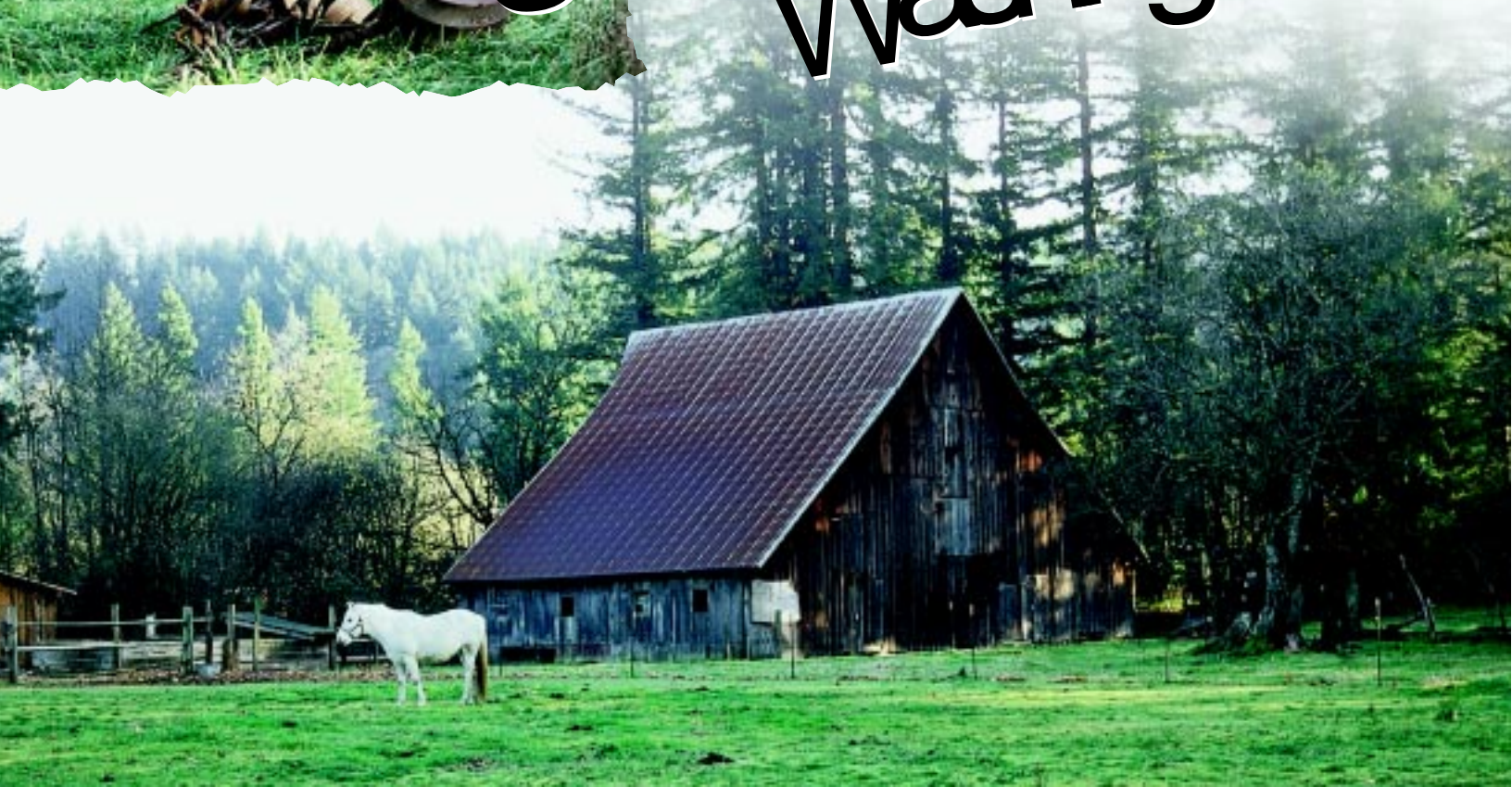


Tips

**ON LAND & WATER
MANAGEMENT for
SMALL ACREAGES in**

**Southwest
Washington**





Is Land and Water Conservation Important To You & Washington?

Washington is a great place to live, and you can help keep it that way!

ARE YOU RAISING LIVESTOCK and wondering why you are buying more feed each year as your land's productivity declines, leaving muddy ground and weeds?











HAVE YOU HAD THE GOOD FORTUNE to buy a beautiful place on a creek and are wondering how to care for your stream and improve your property for livestock and fish?

DID YOU JUST FIND OUT that those pretty yellow flowers along your fence are noxious weeds that threaten the productivity of your land and your neighbor's land?

As you can see, there's a lot to know about owning and managing land. This booklet will get you started and give you lots of information and ideas for a place that you can be proud of...and for protecting Washington's land and water. Remember that we're all part of a watershed and our actions can impact others. There are things that you and your neighbors can do to greatly improve the health of our resources...the resources we all appreciate about Washington.

Look At What You Have

Every landowner needs a management plan. Before developing your plan - look around, make a sketch, and take a few notes about your property. In your sketch, show or note:

-  Property boundaries
-  Fences and corrals
-  Buildings
-  Wells (human or stock)
-  Septic system
-  Streams, wetlands, ponds
-  Bare or muddy ground
-  Weeds
-  Lawn, pasture, cropland
-  Trees or shrubs
- 4 Neighboring land uses
- 4 Flat or sloped ground

Before You Plan...



What Are Your Goals For Your Property?

Goals will help focus your planning process. Consider the following when you define your goals:

- What do you want to accomplish?*
- How do you want your place to look in a few years?*
- What uses can your land support?*
- Will your livestock require grazing?*
- Do you have a good water supply?*
- Are your trees healthy?*
- Are your plants native?*
- Is there quality fish and wildlife habitat?*
- Are you concerned about something else?*

In the end you may have to modify some of your goals because they are not realistic for your property.

The four pastures in this "After" drawing allow better management of livestock grazing and increased forage production. A **stockwater tank** located in the corral is accessible from all pastures and reduces streambank trampling. Shrub and tree plantings along the streambank prevent erosion, replace weeds and bare areas, and provide wildlife habitat.



After You Plan!

Good Land Management Increases Economic Value

Saves money because your farmland is more productive over the long term.

Ensures better water quality for you, your animals and your neighbors.

Improves and protects water quality for fish.

Provides wildlife habitat and more grass for grazing.

Improves the health of your livestock.

Makes your place more attractive.

Keeps your neighbors happier.

Satisfies your responsibility to care for the land.



A Plan For YOUR Land

Once you've looked at your property and identified your goals, you need to develop a management plan for reaching your goals. Remember, even if you like things just the way they are, you will need to **do something** to keep weeds from coming in or to keep the water clean! This booklet provides useful information on developing the many different parts of your management plan.

Contents

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Manure Composting	6
Healthy Riparian Areas	7
Healthy Homesites	8
Know Your Responsibilities	9

Look At Your Land...Make A Plan



Give Your Land A Health Exam

How much of these do you have on your property?

	1	2	3
Healthy ground cover (forest, shrubs, grass)	A lot	Some	A little
Weeds or plants that do little to hold the soil (dandelion, English ivy) or provide little value for livestock and wildlife	A little	Some	A lot
Bare ground	A little	Some	A lot

*If all of your answers are in the first column, your land earns an "A" for health. If most of your answers are in the second column, it is in average condition. If you have any responses in the third column, your land needs immediate **help**! Read on to learn about conservation practices that will improve your land's health.*

Weed Control *Weeds spread fast, so regularly look for new weed patches on your property and act immediately to treat them by using one or more of the weed control practices listed below. Team up with neighbors to improve effectiveness. Remember, weed control by itself is not enough. It is also necessary to modify the practices that caused weeds to become established in the first place!*

Prevention. Good land management will help keep desirable vegetation healthy and weeds under control. Buy only certified weed-free forage, plant only certified seed, and wash your vehicle after being in a weed infested area. Look for weeds on your property and promptly remove them. Managed grazing will also inhibit weed establishment while promoting healthy development of pasture grasses.

Biological Control. Biological control attempts to find something in nature that can weaken or eventually kill a weed plant. Successful bio-agents include certain fungi and insects that weaken weeds by attacking seed heads and other plant parts. Some biological controls may be more appropriate for unmanaged areas. (Ungrazed, etc.)

Chemical Control. Herbicides can be safe and effective when properly applied. Read label instructions carefully and follow directions. Use chemicals away from water to prevent pollution of streams and groundwater. Only certified pesticide applicators can use restricted herbicides. Call a local farm supply store or your county weed board to find out about hiring professional chemical applicators to spray your weeds.

Know Your Weeds

Before they:

- Choke out desirable forage for livestock and wildlife
- Reduce the productivity of your pasture
- Spread RAPIDLY!
- Affect the health of your livestock



Tansy Ragwort



Western Bracken Fern



Foxglove



Be sure herbicides will not reach and kill desirable trees and shrubs. Dispose of leftover chemicals at hazardous waste facilities.

Livestock Grazing. Graze weeds before they go to seed. Because livestock can easily carry and spread weed seed on their coats or in their feces, avoid moving livestock from a weedy area to a weed free area.

Mechanical Control. Mow weeds annually before they go to seed. Pull small weed patches and weeds near streams by hand.

Some Toxic Weeds In Western Washington

Plant Species	Poison Symptom	Livestock Affected	Comments
Bracken Fern (<i>Pteridium</i>)	appetite loss, timid, incoordination, death	cattle, horses, sheep	so abundant that poisoning is common
Common Cocklebur (<i>Xanthium</i>)	vomiting, weakness, ataxia spasms & possible death	swine, cattle, sheep, goats	usually eaten if nothing else available
Creeping Buttercup (<i>Ranunculus</i>)	mouth blisters, inflammation & narcosis	all livestock	rarely eaten unless pasture overgrazed
Foxglove (<i>Digitalis</i>)	contracted pupils, labored breathing, convulsions, death	all livestock	rarely eaten fresh dangerous in hay
Tansy Ragwort (<i>Senecio</i>)	liver lesions, weakness, staggering, death	all livestock	liver damage is permanent
Poison Hemlock (<i>Conium maculatum</i>)	teeth grinding, muscle spasms, respiratory failure, death	all livestock	very toxic to humans
Wyeth Lupine (<i>Lupinus</i>)	spasms, cerebral excitement, birth defects, death	sheep, goats, horses, cattle	can cause birth defects



Poison Hemlock



Wyeth Lupine



Creeping Buttercup



Common Cocklebur

The noxious weeds pictured in the column above are aggressive and competitive—stealing moisture, nutrients, and sunlight from other plants. They should be controlled immediately!



A Sample Schedule For A One-Herd Multiple-Pasture System

In southwestern Washington, livestock are normally grazed April through October during the plants growing season. Begin grazing when plants are 6" to 8" in height. Move livestock after 50% of the plant has been eaten and 3" to 4" in height remain. 2 to 6 weeks are needed between grazing periods depending on the rate of grass growth. You may need to confine livestock and feed them hay until the pasture regrows or move them to a new pasture with 6" to 8" of grass.

M O N T H S												
Pasture	A	M	J	J	A	S	O	N	D	J	F	M
1	G		G		G							
2		G		G		G						
3			G		G		G					
4				G		G		G				
	G											

G Graze
 Rest
 Provide feed/hay



A Grazing Management Tool

Grazing Management Produces More Grass



Continuous grazing allows weeds to grow where grass roots have been weakened. A less dense leaf canopy allows sunlight to reach invading weeds.

Pasture rotation and good grazing management produces more grass, fewer weeds, and a minimum of bare ground.

Choosing The Right Fence

No single factor determines the best type of fence to use. You may find that a combination of fencing works best for you. Some points to consider when selecting a fence are:

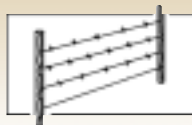
- Purpose - type of animal you're keeping in or out
- Type of soil material - rocky, loamy, mucky
- Topography and terrain
- Cost of material and labor
- Availability of power
- Maintenance requirements
- Aesthetics and visual appeal
- Weather - flooding and moisture
- Safety and people access
- Vegetation control

There are many types of fencing. Each will have advantages and disadvantages. If you make your fence to suit your individual needs and preferences it will become a distinctive part of your property.

Types Of Fencing

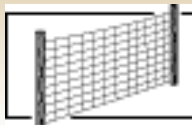
ADVANTAGES

DISADVANTAGES



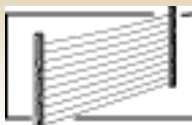
4-STRAND BARBED WIRE
Good control of cattle.

Barbed wire can injure horses, llamas and wildlife. Place wire to allow wildlife to safely pass. Labor and material costs high. Periodic maintenance required.



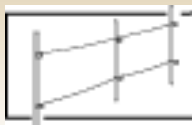
WOVEN WIRE
Good control of sheep. Add 2 upper strands of barbed wire for cattle. May keep some predators out.

Extremely unsafe for wildlife. Limit use to small areas near buildings. Labor and material costs high. Some maintenance necessary.



SMOOTH WIRE 4- to 5-strand good for horses, less harmful to wildlife. 8- to 10- strand will contain large, exotic animals. Durable.

Labor and material costs high. Periodic maintenance required.



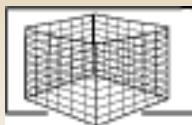
PORTABLE ELECTRIC Good for establishing pasture rotation program on small acreages. Lightweight, portable, easy to set up or dismantle before and after irrigation. Less expensive.

Weathers poorly. Don't use in lengths over 1,000 ft. Requires regular maintenance. Needs solar or electric power source.



GRADUATED FIELD FENCE
Good for horse pastures. Hooves are less likely to become tangled in the smaller openings at the bottom of the fence.

Fencing material and installation is more expensive than regular woven wire fence.



HOG PANELS
Can be formed into a small, portable pen. Wheels may be attached to make moving easier. Good for establishing rotation grazing for a couple animals on small acreage.

Inexpensive and easy to construct. Appropriate for only a few sheep or other small animals. Should be moved once or twice each day.

➔ Stockwater Developing

A stockwater system is an essential part of your grazing and animal health programs. As you divide your acreage into several pastures, establish separate water sources for each pasture or a single water source that is accessible from all pastures. Clean, fresh water is essential for good animal health. Options for stockwater development include:

- Pipe water to a stock tank in each pasture or a centralized location. It is highly recommended (and may be required) that you fence your livestock away from streams to keep manure out of the stream, protect and maintain streamside vegetation, and control erosion.
- Several types of non-electric pumps can be useful to draw water (Check on status of water rights)
- Use a nose pump to draw water from a stream or pond.

➔ For Help

Obtain publications from county extension offices on livestock production, farming, gardening, and 4-H programs. Assistance is available from your local conservation district and NRCS office, and private consultants to:

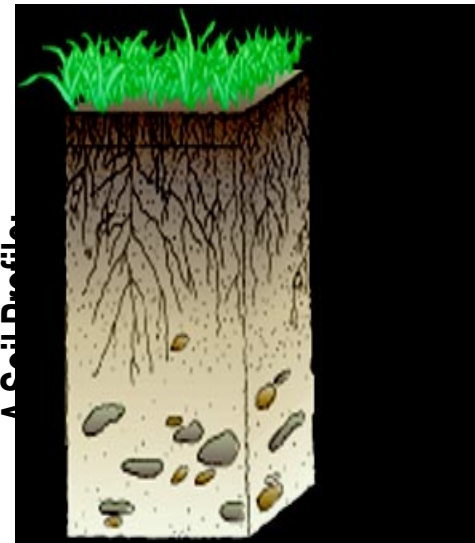
- Design mud management systems
- Design a grazing system
- Increase hay and pasture production
- Design a livestock waste disposal program
- Design stock watering facilities
- Help you meet water quality standards



TYPES - Know Your Soil

Soils can vary widely, even across your backyard. The type of soil you have will influence:

- Type and quantity of grass/crops/trees your land can produce.
- How easily soil may erode.
- If the soil will filter human and animal wastes before they reach groundwater.
- How much fertilizer is needed.
- Possible problems with building foundations.
- Whether the area is a wetland.



PASTURES Are Your Pastures Properly Managed?

- Does your livestock have prolonged access to pastures in the spring before the grasses are 6" in height?
- Are your animals prone to colic or respiratory problems?
- Do your animals waste grass by not grazing to a uniform height of 3"?
- Do you manage all of your pastures the same even if they have different soils or slopes?
- Are your animals allowed to roam freely year-round?
- Are you being bankrupted by high feed bills?

If you answered "yes" to any of these questions you may need a new pasture management program which will provide grass throughout the growing season, save you money in lower feed costs and vet bills, and protect your resources!



For A Successful Grazing Program

- Eliminate continuous season-long grazing.
- Subdivide large pastures into smaller pastures and develop a pasture rotation grazing system.
- Confine livestock and feed them hay until your pasture grasses are 6" to 10" high. Move livestock when 50% of the grass plant has been eaten and 3" height remains. Do not regrade until grasses are at least 6" high (will take 2 to 6 weeks).
- During winter months hold animals in a confinement area.
- Allow rest periods and use a high-intensity, short duration grazing system to rejuvenate poor condition pasture.
- Provide a water source for each pasture.
- Do not graze on wet saturated soils.



To Increase Your Pasture Production

- A pasture is a grazing area enclosed by a fence. Pastures are often planted with non-native plant species to increase their production. These pastures may need fertilizing, irrigating, or periodic replanting.
- Fertilize according to soil test recommendations. Believe the soil test! Overfertilizing is not better and can damage water quality and waste money.
- Mow pastures to a uniform 3" height after grazing to stimulate equal growth of pasture plants.
- Drag or harrow to spread nutrient-rich manure. This also helps promote uniform grazing.
- Control weeds.
- Reseed.

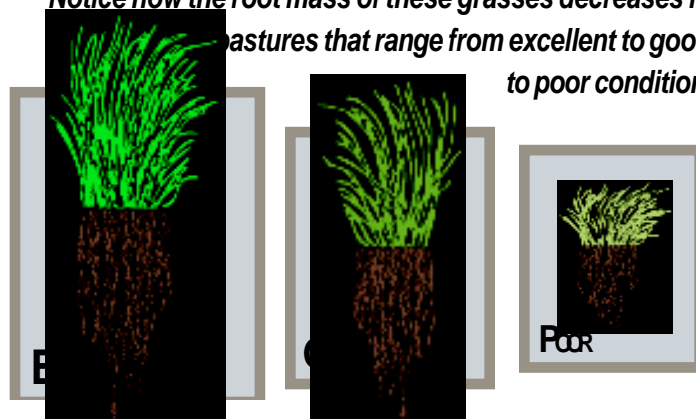
- On limited acreage, you may have only enough pasture to exercise your animals and will need to feed year-round.

How Grazing Affects Root Growth

Overgrazing occurs when more than 50 percent of the grass plant is removed all at once. Overgrazing stops root growth and reduces grass production. Look what happens when you try to sneak in another 10 percent "harvest"—50 percent of the roots stop growing!

PERCENT GRASS PLANT REMOVED	PERCENT ROOT GROWTH STOPPED
10%	0%
20%	0%
30%	0%
40%	0%
50%	2-4%
60%	50%
70%	78%
80%	100%
90%	100%

Notice how the root mass of these grasses decreases in pastures that range from excellent to good to poor condition.



Pastures and Soil

Mud Causes Problems

For You, Your Livestock and Your Neighbors

- Mud harbors bacteria, fungal organisms, and other pathogens which cause problems such as abscesses, scratches, rain scald or thrush.
- Mud is a breeding ground for insects such as Culicicoides (no-see-ums), filth flies and mosquitoes.
- If fed on the ground, a horse can ingest mud or sand with hay which can cause sand colic.
- Standing in mud can lower an animal's body temperature which causes unthriftiness and even hypothermia.
- Mud is slick, unsafe footing especially for horses.
- Mud makes chore time difficult and unpleasant.
- Mud can be damaging to the environment - runoff of sediment contaminates surface water and is detrimental to fish and aquatic wildlife.



Did You Know?

Annual Rainfall in Inches

Amboy	80
Battle Ground	51
Camas	47
Castle Rock	58
Cathlamet	106
Centralia	47
Chelatchie Prairie	95
Elma	67
Longview	45
Packwood	56
Toledo	44
Woodland	50
South Bend	87
Vancouver	39
Yacolt	75

Gutter Talk



- Divert CLEAN rainwater away from animal confinement areas to stock watering tanks, rain barrels, dry wells, road ditches, unused pasture areas, or existing wetlands. Check for permit requirements.
- Plan your gutter systems to handle the amount of rainfall for your area. (See chart.)

- Protect downspouts from animal and livestock damage - you can use heavy PVC pipe, hot wire, or a permanent barrier.

Manure

More Than a Few Reasons to Manage Livestock Manure on Your Property

- Living in manure creates an unhealthy environment for horses and livestock. Poor health may mean more vet bills and increased feed bills for unthrifty animals.
- Leaving manure on the ground creates more mud.
- Manure, like mud, creates a breeding ground for insects, especially filth flies. Insects are annoying at best and, at worst, carry disease or can cause serious allergies.
- Internal parasites hatch from the manure as often as every 3 days allowing for parasite reinfestation as soon as 24 hours after worming.
- Manure problems are inconvenient for the farm owner, can make chores difficult, and are unpleasant for neighbors.
- Nutrient runoff from manure has a negative impact on the environment. It contaminates surface water and groundwater, is detrimental to fish and other aquatic wildlife, and fertilizes aquatic weeds.
- Applying manure back to pastures creates a natural nutrient cycle; one horse's manure represents about \$150 in fertilizer value/year.



For Reducing Mud

- Fence animals out of creeks, wetlands and lakes; provide watering systems away from streams; create water crossings or watering points.
- Practice good pasture management techniques so you have a healthy pasture—avoid overgrazing and creating bare spots.
- Create a sacrifice area and use it to confine livestock in the winter. Also, use the sacrifice area when pastures are grazed down to 3" during the summer months.
- Pick up manure every 1-3 days in sacrifice areas and outdoor arenas.
- Use footing material, such as hogfuel or crushed rock, in high traffic areas such as sacrifice areas and in front of stalls. Depending on material used and severity of problem, footing needs to be 6 to 12 inches deep. Avoid using hogfuel in very wet areas where it will turn into muck.
- Maintain a grassy area of at least 25 feet in width around the sacrifice area; increase this dimension if near a stream. The grass will serve as a filter for any runoff that does occur.
- Install gutters and downspouts on all buildings and then divert away from sacrifice areas.
- Maintain or plant trees and moisture-loving shrubs outside of sacrifice areas. Trees can drink a lot of water, 100-250 gallons per day for a mature tree. This can aid in keeping an area drier and reducing surface runoff.

Tps

For Successful Composting

- Begin by building a pile of manure and stall waste that is at least 3'x3'x3'.
- Cover the pile or area with a roof, tarp, or sheet of plastic (a cover keeps it from getting too wet in the winter or dried out in the summer).
- Keep the pile as damp as a wrung out sponge - no wetter or drier!
- Add air to the pile turning it by hand, with a tractor, or passively by inserting a few perforated PVC pipes (or similar item) into the center of the pile like chimneys.
- When the pile gets as big as you want it for manageability, start a second pile and allow the first to continue composting.
- Add garden waste and lawn clippings to your compost. Don't let grass clippings clump together - spread clippings out so air can permeate through them.
- Kitchen scraps are best managed in a worm bin so to avoid attracting rats or unwanted pests to your livestock area.
- Use only herbivore manure in your composting system. Carnivores, such as our household dogs and cats, may share similar pathogens with humans so their manure needs to be handled and treated differently.
- Don't place composting structure where rain or surface water can run into it.

Tps

On Disposal Of Manure & Stall Waste

- Collect raw manure from sacrifice areas and stalls.



➤ It's Finished!

Your compost could be ready to use in as little as 30 days depending how often you turn it and whether it stays damp. Most likely, it will take a couple months in the summer and three to five months in the winter when temperatures slow down the microbial activity. You will know your compost is ready when it had reduced in volume about 50% and the material looks evenly textured and crumbly like soil and no longer like the original material.

➤ Remember

Your compost system should smell “earthy” and not unpleasant. Odors and flies are associated with fresh manure. Once manure decomposes as part of the composting process there shouldn't be a problem. If your compost is not heating up or if it has a bad odor, it means something is not being managed properly—check to be sure the pile is not too wet or too dry.

- Store manure and apply it to pastures during the growing season (April to October). You'll need a storage bin or area that is covered or tarped; and a means to spread manure, such as a manure spreader and tractor or pickup truck and rake. You'll also need to maintain a good deworming program (since you aren't composting and killing parasites and worm eggs).



- Composted manure and stall waste can be applied to gardens and flower beds during the growing season (April to October). You'll need a compost bin or appropriate area that is covered or tarped with access to water; and a means to spread the finished compost. Follow this general rule of thumb when applying finished compost - apply about 1/2-inch at a time, no more than 3-4 inches per year and ONLY during the growing season.
- Sell or give away composted manure and stall waste to neighbors, community gardens, local garden clubs, nurseries, and topsoil and composting businesses. You will need an appropriately sized, located, and covered storage bin area where people can pick up the finished compost; equipment, such as a tractor to assist with the loading; and advertising by word of mouth, posted fliers, and announcements in the local newsletters and papers.

➤ For Help

- Your local conservation district and NRCS office offer technical assistance in choosing a manure management option suitable for your situation as well as help designing a composting bin or manure storage area.
- Your local Cooperative Extension office can help with manure management. They offer classes on composting and manure management. Contact the Clark Conservation District or WSU/Clark County Cooperative Extension to locate a possible source for stall waste and bedding.
- Libraries have many books on composting
- A good source for information on agriculture composting is the On-Farm Composting Handbook, distributed by Northeast Regional Agricultural Engineering Services, 152 Riley-Robb Hall, Cooperative Extension, Ithaca NY, 14853-5701. Phone (607) 225-7654 or Fax (607) 225-4080, or email at NRAES@cornell.edu



Riparian Areas

Riparian Areas are the vegetated borders found along streams, lakes, and wetlands. They are made up of water-loving plants such as alder, willow, cottonwood, and sedges.

Grazing often removes important riparian vegetation and may cause streambank erosion and water quality degradation.

Over 300 species (85%) of Washington's wildlife depend on riparian habitat during a portion of their lives. Riparian vegetation provides food, nesting, and hiding places for fish, turtles, beaver, river otter, eagles, ducks, songbirds, frogs, insects, and more. Just about everything you like about these areas depends on leaving them in their natural state.

A Healthy Riparian Area is the key to a healthy stream system. Lush and diverse riparian and wetland vegetation along the water's edge will:

Slow flood flows and reduce erosion and property loss.

Secure food and cover for fish, birds, and other wildlife.

Keep water cooler in the summer.

Reduce water pollution by filtering out sediment, chemicals, and nutrients from runoff.

Provide important breeding habitat for birds.

Shelter animals during calving, lambing, foaling, or fawning.



To Prevent Water Pollution and Protect Riparian Areas

- Plant and maintain native trees, shrubs, groundcovers along streams and around animal confinement areas to trap and absorb pollution-laden runoff before it reaches streams or groundwater.
- Eliminate livestock access to streams. Page 3 presents a variety of fencing alternatives that can be used to eliminate access to streams.
- Use off-stream stockwater tanks, nose pumps, or other watering methods to minimize livestock trampling of streambanks.
- Use composted manure, feed, and bedding wastes by spreading it on your land at the appropriate rates and times of year. Do not apply if soil is saturated or frozen to prevent nutrient runoff. This reduces your need for expensive commercial fertilizers.
- Locate livestock sacrifice areas and septic systems away from streams and 100 feet downslope from your well.
- Use farming practices that reduce soil erosion and increase water infiltration such as filter strips and grassed waterways.
- Do not mix, apply, or dispose of weed control chemicals, used motor oil, or other toxic substances into the soil or where they can leach into groundwater. Free disposal of household hazardous waste may be available. Contact your local solid waste disposal service provider.
- Avoid excessive fertilizer and pesticide applications which become a potential source of groundwater and surfacewater pollution. Test your soil to develop a nutrient management plan which best reflects the nutrient needs of your pasture.

Hold more water in the soil, slowly releasing it for longer season streamflows and groundwater recharge.

➤ Fish Need Healthy Streams

What do fish need to thrive?

- Riparian buffers to filter nutrients and sediment.
- Rocks and riffles to churn and add oxygen to the water.
- Clean cold water.
- Overhanging vegetation and large pieces of wood to hide under.
- Deep pools provide coldest water in the summer and least likely to freeze in the winter.
- Riparian vegetation to shade and cool water.



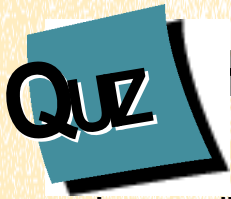
➤ Does Your Property Have A Wetland?

Wetlands are protected from land management activities that would destroy them or change their function. Wetlands are determined by specific soil, vegetation, and hydrologic characteristics. Contact your local Natural Resources Conservation Service Office or county government to determine if your wet area is a wetland.

➤ For Help

- Funding may be available for certain types of livestock management and water quality improvements, including fencing and bank stabilization. Contact your local conservation district and NRCS office for further information.
- Contact your city and county governments for information on local codes and regulations addressing water quality, riparian areas, and other sensitive areas.
- The Washington State Department of Ecology can provide information on state and federal water quality laws, and on some of the permits required to work in or near a stream, lake or wetland. This agency also staffs a Permit Assistance Center at 1-800-917-0043. Publications are also available that list some of the permits which must be obtained before initiating any activity in or near a stream, lake or wetland. Visit the Permit Assistance Center website at <http://www.ecy.wa.gov/programs/sea/pac>

Healthy Riparian Areas



How Safe Is Your Well and Septic System?

Is your well at least 50 feet away from the septic tank and 100 feet from the drainfield or livestock sacrifice area?

Has a well test within the last year shown acceptable results for bacteria and nitrate?

Do you keep fertilizers, pesticides, fuel tanks, and animals away from your well?

Are you *sure* there are no old, unused wells on your property?

Has it been less than 5 years since you last pumped the septic tank?

Do you know how to maintain your well and septic system to protect your drinking water and avoid costly repairs?

No Yes

☐ ☐
☐ ☐
☐ ☐
☐ ☐
☐ ☐
☐ ☐

If you answered “no” to any of the questions, consider a Home*A*Syst evaluation. You will find out how to protect your drinking water supply, your family's health, and the investment in your rural property. Contact your WSU

Extension agent for more information or check out their website at <http://wawater.wsu.edu/resource/index> under water quality publications.



To Avoid Septic System Trouble

- **Do** have your septic system pumped every 3-5 years.
- **Do** keep a record of pumping, inspections and other maintenance.
- **Do** practice water conservation—repair leaky faucets and toilets, run washing machines and dishwashers only when full.
- **Do** know the location of your septic system and drainfield—if your system has a flow diversion valve turn it once a year. Flow diverters can add many years to the life of your system.

Protect Your Home From Wildfire

Maintain 30' of green lawn or fire-resistant plants around your home.

Prune the lower branches of trees below 12' to remove “ladder fuels” that can cause a ground fire to become a more destructive and harder-to-control crown fire.

Have water and firefighting tools available.

Avoid using wood shakes for roofing or storing firewood next to your house.

Contact the USDA Forest Service or Washington Department of Natural Resources for more information.



To Prevent Water Pollution

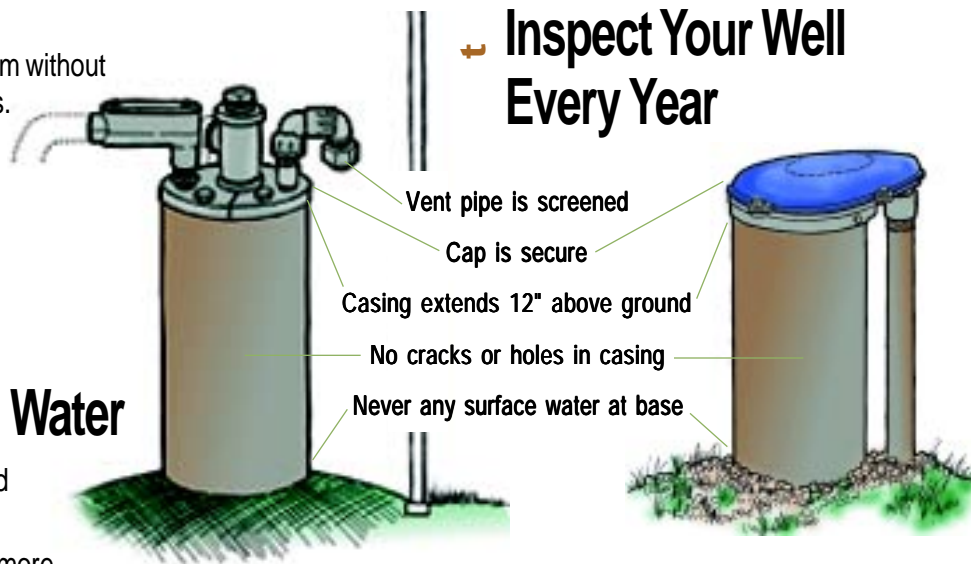
- Establish and maintain shrubs and grasses along streams and around animal confinement areas to trap and absorb polluted runoff before it reaches streams or groundwater.
- Locate manure piles, corrals and other livestock confinement areas away from wells and streams. Use off-stream stockwater tanks to minimize livestock trampling of streambanks.
- Cover manure piles to retain nutrients. Test manure for nutrients. Apply manure to pasture when plants are actively growing and can use this natural fertilizer. To avoid polluted runoff, do not spread manure on wet soils or frozen ground.
- Use farming practices that reduce soil erosion and increase water infiltration.

- **Do** divert roof drains and surface water from driveways and hillsides away from the septic system.
- **Do** take leftover hazardous household chemicals to your approved hazardous waste collection center for disposal.
- **Don't** allow anyone to drive or park over any part of the septic system.
- **Don't** make or allow repairs to your septic system without obtaining the required health department permits.
- **Don't** use commercial septic tank additives. These products do not help and some may hurt your system in the long run.
- **Don't** use your toilet as a trash can by dumping nondegradables down your toilets or drains.

- Do not mix, apply, or dispose of pesticides, motor oil, or other toxic substances near wells or streams. Contact the Clark County Public Works, Environmental Services at 397-6118 ext. 4352 for the best method of disposal in your area.

➤ Steps To Protect Your Well Water

- Locate your well—it should be at least 100 feet and upslope of a septic drain field.
- Know your soil type—surface contaminants move more easily through well-drained soils. Test your water every 1-3 years for coliform bacteria and nitrate.
- Limit your use of lawn garden chemicals
- Shield animal waste piles from rain.
- Protect the soil from contamination by oil, gasoline, and household chemicals.



➤ Inspect Your Well Every Year

➤ For Help

Information is available from WSU/Clark County Cooperative Extension (request the Home*A*Syst packet on well water protection) or call the SW Washington Health District. Internet accessible information is also available. Use "well water protection" as key words.



Protecting Watersheds

A watershed is an area of land from which water drains to a common point, be it a stream, river, wetland, or lake.

Because all water in a watershed is connected, activities on the land are reflected in water quality and quantity. As water flows downhill, it can carry eroded soils, fertilizers, pesticides, motor oil, and other pollutants directly into surface water and groundwater.

We all live in a watershed and have an impact on natural resources. When we protect our resources, we give back to the land, water, air, plants, and animals. In doing so, we ensure a healthy watershed that will sustain us for generations to come. Take action on what you have learned, contact the listed specialists below if you need additional help, and inquire about other laws that may apply to your property or proposed activities.



What You Need To Know As A Rural Landowner	Who To Contact	Phone Number
Building Codes and Permits - Before building, contact your city or county planning department for zoning requirements and permits.	Clark County Department of Community Development	360-397-2375 ext.0
Buried Utilities - Washington law requires that you notify utility companies no less than two days and no more than 10 days before you start to dig.	Northwest Utilities Notification Center	360-696-4848
Floodplain Protection - Permits may be required for work within a 100-year floodplain. Insurance and financing may be restricted.	Clark County Department of Community Development	360-397-2375
Forest Practices - The Forest Practices Act requires permits for many activities on wooded land. Check for requirements and exemptions.	Washington Department of Natural Resources	360-577-2025 800-527-3305
Open Burning - Permits may be required, often at no charge. Bans occur during fire hazard or air pollution periods.	Southwest Clean Air Agency	360-696-8105
Septic Systems - For installation of septic systems or problems with existing systems call for advice or permits.	SW Washington Health District	360-397-8428
Streambank and Wetland Protection - Permits are required to fill, drain or dredge water areas and to	WA Dept. of Ecology–Permit Assistance Center Clark County Department of Community Development	800-917-0043 360-397-2375 ext.0

modify stream channels, streambanks or wetlands. Technical assistance is available for stream and wetland protection.

Clark Conservation District
Natural Resources Conservation Service

360-883-1987
360-883-1987

Trash Recycling and Disposal - Locate licensed landfills, private trash disposal companies, and recycling centers. Burning or burying household trash on private land is not allowed.

Clark County Department of Public
Works—Environmental Services

360-397-6118 ext.4352

Water Quality - You are responsible for managing manure, erosion, pesticides, fertilizers, irrigation and near-stream areas to protect surface water and groundwater quality.

Clark Conservation District
Natural Resources Conservation Service
WSU/Clark County Cooperative Extension
Washington Department of Ecology

360-883-1987
360-883-1987
360-254-8436
360-690-7171

Water Rights - A permit is needed for well water uses of more than 5,000 gallons of water per day or more than 1/2 acre garden or lawn irrigation. A water right is required for **any** surface water withdrawal.

Washington Department of Ecology

360-407-0240

Weed Control - Noxious weeds crowd out forage and destroy wildlife habitat. Many are toxic to animals and humans. Control of these plants is important.

Clark County Weed Management

360-254-2034

Wells - Wells need to be registered with the Washington Department of Ecology. Well logs must then be submitted to the SW Washington Health District. Contact the SW Washington Health Department for any well activity!

Washington Department of Ecology
SW Washington Health District

800-468-0261
360-397-8428

Wildlife Protection/Endangered Species - The law protects threatened and endangered species. Your land management may be affected if these species are present.

Clark County Habitat Biologist
Local Audubon Society Chapter
Washington Department of Fish and Wildlife
US Fish and Wildlife Service

360-397-2375 ext.4598
360-892-8872
360-696-6211
503-231-6131



Know Your Responsibilities

