SECTION FIVE

# ANIMAL MANAGEMENT FOR WATER QUALITY

## Proper pasture and animal yard management is an important component to a successful hobby farm to support healthy animals and sustainable land management practices.

The use of pastures and animal yards by livestock, horses and other farm animals can cause significant land disturbance resulting in soil erosion, stormwater runoff and the pollution of nearby water resources. Good animal management includes taking measures to address the following:

- **Space** – adequate space for animals is essential, both outdoors and indoors
- **Grass and Grazing** – manage grass and grazing to prevent overgrazing and erosion
- **Manure** – develop a successful manure management plan
- **Mud** – properly implement mud management practices
- **Water Resource Areas** – manage shoreline areas for water quality protection
- **Fencing** – develop techniques to keep animals where you want them
- **Water Supply** – provide suitable water sources, other than streams and ponds

Section 5 contains the following Fact Sheets:

- FACT SHEET 5-1 Animal Space Needs
- FACT SHEET 5-2 Grazing and Grass Management
- FACT SHEET 5-3 Mud Management
- FACT SHEET 5-4 Manure Management
- FACT SHEET 5-5 Manure Composting
- FACT SHEET 5-6 Controlling Animal Access to Waterways: Fencing
- FACT SHEET 5-7 Controlling Animal Access to Waterways: Waterway Crossings
- FACT SHEET 5-8 Controlling Animal Access to Waterways: Alternative Water Sources
- CHECKLIST 5A Animal Management for Water Quality

Many of the hobby farm management techniques in these fact sheets are aimed at reducing soil erosion and sediment transport that may make its way to nearby water resources. Hobby farm erosion and sedimentation controls should be based on reducing the amount of precipitation, snow melt and stormwater runoff that reach erodible areas and potential contamination sources. Simple disconnection practices, buffers and barriers can help eliminate runoff from coming into contact with transportable materials such as bare soil, manure, mud, fertilizers and other chemical compounds found on hobby farms.

FACT SHEET 5.1

# ANIMAL SPACE NEEDS

Small acreage hobby farms are often located in higher density areas with residential neighbors rather than in rural, less populated areas. Lacking the wide protective buffers that larger and more rural farms often have, hobby farms can be located not only close to neighbors but close to surface waters such as ponds, streams, and coastal waters.

Despite the smaller land area, a wide range of animals can be found on hobby farms. Proper land management is essential to ensuring that farming activities are sustainable and compatible with surrounding land uses to protect water quality, as well as to provide for the health and well-being of your animals.

## WHAT IS MY STOCKING RATE?

Your hobby farm 'stocking rate' is how many animals your property can support and reasonably sustain. The number of animals that your hobby farm can safely support is based partially on your (and your land's) ability to:

- Provide feed and water
- Manage manure
- Provide access to pasture and exercise areas
- Provide shelter
- Manage your land

One of the largest sources of surface water pollution originating from hobby farms comes from those farms that cannot support the number of animals on them. Too many animals living in too small an area can produce more manure than can be properly managed and cause pastures to be overgrazed and eroded. Both of these problems can increase the chances of sediment, nutrients and harmful bacteria being carried by stormwater runoff and polluting nearby waterbodies.

Keep in mind that not every hobby farm utilizes pasture. However, if your hobby farm does not contain pasture, then supplemental feed must be purchased (and stored). Also, your animals will still require an adequately sized exercise yard and you will need a realistic manure management plan to support your animals.

**REGULATORY CHECK**
Some communities have local bylaws or regulations that limit the number of animals per acre or require a certain acreage per animal. Visit your Town or City Hall for more information on specific rules that might apply.

## HOW MUCH PASTURE IS NEEDED?

If you are utilizing pasture for feed then you need to ensure that you have adequate managed area for this purpose. Pasture areas differ from livestock yards, paddocks and turnout areas in that pastures provide some or all of the food (forage crops) during the growing season for grazing animals. While these other areas are generally smaller in size without substantial vegetation, a well maintained, well vegetated pasture is important to long-term pasture use, the protection of nearby surface water quality and overall animal health.

The general consensus is that one to two well managed acres of quality land is recommended for each 1,000 pounds of livestock or animal. Based on average weights, this translates into approximately:

- 1 horse or cow per 1-2 acres
- 2 small ponies per 1-2 acres
- 4-6 sheep or goats per acre
- 2-3 llamas per acre
- 4-6 alpacas per acre
- 2-5 pigs per acre

The above stocking rates are only an approximation, as every location is unique and animal needs differ. The number of animals your hobby farm is able to support will depend on various factors. For instance, pastures that have bare ground, weeds, areas that animals won't graze, slow plant growth, soil compaction, erodible sloped land and other problem areas will support fewer animals. High quality and fast-growing pastures, rotational grazing and supplemental feeding can help increase the number of animals your hobby farm can sustain in an environmentally friendly manner.

## WHAT ABOUT SHELTER?

Your animals will also need shelter from adverse weather, especially during the cold and snowy winter months, but also to protect them from the hot summer sun and during windy days. This could be in the form of a barn or a 3-sided lean-to structure. Shelter should ideally be located on top of a slight rise so that stormwater does not run into the structure, and if open sided, should face south to avoid facing prevailing wind directions.

**THE RESPONSIBLE HOBBY FARMER SHOULD KNOW ABOUT THE SPACE NEEDS OF EACH TYPE OF ANIMAL KEPT ON THE HOBBY FARM, INCLUDING SPACE NEEDED FOR MANURE MANAGEMENT AND THE STORAGE OF FEED, BEDDING AND EQUIPMENT.**

**HELPFUL LINKS**
www.extension.unh.edu/resources/files/Resource000471_Rep493.pdf
www.ag.umass.edu/crops-dairy-livestock-equine/fact-sheets/basics-of-pasture-management
www.ag.umass.edu/crops-dairy-livestock-equine/fact-sheets/livestock-grazing-stocking-rates
www.ag.umass.edu/crops-dairy-livestock-equine/fact-sheets/livestock

FACT SHEET 5.2

# GRAZING AND GRASS MANAGEMENT

Many hobby farmers see themselves as “grass farmers” when approaching grass and grazing management. It is important to manage pasture grass and grazing activities to meet the nutritional needs of your foraging animals while maintaining pasture health for long-term viability.

Maintaining proper grass height and resting pastures long enough for grass regrowth contribute to a healthy and lush pasture. Paying particular attention to grass height and grass regrowth, using techniques such as rotational grazing, can ensure a well vegetated pasture and can help keep soil stabilized, reduce soil erosion and protect nearby surface water quality.

## GRASS GROWTH

Proper grass growth and care can provide a sustainable source of forage for your hobby farm livestock. Unlike most trees and shrubs that grow from the outer tip of their branches, grass generally grows from the crown, or base of the plant. If grass is grazed too close of the ground, its roots lose the ability to store energy, the crown can be permanently damaged and grass may not regrow. Remember that you need grass to make grass.


Adapted from Managing Small Acreage Pastures During and After Drought. Natural Resources Series, Fact Sheet No. 6.112, Colorado State University, December 2014. Comprehensive Environmental, Inc. © 2017

## GRAZING HEIGHT

Optimal grazing height will vary based on the type of grass and how selective the grazer, but in general, pasture vegetation should be grazed at a height of 6 to 8 inches and stopped at a height of around 3 to 4 inches. This can be thought of as ‘take half the grass height and leave half the grass height’ concept. Although this can be difficult with grazers that are selective, grasses grazed down to the crown can decimate a pasture leaving little grass for regrowth.

**DID YOU KNOW?**
Many farm animals eat approximately 2% to 3% of their body weight every day. This means that a 1,000-pound cow or horse could eat as much as 30 pounds of food or more every day.

## MOWING

Selective grazers will consume their preferred grass while leaving others. Periodically mowing your pasture as needed to a height of 6 to 8 inches will help maintain vegetative growth. Mowing can help thwart weed growth by preventing weeds from going to seed.

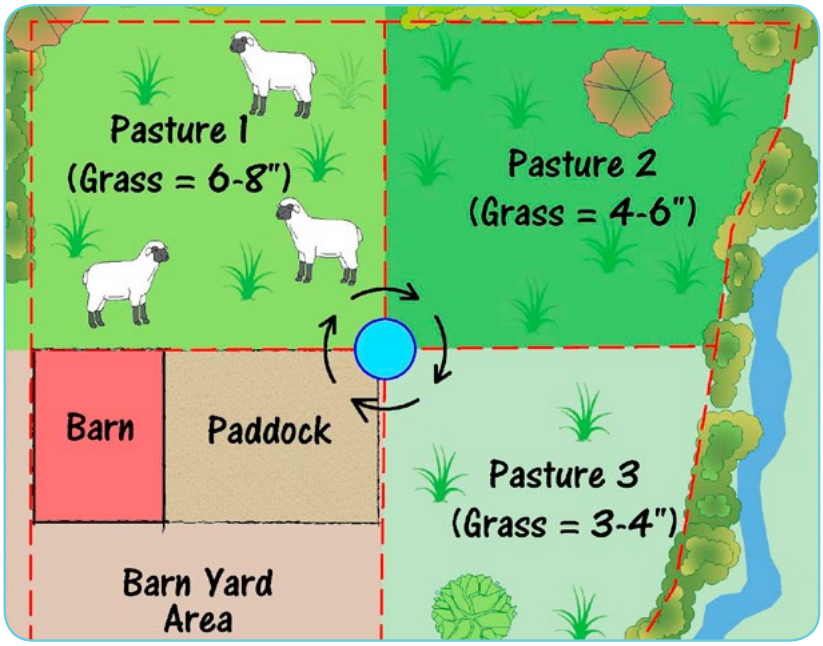
## OVERGRAZING

Overgrazed pastures most often occur when they are overstocked (too many animals are being supported by too little land) and pastures are not given the rest period needed for grasses to properly regrow. The quantity and quality of poor grass regrowth will not meet the nutritional needs of the animal. Grass that is consistently grazed too low will eventually die, causing bare spots. The heavy hoofs of horses and livestock on these unvegetated areas will lead to soil compaction and erosion. Consider rotational grazing practices that give pastures a rest period between grazing.

## ROTATIONAL GRAZING

Rotational grazing or pasture rotation is when animals are rotated through several pastures or segregated areas rather than being allowed to continuously graze on one large pasture. Dividing your pasture into two or more smaller pastures gives you better control over how long your animals forage each area.

Start them in a pasture that has a grass height of 6-8 inches. When that height is reduced to 3-4 inches, rotate them into another pasture. Depending on the season, amount of rain, and number of animals you need to support, the grass in your starting pasture may or may not be at grazing height (6-8") when you complete the rotation. If not, then animals should be fed supplemental feed and kept in alternative areas (paddock, livestock yard, exercise area) until pasture grass has grown to an appropriate height to begin grazing again.






Periodically inspect your hobby farm pasture(s). Look for bare areas that need seeding, weed species (and those that might be poisonous) that should be removed and erodible areas that could be addressed with stormwater management techniques (see Section 6).

### WATER QUALITY BENEFIT

Good grazing and grass management practices not only help sustain strong pastures to support healthy animals but will help to maintain a solid vegetative cover. This cover can help minimize soil erosion and runoff while acting as a filter to help keep nutrients onsite and slow pollutants from reaching nearby waterways, and protecting water quality.

FACT SHEET 5.3

# MUD MANAGEMENT

At one time or another almost every hobby farm with animals has had to deal with mud. Soil mixed with water, and in many cases manure, creates mud. Similar to manure, mud can harbor pathogens and become breeding grounds for pests.

**Mud can create unsanitary conditions for both animals and humans while becoming a significant threat to water quality. Mud management is a must and requires a solid commitment to managing your pasture, livestock yard, animal manure, erosion control and water supply activities.**

In addition to small pastures, hobby farms that support livestock often have a livestock yard (sometimes also referred to as an exercise area, riding ring, feedlot, pen, corral or paddock although there are sometimes slight differences among each of these terms). Unlike pastures, these smaller areas do not provide forage for animals but instead are often spaces used daily for feeding, handling, exercising and loafing. Generally located near the barn or covered animal shelter, these high-traffic areas tend to have bare ground making them a source of mud and concentrated animal waste that can pose a risk to animal health and water quality.

Mud can be a persistent problem for a hobby farmer, but it doesn't have to be with proper planning and management. Mud is not just an annoyance, it can create a number of serious problems for the hobby farmer including:

- Creating unsafe footing for animals and humans
- Harboring disease causing pathogens
- Producing a breeding ground for insects
- Damaging animal hooves and harm digestive systems
- Being a source of concentrated manure
- Compromising nearby water resources through stormwater runoff

## REGULATORY CHECK

Massachusetts drinking water regulations (310 CMR 22.00) prohibit the stabling, hitching, standing, feeding or grazing of livestock or other domestic animals within 100 feet of the bank of a surface water source or tributary and prohibit people from allowing or causing any animal to go into, or upon, any surface water source or tributary thereto.

## HOW TO MANAGE MUD

| | |
|---|---|
| **REMOVE MANURE** | Areas should be cleaned of manure every 1-3 days depending on weather and accumulation rates to maintain a healthy environment. Manure holds moisture, a key component to mud. Removing it regularly can help reduce the production of mud. |
| **APPLY FOOTING MATERIAL** | Problem areas should be cleared of mud and replaced with suitable footing material such as gravel, chipped wood products or a combination of both. |
| **DIVERT RAINWATER** | Runoff from nearby slopes, roofs, driveways or other impervious areas should be directed away from pastures, animal yards and anywhere else manure accumulates. Easy to install solutions such as gutters and downspouts with flexible extensions from roofs, or strategically located ditches and berms located up-slope from animal yards can help redirect water away from mud prone areas. |
| **PROVIDE COVER** | Portions of small livestock areas can often be covered and water diverted away from problem areas. Covering these areas can help prevent rainwater from mixing with manure and soil. |
| **PLANT A TREE** | Trees require a lot of water and since water is a major ingredient of mud, then adding trees near your problem area can help alleviate mud concerns. Trees are able to not only take in water through root systems, they can actually intercept rainwater on leaves and stems during a storm. Both of these actions can help reduce the amount of water that reaches pastures and livestock yards. |
| **RESTRICT RESOURCE AREA ACCESS** | Animals with direct access to wetlands, streams, ponds, floodplains and other resource areas can damage natural vegetated buffers and create bare areas. Combine these naturally wet areas with the addition of manure and disturbed soils and the making of mud is inevitable. Measures should be taken to prevent animals from gaining access to water resources. |

**CONSIDER ASSESSING YOUR HOBBY FARM FOR VULNERABLE AREAS SUSCEPTIBLE TO MUD AND DEVELOP A MUD MANAGEMENT PLAN. REMEMBER THAT YOUR MUD MANAGEMENT PLAN MAY VARY DEPENDING ON THE TIME OF YEAR.**

### WATER QUALITY BENEFIT

Managing mud significantly reduces the chances of runoff contamination from reaching nearby waterways and helps to maintain a healthy environment for both humans and animals.

FACT SHEET 5.4

# MANURE MANAGEMENT

All animals produce manure, so manure management is a large part of caring for animals on a hobby farm. Animal manure contains pathogens and nutrients that, if mixed with stormwater runoff, can pollute nearby surface waters.

Poor manure management not only puts waterways and drinking water at risk but exposes animals and humans to harmful pathogens. Pathogens include bacteria, viruses and parasites, all of which can cause significant short and long-term health impacts.

## CLEAN UP

Manure should be removed about every 1-3 days from all animal areas to minimize health risks depending on weather and accumulation rates. Frequent manure removal helps to prevent mud and breeding grounds for pests while reducing pollutants that can mix with stormwater runoff. Animal areas free of manure make for a sanitary and healthy environment for everyone.

## REDUCTION

Although it's unlikely you'll reduce the total amount of manure your hobby farm produces without reducing the number of animals, you can reduce your overall stall waste by using less bedding or a more absorbent bedding.

## STORAGE

Manure storage areas should be located carefully to prevent material from washing into nearby waterways or storm drain systems.

- **Find a dry, level spot** – manure storage should be located away from floodways, slopes, and waterbodies to reduce runoff and potential contact with surface water. A dry, level spot on an impermeable surface such as poured concrete or a liner can work well.

### WATER QUALITY BENEFIT

Timely cleanup of animal manure, suitable storage, and proper disposal are three effective ways to help prevent manure from mixing with precipitation and runoff that can contaminate nearby surface waters.

- **Slope** – locate storage areas downslope of drinking water wells, catch basins, storm drains, animal watering areas, edible plants or gardens, and waterbodies (if possible), making it less likely for stormwater to wash manure into nearby surface waters.
- **Cover it up** – manure should be covered to prevent mixing with precipitation. A roof, weighted tarp or even a covered dumpster can achieve this.
- **Divert water** – help keep water from mixing with your manure storage by diverting roof and surface runoff to areas that can help infiltrate the water back into the ground. Redirecting runoff to well vegetated or crushed stone areas can help slow and infiltrate this excess water.
- **Buffer** – creating a vegetated buffer around your manure storage area will help infiltrate drainage and reduce stormwater runoff entering and exiting your storage area.
- **Maintain access** – if you plan on eventually disposing of manure using equipment such as a small front loader, bobcat, or similar vehicle, then make sure your storage area is easily accessible by the size of equipment you plan on using. Also, select a material such as crushed stone to place in heavily traveled areas leading up to your storage area. This along with a suitable cover can help prevent erosion and reduce mud.

## DISPOSAL

A reliable manure disposal system can help eliminate overflow and keep it from becoming a threat to you, your animals and nearby surface waters. Depending on the amount of manure your hobby farm produces, disposal generally involves one or more of the following methods:

- Compost it
- Apply it to pastures
- Give it away
- Hire a manure hauler/disposer to remove it
- Find an off-site disposal or compost facility to bring it to

Since each of the above disposal methods has its advantages and disadvantages with varying financial costs, you may want to consider implementing several at various levels.

Remember that a successful manure management plan includes manure clean-up, reduction, storage and disposal and a plan lacking one of these individual elements can lead to failure. Although keeping up with manure management can be tedious at times, the cost of not implementing a proper program can put the long-term health of your animals and viability of your hobby farm at risk.

### PLAN AHEAD

Manure can pile up quickly! A 1,000-pound animal can produce well over 50 lbs. of manure per day, exceeding 18,000 lbs. of manure each year. Plan ahead and create an area large enough to store manure, bedding and feed waste for a year or more. This pile may be bigger than you think!

### REGULATORY CHECK

According to the MA Watershed Protection Act (313 CMR 11.00), uncovered outdoor storage of manure is not allowed if your hobby farm is located within certain areas of the Quabbin, Ware River or Wachusett watersheds. To determine if you are located in this area or for more information on specific restrictions see the following link: www.mass.gov/eea/agencies/dcr/water-res-protection/watershed-mgmt/the-watershed-protection-act.html#ForFurtherInformation

FACT SHEET 5.5

# ANIMAL MANURE COMPOSTING

Hobby farms that support animals find that efficient manure management is essential to upholding a healthy farm environment, protecting water quality and maintaining good neighbor relations. One of the most challenging steps to manure management can be disposal. Many hobby farmers find that composting is a good way to safely and efficiently reduce and recycle animal manure.

## WHY COMPOST MANURE?

Composting animal manure can save money and time and generate a nutrient rich material that you may be able to use in other areas of your farm such as your pastures or in your vegetable gardens.

## WHAT IS COMPOSTING?

Most organic matter, including manure, will naturally decompose. The process of composting speeds up this decomposition process by providing an ideal environment for microorganisms to break down manure and create a nutrient rich soil mixture. Compost can be a highly sought-after nutrient source and soil amendment for gardens and pastures since it generally is organic in nature and can build soil structure for plant growth.

Composting manure can:

- Reduce and recycle animal manure
- Reduce animal manure disposal costs
- Decrease your manure pile size and storage area
- Help keep nutrients out of waterways
- Kill disease causing pathogens
- Create a valuable soil fertilizer/amendment
- Enrich soil structure that can increase water retention and reduce soil erosion
- Decrease fertilizer amounts and costs

## WHAT TYPE OF MANURE CAN I COMPOST?

Many types of animal manure are suitable for composting on a hobby farm, but not all. Manure from farm animals such as horses, cows, poultry, and llamas/alpacas along with bedding material such as straw, sawdust, wood shavings, and hay are all good composting material. Do not compost dog, cat or human waste as this material requires very high temperatures for a sustained amount of time to rid the material of harmful pathogens.

**CAUTION!**
DO NOT COMPOST dog/cat manure or human waste; manure from diseased animals; or meat or animal products.

## WHERE CAN I PUT MY COMPOSTING OPERATION AND DO I NEED A SPECIAL COMPOST CONTAINER?

Although there are many commercial compost containers on the market, these are often more suitable to compost kitchen scraps and small amounts of yard waste. If your hobby farm has one or more larger animals you will need a space big enough to handle multiple compost piles. Your compost pile should be on an impervious surface such as a concrete pad or tarp and located away from edible gardens, groundwater wells, surface waters, storm drains and any place that may flood. A flat, well-drained, covered area with easy access is an ideal location. A grassed buffer around your compost area is recommended so that any runoff can filter through this vegetated area, reducing the potential for containments to reach surface waters.

Compost systems should be sized to meet your specific hobby farm needs. The kind of system you choose will depend on the type and number of animals you have and how much space you can dedicate to manure composting. It is recommended that a multi-bin system be used so that when one bin fills another one can be started. If, for example, a 3-bin system is used, the goal is to have finished compost in the first bin before the third bin is filled with fresh manure. The finished compost can be removed and the first bin becomes available when the third bin is full. Compost bins can be any size or shape and easily be made out of new or recycled materials such as wooden pallets, cinder blocks, wire mesh, chicken wire, fence sections, window screens or any other material that will enclose your manure. If your design doesn't have a roof, a secured tarp can be used to cover your compost.

**IDEALLY, YOUR COMPOST AREA SHOULD BE LARGE ENOUGH TO HOLD 6-MONTHS OF MANURE. HOWEVER, MANY HOBBY FARMERS HAVE LIMITED SPACE, SO CONSIDER ANY AMOUNT OF MANURE COMPOSTING, NO MATTER HOW SMALL, TO BE A BENEFIT TO YOUR HOBBY FARM.**

**PLAN AHEAD**
One large animal can generate as much as 50 pounds of manure every day! This requires a storage area of about 12 feet on each side, with a depth of about 5 feet for one year, per animal.

**WATER QUALITY BENEFIT**
Composting manure not only helps to prevent it from potentially reaching nearby waterways, but creates a valuable soil amendment and organic nutrient source that when applied to crops and fields is recycled back into the earth.

## A RECIPE FOR COMPOSTING SUCCESS

Microorganisms that assist in the composting of manure need what many living organisms require: food, water and air.

- **Food (Nitrogen and Carbon)** – How fast your manure decomposes relies heavily on the carbon to nitrogen (C:N) nutrient ratio in your pile. Most animal manure alone generally has an ideal C:N ratio. However, if you have bedding mixed in you may need to add an additional source of nitrogen such as grass clippings, blood meal or chicken manure.
- **Air** – Microorganisms need oxygen to survive and break down manure. Periodically turning your compost to introduce air or incorporating simple perforated PVC pipes into your compost pile can provide the oxygen needed to support these microorganisms.
- **Temperature** – Decomposition creates heat which is important to support the microorganisms you want in your compost and in your finished soil structure. Heat created in your compost pile is also needed to kill any pathogens, weed seeds and/or fly larvae you may have in your manure. Compost piles generally should be turned periodically to maintain an internal temperature of 140-150˚F. This can be measured with a compost thermometer (similar to a meat thermometer but with a longer probe).
- **Water** – Compost piles need moisture to support the decomposition process. Your compost pile should be wet but not soaked. Since heat plays a major role in the process it can quickly evaporate moisture, so plan to add water to your compost pile on a regular basis to keep it moist but not to the point where you are creating runoff.

**COLLECT WATER FROM THE ROOF OR COVER OF YOUR COMPOST BIN SYSTEM WITH A RAINBARREL AND USE THIS RECYCLED WATER TO ADD MOISTURE TO YOUR COMPOST WHEN NEEDED.**

The length of time it will take to make any type of compost will depend on the size of your compost pile, time of year, contents, and how you manage it. Typically, it will take approximately 3 to 6 months to complete a batch of compost.

**HELPFUL LINKS**
www.mass.gov/eea/agencies/massdep/water/watersheds/horsekeeping-and-water-quality.html
www.ag.umass.edu/crops-dairy-livestock-equine/fact-sheets/composting-horse-manure
www.ag.umass.edu/sites/ag.umass.edu/files/fact-sheets/pdf/manure_composting_for_small_livestock_operation_17_03.pdf

FACT SHEET 5.6

# CONTROLLING ANIMAL ACCESS TO WATERWAYS: FENCING

Many hobby farms rely on nearby waterways to provide animals with freshwater access. Although convenient, direct animal access to nearby streams and ponds can be detrimental to water quality and may eventually render that water source unusable in the future due to pollution.

When farm animals are allowed to congregate near surface waters such as lakes, streams, ponds, rivers, and coastal areas significant environmental damage can occur resulting from hoof traffic, grazing and manure including loss of vegetation and protective buffers, soil compaction, bank erosion, sediment and nutrient deposition and accumulation of harmful pathogens.

**ANIMALS SHOULD NOT HAVE DIRECT ACCESS TO WATERWAYS AND BE PROVIDED ALTERNATE WATER SOURCES FOR THEIR DAILY, FRESHWATER NEEDS.**

## EFFECTS ON WATERWAYS

Waterways have historically been economically important to farmers with animals, as forage quantity and quality at times tend to be greater, not to mention the ease of access to a reliable water source on demand. However, allowing livestock unrestricted access can promote overgrazing along the shore of a waterbody, while grasses in undergrazed areas become unpalatable to the animals. As grasses preferred by horses and livestock continue to produce new growth, the animals will stay in the area longer, which prevents recovery of the area and reduces the ability for vegetation to treat runoff from adjacent grazing areas.

Negative impacts of farm animals on waterbodies and surrounding areas can be prevented or minimized by eliminating access. There are many opportunities for hobby farmers to improve farming practices while protecting the functionality of waterways and adjacent buffers through proper land and grazing management practices.

Hobby farms that raise animals need to consider options to protect waterways through the use of fencing, properly constructed stream crossings and alternative water sources that promote good grazing management.

### REGULATORY CHECK

Massachusetts drinking water regulations (310 CMR 22.00) prohibit the stabling, hitching, standing, feeding or grazing of livestock or other domestic animals within 100 feet of the bank of a surface water source or tributary and prohibit people from allowing or causing any animal to go into, or upon, any surface water source or tributary thereto.

**PLAN AHEAD**
Hobby farmers need to be aware of any local regulations or bylaws that pertain to fencing requirements and also know the exact location of property boundaries when installing fence near neighboring properties.

# FENCING

Fencing is a common practice used to prevent access of animals to waterways. Fencing farm animals out has many benefits, including preventing destabilization of streambanks, preventing erosion and improving runoff filtration and nutrient uptake, while allowing control of productive rotational grazing systems.

There are many types of fencing. The best fencing option will depend on the purpose, topography, size of the area, soil type, flood risk, animal type, material availability and cost. Before purchasing fence materials, consider all options to decide which is best for your hobby farm.

## Common Types of Fencing

| | |
|---|---|
| **WOOD** | • Traditional material commonly used and easily found<br>• May require upkeep every few years, including painting or staining<br>• Expect that pressure-treated lumber will last for about seven years without painting or staining, but has a higher initial cost than untreated lumber<br>• Pressure-treated wood is used for posts with any fencing system for its rot resistant properties |
| **WOVEN WIRE** | • Often made with galvanized wire and is often used for sheep, goats, and poultry<br>• Horse owners also use woven wire fencing because of its rigid property and keeps predators out of corral areas<br>• Woven wire fence can last for 20 years with moderate maintenance |
| **HIGH TENSILE WIRE** | • Stronger alternative to galvanized woven wire<br>• Requires specialized equipment to install<br>• Wire is heavy duty grade which has a higher initial cost<br>• Requires little maintenance and has a 50-year life expectancy |
| **BARBED WIRE** | • Developed for use in areas where wood was scarce and large areas of land were needed to raise livestock<br>• Difficult to work with due to the barbs<br>• Requires special equipment to install<br>• Can cause serious injuries to horses, livestock and wildlife animals if tangled in barbs<br>• Local regulations may prohibit the use of barbed wire fencing |
| **ELECTRIC FENCES** | • Easy to install in any configuration that is needed<br>• Flexible wire is an inexpensive option for fencing horses and larger livestock<br>• Woven wire version is available for use with smaller livestock<br>• Has fairly low maintenance requirements |

Unfortunately, fences can also pose a risk to wildlife if they cannot cross over or under the fence. Consideration should be made to maintain free travel for wildlife and reduce adverse impacts when choosing a safe barrier method for your farm animals.

**REGULATORY CHECK**
Since most hobby farms are not exempt from the MA Wetlands Protection Act (WPA 310 CMR 10.00), most fencing within 100 feet (in some cases 200 feet) of a wetland or waterway will likely require approval. See your local Conservation Commission for assistance in complying with the WPA and for information on other approvals that may be required.

FACT SHEET 5.7

# CONTROLLING ANIMAL ACCESS TO WATERWAYS: WATERWAY CROSSINGS

A waterway or stream crossing may be necessary for animals to access a hobby farm pasture or trail system that is separated by water from other areas of the hobby farm. Direct animal access to wetlands and waterways can significantly impact the water quality and long-term viability of the freshwater resource. In addition to the physical damage that can occur to the banks and nearby vegetation from hoof traffic and grazing, manure deposited directly into the water can have an immediate impact on water quality and animal health.

A well-built crossing can provide farm animals with a safe and stable surface to reduce the risk of injury when crossing the stream channel or waterway. A designated crossing can reduce land disturbance, minimize muddy conditions and prevent impacts to the stream bed and water quality.

Stream crossings can be built with a variety of materials, however choosing the right location is essential. A crossing should be installed where the stream is straight, narrow if possible and where the channel alignment is less likely to change, as it would at a meander. Channel alignment at a meander often shifts because of the scouring affect the stream has on the outside edge of a meander.

## REGULATORY CHECK

Since most hobby farms are not exempt from the MA Wetlands Protection Act (WPA 310 CMR 10.00), the crossing of any wetland or waterway generally requires approval. See your local Conservation Commission for assistance in complying with the WPA and for information on other approvals that may be required. Additionally, Federal, state and local regulations may govern the sizing of any culvert or bridge.

**WATER QUALITY BENEFIT**
Keeping livestock, horses and other animals away from and out of waterways is essential to water quality protection.

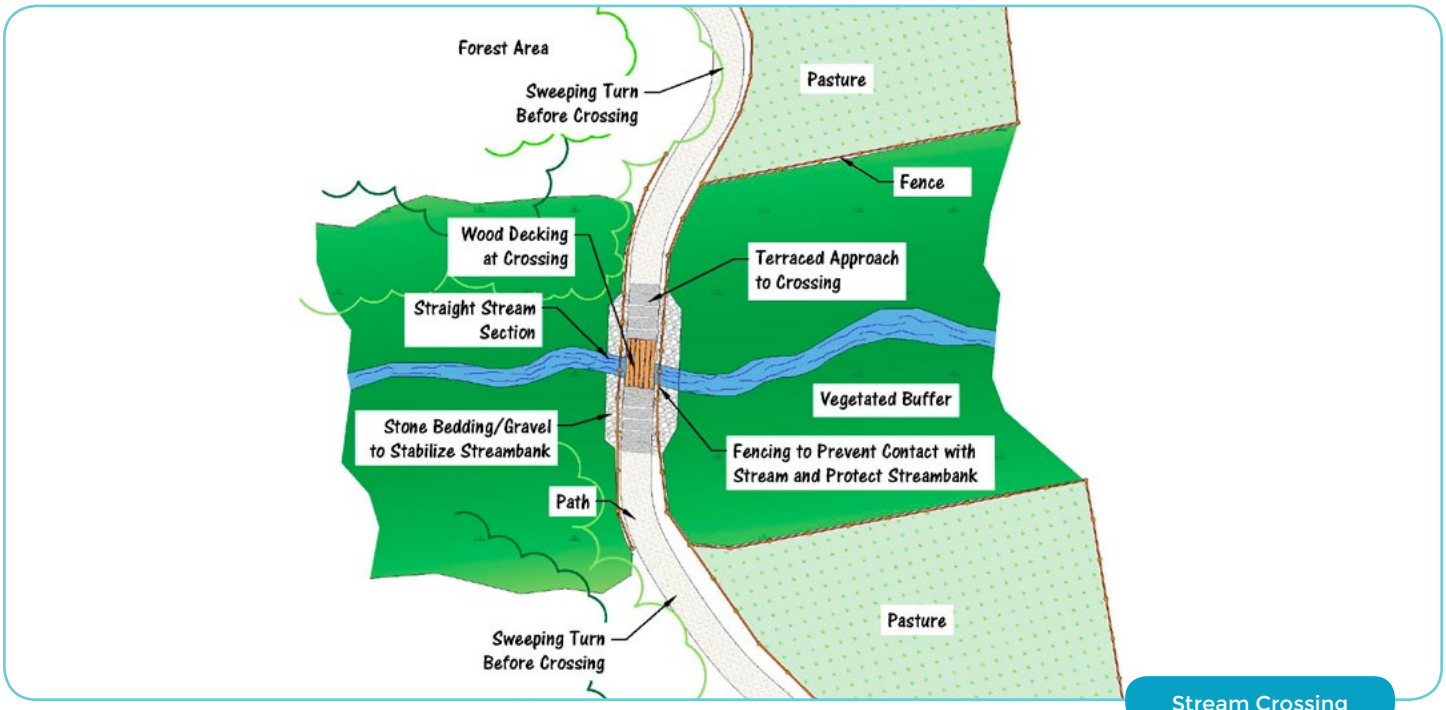
## BUILDING A STREAM CROSSING

- Contact the local Conservation Commission for information on local and state regulations that apply to work being completed in a stream channel or waterway. Most work within or adjacent to a waterway will require one or more approvals.
- Build the crossing during the dry part of the year.
- Grade the banks with gentle slopes to make it easier for farm animals to approach the crossing.
- Stabilize stream banks with landscaping fabric beneath a layer of crushed stone and gravel.
- Install a culvert (e.g. pipe, granite blocks, large field stones) parallel to the stream bank to convey flow below the crossing and allow for wildlife passage.
- Various stream crossing materials can be used (e.g. wood timbers, large flat stones, concrete slabs, etc.) to span the stream.
- Install fencing on either side of the crossing to prevent farm animals from accessing the waterway.

The above is simply a guide in developing a stream crossing strategy – each individual location and community will have different concerns and standards that will need to be addressed. Never construct a crossing without first consulting with your local Conservation Commission.

## STREAM CROSSING MAINTENANCE

As with most structures, maintenance is critical to ensure your crossing remains safe for you and your animals and that it is achieving the goal of protecting your riparian area while allowing your animals access to other parts of your property. Make sure you routinely inspect your stream crossing, particularly after a rain event, and make the necessary repairs (with Conservation Commission approval if needed).




Stream Crossing

FACT SHEET 5.8

# CONTROLLING ANIMAL ACCESS TO WATERWAYS: ALTERNATIVE WATER SOURCES

Allowing farm animals unrestricted access to surface water has generally been the most common and easiest way to meet the water needs of horses, livestock and other farm animals. However, this method often results in impacts to surface water quality and to that of the adjacent land area.

Streambank erosion, depleted buffer zones and pathogens from manure are a few of the long-term impacts from direct waterway access. To avoid direct water quality impacts, hobby farmers need to find a dependable alternative water source for animals.

Benefits of providing an alternative water source include:

- stream bank and waterway protection
- aquatic and wildlife habitat protection
- improved animal health
- better pasture management
- improved relationship with neighbors

A water trough or similar device can be permanent or portable. When installing a trough, you should place it at a location that reduces the risk of contamination to waterbodies and water supply sources and encourages farm animals to drink. Remember, Massachusetts drinking water regulations (310 CMR 22.00) prohibit the stabling, hitching, standing, feeding or grazing of livestock or other domestic animals within 100 feet of the bank of a surface water source or tributary and prohibit people from allowing or causing any animal to go into, or upon, any surface water source or tributary thereto.

**DID YOU KNOW?**
If your water trough is large, deep, covered, and won't be knocked over - you can add fish! Fish can have the added benefit of eating algae, reducing the need to clean the trough as often.

**WATER QUALITY BENEFIT**
Alternate water sources eliminate the need for farm animals to access waterways, helping to protect water quality and adjacent habitat.

## WHEN INSTALLING AN ALTERNATIVE WATER SOURCE

- Locate it away from waterbodies and water supply sources
- Provide a flat and stable surface area around the trough to protect the area from erosion
- Centrally locate it so that it's accessible from all pastures and paddock areas at all times
- Provide adequate capacity to meet the requirements of all animals
- Ideally, construct a structure over the trough to provide animals with shade and reduce the amount of alga growth and maintenance required
- If the water source is also used for human consumption, install check valves or similar devices to prevent contamination of the water source (check local codes for requirements)

## MAINTENANCE REQUIREMENTS

- Always ensure animals have adequate water in the trough
- If automated, regularly check the flow of water to the trough
- Look for leaks and fix them right away
- If you have a float valve check it regularly to make sure it's working
- Areas around the trough can get wet and muddy - stop any leaks and fix eroded areas right away
- Consider a mud management plan
- Drain and cleanout troughs at least once a year

## HOW TO CLEAN YOUR TROUGH

- Dump out the existing water and use a pressure washer to hose off the sides and bottom
- Pour in a small amount of dish washing soap and use a stiff bristle brush to scrub the inside of the trough
- Dump out the trough again and thoroughly rinse out any remaining soap and debris
- Refill the trough

CHECKLIST 5A

# ANIMAL MANAGEMENT FOR WATER QUALITY

**Use the following questions to help guide your hobby farm animal management decisions:**

1. Does your municipality have local bylaws or regulations that limit the number of animals per acre or require a certain acreage per animal?

☐ YES ☐ NO If YES, list the applicable restrictions,

2. Does your farm utilize pasture for feed?

☐ YES ☐ NO If YES, is the size of your pasture within the recommended guideline of one to two acres for each 1,000 pounds of livestock? Use the guide below.

| Recommended Pasture Size (by Animal Type) | Your Pasture Size |
|---|---|
| 1 horse or cow per 1-2 acres | |
| 2 small ponies per 1-2 acres | |
| 4-6 sheep or goats per acre | |
| 2-3 llamas per acre | |
| 4-6 alpacas per acre | |
| 2-5 pigs per acre | |

3. If you answered YES to question #2, do you follow these recommended practices? (check selections that apply)

☐ Practice rotational grazing to give pastures a rest and avoid over-grazing (e.g., avoid grazing beyond a minimum grass height of 3-4 inches)?

☐ Periodically mow your pasture to a height of 6-10 inches to maintain healthy vegetation and limit weeds?

4. Do you use a properly installed fence (and crossing, if necessary) to keep animals out of surface water? ☐ YES ☐ NO

5. As required by the Massachusetts Drinking Water Regulations, do you avoid stabling, feeding, hitching, standing, feeding, or grazing of livestock within 100 feet of surface water sources and their tributaries? ☐ YES ☐ NO

6. Is an alternative water source needed to prevent animal access to surface waters? ☐ YES ☐ NO

7. Do you have sufficient area to store manure, animal bedding and feed waste for a year or more? ☐ YES ☐ NO

8. Do you compost livestock manure as part of your manure management strategy? ☐ YES ☐ NO

9. Do you follow recommended mud management practices? (check selections that apply)

☐ Remove accumulated manure every 1-3 days (depending on weather and accumulation rates)?

☐ Restrict livestock access to sensitive areas such as wetlands, streams and ponds (e.g., with fencing)?

☐ Divert stormwater away from areas where manure accumulates?

☐ Plant trees and/or use materials such as gravel and wood chips in problem areas?