

Providing Water with Limited Access Ramps

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Direct access to surface water in pastures has traditionally been an easy, inexpensive method of providing water to livestock. However, there are concerns about the impacts on water quality in relation to the health, safety and productivity of the livestock, fish habitat, streambank erosion and downstream users.

While fencing livestock out of the water source and providing an alternate watering system is the most effective way to reduce the impacts of livestock on water quality, there are times when this is not possible. In these situations, access ramps can be used to significantly improve water quality and animal health.

Limited Access Ramps

A limited access ramp (Figure 1) is a constructed access point to a body of water that allows direct access watering to a small area, while the rest of the pond, river or stream is fenced out.



Figure 1. A newly prepared limited access ramp.

Site Preparation

The ramp should be constructed in a location that requires the least amount of bank modification, limits the amount of natural damage and has the best access to the water supply. If the ramp is placed in a fast-moving stream, it will need to be anchored or protected with rock, to prevent it from washing away.

Before the addition of any material, the slope should be levelled and cleared of any topsoil and debris. The slope from the top of the ramp to the water should not exceed 6:1 (horizontal:vertical). This allows the animals to move easily on the ramp and reduces the amount of

runoff down the slope. A ramp that is too steep will also deteriorate more quickly.

A shallow depression at the top of the ramp should be dug to divert excess water from the ramp surface down the sides. For shallow-angled ramps, a shallow ditch should be dug on each side of the ramp, to give the ramp shape and to prevent gravel from spreading. The ditch should be approximately 1.5 times the depth of the gravel (i.e. for a gravel thickness of 0.3 m, the keyway should be 0.45 to 0.5 m).

The size of the ramp depends on the number of animals being watered. A minimum width of three meters should be used for a herd size up to 30 head. Beyond 30 head, add 0.3 m width for every 10 animals. The length of the ramp should extend to well below the lowest predicted water level.

Pros:

- ▶ Limits access to one point
- ▶ Simple concept
- ▶ Low cost
- ▶ Low maintenance

Cons:

- ▶ Animals can at times still stand in water
- ▶ Needs careful construction

Materials Needed

Geotextile (which is either woven or nonwoven geotextile fabric) or **geogrid** (a plastic sheet of mesh grid) is often used with gravel, in order to add more stability to a ramp and to prevent mixing with the gravel and soil underneath. These materials are available from various manufacturers.

Geotextile or geogrid often come in three or four metre lengths. If more than one width is needed to cover the ramp, the fabric should be overlapped. This overlap should be at least 0.3 m. In muddy or soft conditions, the overlap can be increased to 0.6 m. Reinforcing bar, bent with a hook on one end, can be used to anchor the material during spreading of the gravel. It is important to ensure that trucks and other equipment are not driven

over the stabilization material until after the gravel has been laid down (Figure 2).

Well-graded crushed gravel should be applied on top of the stabilization material. A good mixture of coarse and fine material will allow better compaction and stability. The maximum size should be 4 cm (1.5"), with less than 10% of the granular material as sand. The amount of gravel needed is determined by the size of the ramp and the thickness needed. The thickness depends on how soft the base is. Generally, a solid base will only need 0.3 m of gravel over geotextile/geogrid. In softer conditions, up to 0.6 m is often needed. The geotextile/geogrid and gravel should extend approximately 2 m beyond any soft spots in all directions.

If the gravel causes a concern for the animal's hooves, the ramp may be capped with sand. By capping the ramp, manure can also be more easily scraped without removing gravel. Concrete ramps require less maintenance than gravel but cattle may lose their footing more easily.



Figure 2. Gravel is added on top of geotextile without driving onto the material.

Fencing

Fencing should be installed within the sides of the ramp in order to prevent animals from stepping over the edge and to prevent gravel from spreading off the ramp. The rest of the bank should be fenced also to limit drinking access from the ramp only.

A fence and/or cribwork can be installed at the end of the ramp to prevent animals from walking off the ramp into the water, to provide a nose-only area or to reduce the amount of gravel lost to the water source. Cribwork can be as simple as placing horizontal planks at the edge of the water and ramp (Figure 3). The fence should be constructed so it can be easily moved depending on the water level. Rail fences or moveable metal gates are often used.



Figure 3. Using cribwork to allow only the nose of the animal into the water source.

Maintenance

Over time, granular material may need to be added to prevent the ramp from degrading. Manure should be removed from the ramp periodically to maintain adequate footing and to prevent manure runoff from entering the water.

Sources:

Livestock Watering Training Module, February 2005. Agriculture and Agri-Food Canada.

The Stockman's Guide to Range Livestock Watering from Surface Water Sources. 1999. Canada-Manitoba Agreement on Agricultural Sustainability, Saskatchewan Agriculture and Food, Prairie Agricultural Machinery Institute.

For more information, contact the Nova Scotia Pasture Improvement Initiative (NSPII) at (902) 896-0277.

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