Emergency Livestock Disposal Sites

Introduction

Death of livestock is a normal occurrence and represents a loss to the livestock operation. Even the best livestock producers will have losses of two or three per cent, but higher rates can occur. Events such as fire, building collapse, suffocation or the outbreak of a major disease can result in a large number of animal deaths. Producers are encouraged to develop a plan to dispose of significant numbers of animal carcasses in the event of a catastrophic loss. The outbreak of a foreign animal disease can result in the death of many animals at the same time. Diseased animals are sometimes depopulated immediately to eradicate the disease. If the disease is readily transmissible, neighbouring animals and animals with previous contact with the infected herd are sometimes depopulated to prevent the disease from spreading. Selecting and executing a method of carcass disposal is a formidable task, so coordination between federal, provincial and municipal governments will be required.

Emergency Preparedness

The Canadian Food Inspection Agency is responsible for directing the disposal of mortalities resulting from a federally reportable disease, and the province and municipality involved may be expected to provide support. If a large number of animals die due to an unlisted infectious disease, fire, flood or other natural disaster, the appropriate municipal authorities and various provincial government departments will direct disposal of the mortalities.

Rapid response is critical in the event of a foreign animal disease. Delays in determining and implementing a suitable containment, destruction and disposal plan may significantly increase the number of carcasses that need to be managed due to increased exposure to the disease agent. If the disease is zoonotic (capable of transfer from animals to people), the public may be at risk as well. Advance planning will facilitate effective animal disposal and identifying sites in advance of an emergency will reduce pressures of limited time during the emergency.

Common Disposal Methods

In an emergency, on-farm disposal is preferred because transportation is not required. Producers are encouraged to consider the environmental suitability of their farm for disposal of livestock in an emergency. However, on-farm disposal may not be an option for some farms due to environmental constraints. Where animals have been moved off the farm of origin an alternate disposal location may be necessary. Ideally, this location would be suitable for burial, incineration and composting.

Common methods of deadstock disposal include rendering, burial, and composting. Landfills are commonly used for carcass disposal in many parts of the world but in Saskatchewan many landfills do not accept carcasses. Contact the nearest landfill to determine if they accept carcass material.

Rendering should not be relied upon for emergency disposal. Rendering capacity is limited and therefore may not be available in event of emergency. Burial, composting, and landfill are therefore the most likely emergency disposal methods. A comparison of disposal options is provided below.

Landfills

Landfills have been used as a means of carcass disposal in several major disease eradication efforts. Landfilling of carcasses represents a means of waste containment rather than elimination, and long-term management of the waste may be required.

According to a United States Department of Agriculture report, several risk assessments conclude that disposal of potentially Transmissible Spongiform Encephalopathy-infected carcasses in an appropriately engineered landfill site represents very little risk to human or animal health.

During an emergency or instance of catastrophic loss, response time is often very limited, and landfills offer the advantage of infrastructure for waste disposal that is pre-existing and immediately available. Because landfill sites exist prior to times of emergency, set-up time would, in theory, be minimal. However, time is required to establish availability of the site, and this is best done in advance of the emergency. Landfills are typically owned by a municipality (urban or rural) or a private landowner. Also, landfills are governed by The Municipal Refuse Management Regulations handled by the Ministry of Environment. Therefore, consultation with the landowner, municipality and the ministry is necessary. Disposal in a dedicated area of landfill is an option to be considered. Additionally, when new landfills are proposed, use of the landfill in emergency situations should be considered.

Private Land

Private land could be considered for potential emergency disposal sites. A memorandum of understanding becomes important since the potential availability of private land is considered less secure than public land. Also, existing intensive livestock operations are very often suitable disposal sites, and the operator should consider if they are willing to accept livestock from neighbouring farms.

Access to Crown land in the event of an emergency is more certain than access to private land. Vacant Crown land is preferred but limited in land area and not evenly distributed throughout the province, so other options should also be considered.

Proposed Criteria

The disposal of mortalities must not adversely impact the environment or public health. The site should have natural features that provide environmental protection for a variety of disposal methods. The Site Characterization Manual for the Development of Intensive Livestock Operations and Earthen Manure Storage (2005) provides groundwater protection criteria that apply to disposal by burial. Managing Livestock Mortalities (2022) provides additional criteria and considerations for site selection.

Proposed criteria are presented in Table 1. Additional selection criteria must be defined in cooperation with stakeholders, so the site will be available in an emergency.

Site Selection

Characteristics of potential sites will determine their suitability. Soil conditions, proximity to water resources and setback distances need to be considered. Sites should be "pre-screened" for potential suitability using available information. These sites require detailed investigation prior to use.

On-site investigation (including drilling for soil samples) is required to confirm the properties of the pre-screened sites. If site conditions are found to be environmentally secure, and other criteria are favourable, then the site may be considered for emergency use. Ideally, any other local or provincial approvals that may be required would be in place for preselected sites.

Table 1. Proposed Criteria

Criteria	**Test**
Resident	500 m
Well Logs	Indicate geologically secure
Aquifers	> 15 m beneath surface
Oil/Gas wells	none on 1/4 section
Utilities (available)	Yes
Water (available)	Yes
Undergrounds	Identify, avoid and determine separation distance
Air Photo	Use digital photo to identify location of residents and confirm land forms
Groundwater Velocity	< 0.15 m/yr (from Site Characterization - requires on-site testing)
Road	> 100 m
Road all-weather	< 2.5 miles
Railway	> 50 m
Surface Water	> 100 m
Geology	Exclude Alluvial plain, GlacioFluvial, Delta, Meltwater Channel
Cemetery	>100 m
Gravel Pit	> 100m
Reserve	Reserve land is not suitable for mass disposal
Provincial Park	Provincial park land is not suitable for mass disposal
Regional Park	Regional park land is not suitable for mass disposal
Town	>1000 m

Option	Advantage	Disadvantage	Capacity[1]	Comments
Rendering	• Value-added products • Destroys most pathogens	• Transportation required • Supplemental treatment required to deactivate TSE	635 tonnes/week without disrupting normal operation. 3,200 tonnes/week max.	Available volume is limited, as capacity is required for routine processing. SRM disposal may not be available.
On-site burial	• Transportation not required • Environmentally secure in much of Saskatchewan • Rapid	• Geotechnical investigation required to confirm site conditions	1,350 tonnes/ week [2]	Much of Saskatchewan is underlain by till that is effective at containing contaminants
Central burial	• Geotechnical investigation may occur in advance • Provides location for off-farm livestock	• Transportation required	115,000 tonnes/ quarter section[3]	A central burial site identified in advance is valuable in an emergency
Composting	• On or off farm • Publicly acceptable • Destroys most pathogens	• May not deactivate TSE • Careful management required	12,000 tonnes/ quarter section[4]	End-use of compost may be dependent on nature of disease
Landfill burial	• Wide geographic dispersion • Infrastructure exists for rapid disposal and long-term management	• Agreements/ approvals may be required • Transportation required	1,300 tonnes/acre[5]	Saskatchewan Environment and the RM may have approval conditions
Incineration	• Destroys most pathogens • Deactivates TSE with proper operation	• Usually operated by contractors	420 tonnes/week/ air-curtain[6]	Infrastructure is usually required

1. The capacity will vary according to a number of variables. An estimate is presented for comparison.
2. Assume the excavator will move 65 cubic yards/hour and works eight hours/day, and the trench is four m deep.
3. Assume the trenches are four m deep, two m wide, spaced 10 m apart and set back 100 m from property boundaries.
4. Assume the windows are two m tall, spaced six m apart and set back 100 m from property boundaries.
5. Assume the trenches are four m deep and spaced 10 m apart.
6. Assume the incinerator burns 2.5 tons of carcass/hour and is operated 24 hours/day.

If you have any questions, contact the Ministry of Agriculture's Agricultural Operations Unit: 306-787-2150.