



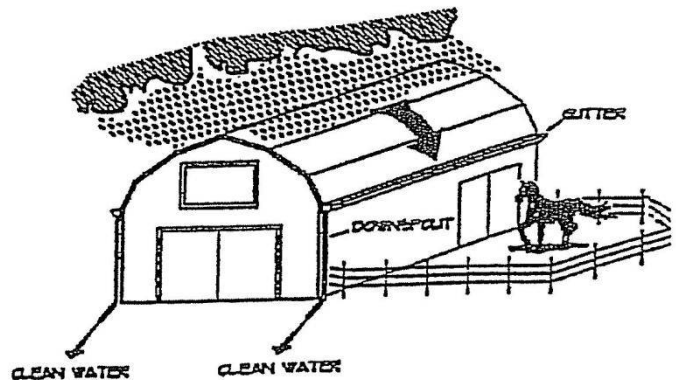
Roof Water Diversion

One of the most common problems on farms with animals in Western Washington is mud. Mud causes damp stalls, hoof disease, wet wasted hay, feed and bedding, and creates unusable winter exercise areas because of slippery surfaces. The first consideration in dealing with mud is; how are you handling the clean roof water coming off your outbuildings? Is it entering your livestock confinement area and contributing to wet conditions?

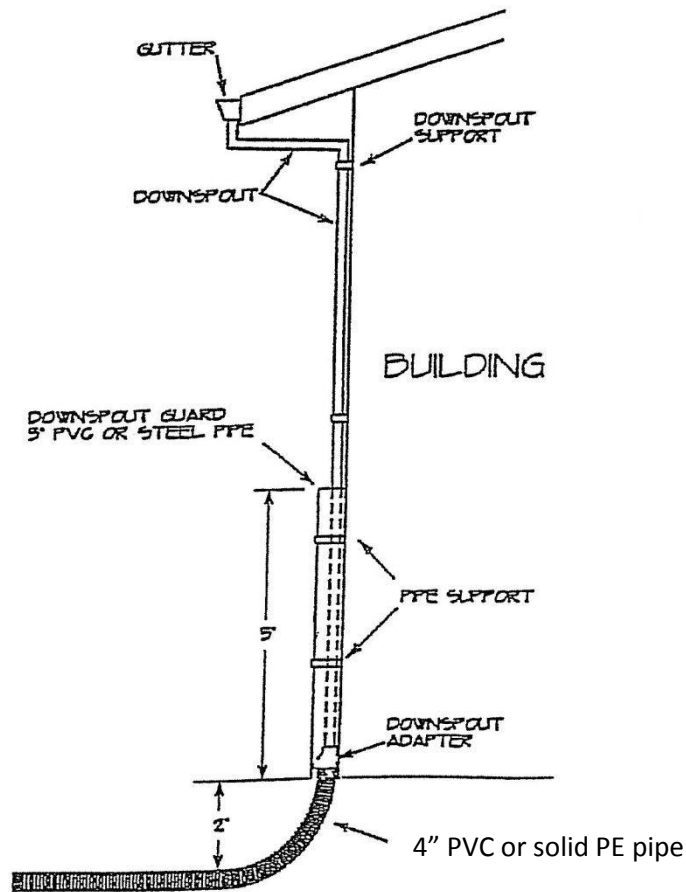
A one-inch rainstorm sheds 558 gallons of water off of a 900 square foot barn. If this clean rain water runs through livestock lots, it becomes contaminated with manure and sediment which then trickles down to the nearest ditch or stream. Besides making muddy conditions for you and your animals, it also becomes a water quality problem for people downstream, fish and wildlife, and eventually, Puget Sound. By installing gutters, downspouts, and underground outlets that direct roof water away from your animals, you prevent mud and keep 'clean water clean'.

INSTALLATION: After removing old gutter (if applicable) check the condition of rafter ends and/or fascia board and replace if necessary.

- ❖ **MARK GUTTER SLOPE** – Gutter should slope down 1/16-inch every foot. Mark slope on mounting surface $\frac{1}{8}$ inch below shingles using a string or chalk line.
- ❖ **GUTTER ASSEMBLY** – Assemble gutter sections using appropriate connectors according to manufacturers' recommendations. Gutter parts and detailed installation instructions can be purchased at most home improvement warehouses.
- ❖ **HANG GUTTERS** – Attach gutter to fascia board or rafter ends along slope line every 3 feet on center with appropriate mounting devices.
- ❖ **ATTACH DOWNSPOUT ELBOWS** – Fit one elbow tightly over gutter outlet. Attach second elbow to the wall with a length of downspout that will allow second elbow to fit flush against building wall. See illustration.



- ❖ **ATTACH THE DOWNSPOUT** – (Figure one downspout for at least a minimum of every 50 feet of gutter length.) Fit upper downspout end onto second elbow and fasten against the wall using two downspout bands. Add additional downspout material as needed to reach 6 inches above the ground surface. Downspouts should be protected from damage by inserting them through a five foot section of 6-inch diameter steel or PVC pipe prior to placement.
- ❖ **ATTACH UNDERGROUND OUTLETS** – Fit 4 to 6-inch solid PVC or PE pipe around downspout end just above the ground surface. Connect pipe sections and bury in a trench two feet underground, routing them to an appropriate outlet area. Slope outlet at a minimum of 6 inch drop for every 100 feet of pipe for adequate drainage. A rodent guard on outlet will stop burrowing animals.



CROSS-SECTION DETAIL

SITE SPECIFIC RECOMMENDATIONS:
