

Living On the Land

Keeping Clean Water Clean & Reducing Mud Managing Roof Runoff

What does winter mean to you in Western Washington? You got it, Rain! And with the fall, winter, and spring rains comes the question of how you can best manage all of that water. Why? Well, on small acreages, a little water makes a lot of mud, and we get lots of rainwater. For those who raise livestock, this can bring wet stalls, damp feed, and soggy hay and/or bedding. Of course, wherever you let your livestock out, you can count on muddy turnout areas and pastures as hoofs churn away.

While you cannot completely eliminate mud, you can reduce the amount and the problems it causes. One of the easiest, least expensive, and most effective ways is to divert the clean water from roofs away from livestock (or vehicle use areas). Unless you have lots of gravel and paved driveways, your house and outbuildings probably contribute the most to rainwater runoff on your property. For every 10 foot by 10 foot (100 square feet) of roof surface, one inch of rain produces 62 gallons of water. That means that a 30 foot by 30 foot (900 square feet) barn roof produces 558 gallons of roof runoff for each inch of rain! And you wondered why there was so much mud? (*Wondering how many inches of rainfall you receive? Take a look at the picture on page three.*)

If this roof runoff flows through livestock areas, manure, equipment storage areas, or bare soil, it can transport sediment, oils, chemicals (herbicides and pesticides), pathogens (bacteria), and excess nutrients (nitrogen and phosphorous) to streams and lakes. This can cause health problems for people and wildlife (fish and animals drinking from the stream).

The Best Management Practice (BMP) in this case simply means installing and/or maintaining properly functioning gutters, downspouts, and outlets.

What to Do

Installation. If you do not have gutters or the gutters need to be replaced, remove the old gutters and repair or replace damaged rafter ends and fascia boards where they attach to gutters. If you contract this work out, the job will cost more, but will save you time.

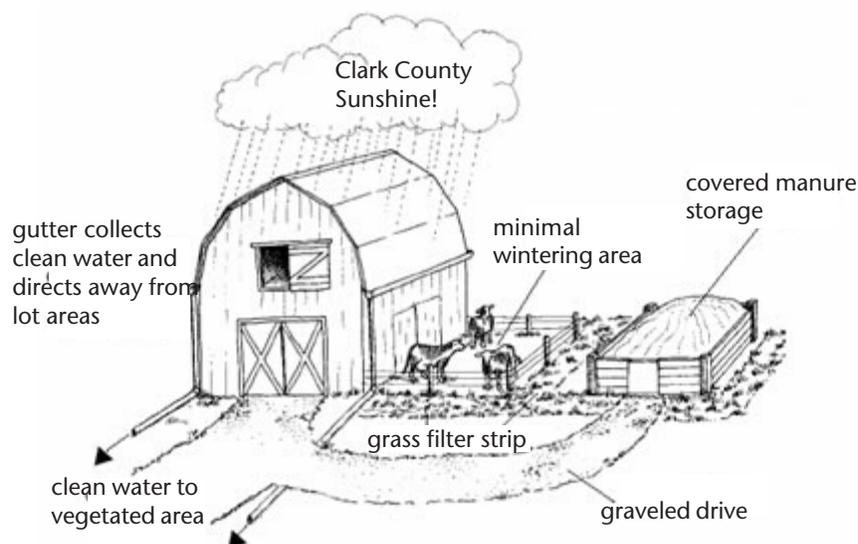
What Are BMPs?

Best Management Practices (BMPs) are practices that protect your resources and may also enhance the value of your property.



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Gutter slope. As you know, water only runs downhill. The correct downhill slope for gutters is just over 1/8 inch drop for every 10 feet of gutter length. Mark your slope on the fascia board using a chalk line, starting about 3/4 inch below the roofing material. On some longer buildings, this may mean using several downspouts, both to handle the amount of water and to accommodate the slope on the fascia board. A common gutter four inches wide and 2.5 inches deep requires one 2 by 2 inch downspout for each 2000 square feet of roof area. (A five inch wide by 3.5 inches deep gutter requires a 2 x 3 inch downspout every 4000 square feet of roof area.)



Hanging Gutters. Assemble gutter sections and downspouts using the correct connectors and hangers as specified by the manufacturer. Most home improvement warehouses carry these do-it-yourself gutters. Normally, you place a downspout for every 1000 square feet of roof. In areas with livestock access or frequent vehicle use, protect the lower five feet of downspouts by inserting them through a six inch diameter steel or PVC pipe. A little extra expense now saves you money in the long term.

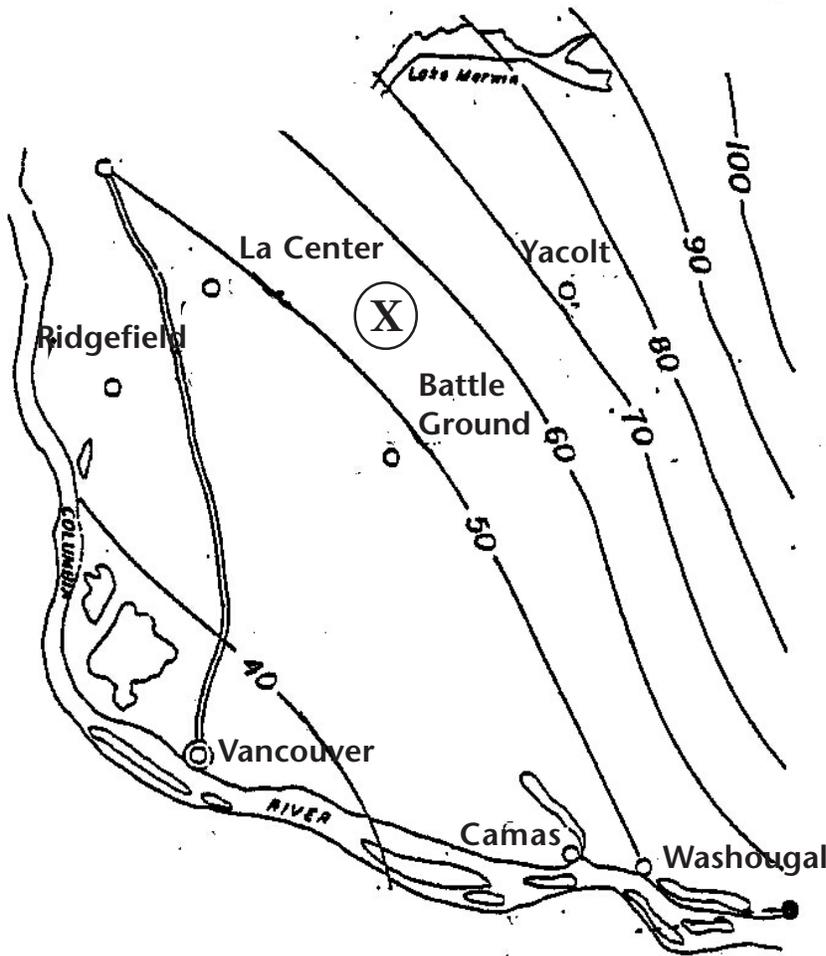
Outlets. To carry the water from the downspouts, one four inch corrugated plastic pipe can handle the rainwater from a 5400 ft² roof area as long as the slope of the outlet pipe is at least .01 feet vertical drop for every foot of horizontal distance (one foot drop for every 100 feet). The outlet pipe should be covered with two feet of backfill to protect it from crushing in areas where vehicles drive over. You should outlet this roof runoff in areas not heavily used by livestock or vehicles. The outlet area should be well vegetated to prevent erosion. It is best if you can locate this where the water can infiltrate back into the ground. You should not outlet this on your property boundary or directly into streams and lakes since this only transfers your problem to someone else.



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How Much Rain Do You Receive?

It's simple! Look at the table and estimate rainfall for where you live and figure out how many square foot of roof surface you have. Take these and plug them into the following formula: Area sq. ft. X inches rain X 0.62 = Gallons of runoff per year.



For example, a 60 foot by 35 foot roof equals 2100 sq. ft. (60 x 35). At "X" on the map, you get about 55 inches of rain, so:

$2100 \times 55 \times 0.62 = 71,610$ gallons per year from that roof.

Average Rainfall Amounts

Vancouver = 37.32"

La Center = 48.85"

Battle Ground = 47.22"

Yacolt = 75.76"

Washougal = 50"

Ridgefield = 44"

Adapted by Douglas Stienbarger, WSU Extension Clark County, from Snohomish CD "Easy BMP" series. (2004)

Living on the Land is sponsored in partnership by WSU Extension Clark County, the Clark County Clean Water Program, and the Clark Conservation District

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