

## Managing Cow/Calf Operations to Protect Water Quality

**M**anure is a valuable nutrient source to a farm. However, manure contains nutrients, organic matter and micro-organisms that can contaminate water supplies.

### Wintering and feeding sites

Wintering and feeding areas beside creeks, rivers, lakes or dugouts can contribute contaminated runoff to these water bodies during spring snowmelt or heavy rainfalls. Cattle with unrestricted access to these water bodies can contaminate them with manure and sediment from damaged stream banks.

Cattle, for example, exert about 10 times the weight or pressure per unit area as a D-9 Cat with a blade. Consequently, cattle can do much damage to streams and stream banks.

Sediment from erosion impairs water quality and degrades habitat for fish and other aquatic life. Even small cow-calf operations with fewer than 50 cow-calf pairs can affect water quality.

Nutrients from manure can cause unwanted algal growth in dugouts, lakes and rivers. Algal blooms in irrigation canals and dugouts plug water delivery systems and often require costly chemical control. When algae die and decompose, dissolved oxygen in the water is depleted, which often causes fish kills. Decomposing algae can also generate offensive taste and odour problems and increase water treatment costs. Toxins from blue-green algae can be fatal to livestock.

Water supplies contaminated with manure contain fecal coliform bacteria and may have other disease-causing micro-organisms such as *Cryptosporidium* and *Giardia*.

These micro-organisms are a threat to public health and can reduce weight gains and productivity in livestock.

One cow can add up to 500,000 fecal bacteria to a stream each day if allowed direct access to the stream. Water with 200 fecal bacterial per 100 mL is unhealthy for swimming. Drinking water must have no fecal bacteria.

Drinking water from dugouts or other surface water supplies must be treated before consumption. Drinking water from these sources should be tested every year.

*Runoff from manure is a potential threat to public health.*

### Protect water resources

Good water quality is needed for healthy drinking water for people and livestock, a large, diverse fish population and a healthy, attractive recreational environment.

- **Locate wintering and feeding areas away from water sources.** There is a greater risk of livestock waste affecting surface water if cattle are close to streams, rivers and lakes. Provide shelter for cattle away from water sources.
- **Set up alternative water supply.** Cattle often prefer drinking water from troughs rather than wading into water, even if the water source is not fenced off. Alternative water supplies protect water sources by eliminating deposition of animal wastes in the water and minimizing shoreline disturbance. Solar, wind, battery, gravity or animal-powered (e.g. nose pump) pumping systems are available.

- **Use rotational grazing.** Rotating cattle in fenced paddocks allows better forage management and controls cattle access to streams. Time-controlled grazing reduces nutrient and sediment runoff by reducing the amount of manure in any one area and limiting the time spent by cattle near fragile areas like stream banks.
- **Fence cattle away from streams and dugouts.** Fencing water sources improves herd health by reducing livestock contact with waterborne micro-organisms. Fencing also stabilizes stream banks, prolongs dugout use, reduces soil erosion and protects vegetated areas along water bodies. Cattle that must wade into water bodies to drink have an increased risk of foot rot and leg injuries. They can also have reduced weight gains due to drinking contaminated water.
- **Maintain vegetation along streams, lakes and dugouts.** Areas beside water bodies with vegetation like willows, poplar and grasses are known as riparian areas. Riparian areas help filter sediment and nutrients from runoff and reduce bank erosion.

**Prepared by**

Alberta Agriculture and Rural Development

**More information**

Alberta Ag-Info Centre

Call toll free: 310-FARM (3276)

Website: [www.agriculture.alberta.ca](http://www.agriculture.alberta.ca)