accumulates on a livestock yard depends mainly on the number of animals and the hours per day animals spend on the lot. Cleaning and scraping at least once a week is optimal. Heavy concentrations of animals may need to be clean more often. Naturally, concrete surfaces are easier to clean than earthen lots. Clean earthen yards when dry to avoid scraping up the top layers of your soil base. Earthen yards might be cleaned only once or twice per year.

LIVESTOCK STORAGE AND MANURE UTILIZATION

In addition to the condition of your livestock yards, your farm animal manure management plan should consider manure storage and utilization.

Animal manure can be a valuable nutrient source and soil conditioner. When managed properly, the nutrients in manure can be substituted for commercial fertilizers, saving money and protecting both ground water and surface water. Matching nutrient applications to crop nutrient needs is criti-

For more information, see Fact Sheet 7 in this series: How to Manage Stored Manure and Protect Your Water.

Abandoned Livestock Yards

With active feedlots or yards, the layer of organic matter mixed with soil at the surface lies over compacted subsurface soil, forming a layer through which water moves very slowly. Therefore, leaching of nitrate and bacteria is not likely through the surface seal and compacted layers of an active livestock yard.

Abandoned yards, or yards that haven't been used for an extended period, however, can pose a significant risk of ground water contamination. As the manure pack breaks up from lack of use, contaminated water can leach through the surface and reach ground water.

TAKE ACTION!

Dig up permanently abandoned yards, spread the combined manure and soil on fields, and refill the former yard with other material.

OR till and plant the yard to a high-nitrogen-using crop to consume excess nitrogen in the soil and decomposed manure.

CONTACTS AND REFERENCES

DESIGN AND TECHNICAL STANDARDS

Your local office of the USDA Natural Resources Conservation Service or

Utah Natural Resource Conservation Service: (801) 524-4550

or <http://www.ut.nrcs.usda.gov>.

SITE LOCATION AND OTHER ASSISTANCE:

Contact your Utah State University Extension county agent through your local phone book or (435) 797-2200

or on the web: <http://extension.usu.edu/htm/counties>.

Utah Department of Agriculture and Food Website:

<http://www.ag.utah.gov>

MORE READING:

MidWest Plan Service Handbooks,
Beef Housing and Equipment Handbook. MWPS-6
Sheep Housing and Equipment Handbook. MWPS-3.
Swine Housing and Equipment Handbook. MWPS-8.
Dairy Housing and Equipment Handbook. MWPS-7.
Livestock Waste Facilities Handbook. MWPS-18.
MidWest Plan (800) 562-3618 or (515) 294-4337) or
<http://www.mwps.org/>

Agricultural Waste Management Field Handbook. 1996.
USDA, NRCS

Utah NRCS Website: <http://www.ut.nrcs.usda.gov>

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GLOSSARY

These definitions may help you make more accurate assessments when completing Fact Sheet #8. They may also help clarify some of the terms used in Survey #8.

ANIMAL FEEDING OPERATION (AFO): A lot or facility without natural forage where animals are confined, fed and maintained for 45 days or more in any 12 month period.

EARTHEN MATERIALS: Made up of natural, from the earth substances.

LEACHING: To dissolve out a soluble material by overload of water.

MICROORGANISMS: Bacteria or viruses that are too small to see with the naked eye.

PERMEABLE: A substance that allows things to pass or flow through: diffuse.

SEEPAGE: Materials that pass, flow or ooze through a porous substance.



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