Closure of Manure Storage Facilities and Manure Collection Areas

Purpose	Provide guidance on the closure of manure storage facilities and manure collection areas Protect groundwater and surface water from contamination
Relevant Legislation	*Agricultural Operation Practices Act* • Standards and Administration Regulation
Related Worksheet	Agdex 096-90 Manure Storage/Collection Area Closure Worksheet
Technical Guideline Listing	Agdex 096-100 Technical Guideline Listing

1. Introduction

This guideline provides a consistent, risk-based screening approach to closing manure storage facilities and manure collection areas. Confined feeding operators who work with the Natural Resources Conservation Board (NRCB) to plan the closure of their facilities will be able to identify appropriate closure activities based on the type of manure storage and the potential environmental risk at the site. **The *Agricultural Operation Practices Act* (AOPA) requires the removal of manure from a manure storage facility within one year of the storage facility no longer being used, unless otherwise directed by the NRCB.**

Manure storage facilities and manure collection areas need to be constructed and managed properly to protect groundwater and surface water from the potential impacts of manure constituents. When a manure storage facility will no longer be used, proper closure techniques are needed to continue the protection of groundwater and surface water. Table 1 provides those closure requirements.

Closure requirements vary for earthen liquid manure storage and catch basin facilities and are dependent on the potential risk to groundwater quality. These facilities are screened for potential risk by NRCB staff using the environmental risk screening tool (ERST). Information used to complete the ERST includes published maps, databases, site-specific data (for example, geological data from an on-site geotechnical report), and information obtained through an on-site inspection. Site-specific data includes information on the soil lithology, the uppermost groundwater resource, groundwater flow direction, domestic water well construction, groundwater chemistry, and geological data from on-site geotechnical reports.

2. Managing risks to the environment

AOPA provides authority to NRCB staff to assess the risk to the environment at manure collection and storage facilities. The NRCB routinely works with operators to reduce the increased potential for risks to the environment during closure of manure storages.

In some cases, the NRCB may collect soil and water samples to help determine risk to the environment. In situations where extensive contamination is identified, the NRCB may involve Environment and Protected Areas (EPA). EPA will then work with the operator and the NRCB to better understand the nature and extent of the contamination and ensure that any adverse effects (as defined in the *Environmental Protection and Enhancement Act*) are properly managed.

It is important to note that AOPA does not directly deal with soil and groundwater quality issues that may limit future land use at the site of a closed manure storage facility (for example, subdividing or changing the use of agricultural land). An operator who is contemplating a

land use change is responsible for contacting the appropriate authorities to ensure that soil and groundwater quality criteria as well as any surface water flow disturbances or diversions are satisfied for the proposed land use. Appropriate authorities may include the local municipality, which establishes allowable land uses, and EPA, whose mandate includes ensuring compliance with soil and groundwater remediation guidelines for different land uses.

3. Closure Requirements

Closure requirements are based on the perceived level of potential environmental risk to groundwater at the facility. Operators should contact the NRCB to screen the level of risk. The ERST will be used to screen for low, moderate or high potential risk. Required closure actions will correspond with the risk. See Table 1 for closure requirements based on facility type and level of risk.

***Table 1**. Closure requirements based on facility type and level of risk*

Facility Types	Requirements
Earthen liquid manure storages (EMS)	**Required for all risk levels:** • Remove all liquid and solid manure contents in the EMS, including sludge • Seal or remove all inlets and outlets • Record and document all closure activities (see accompanying worksheet) • Retain records documenting the removal, transfer and spreading of all manure ***Additional requirements for moderate or high-risk levels*** **Moderate risk:** • Fill and mound the EMS with soil to prevent surface water ponding **High risk:** • Excavate manure impacted soils from the base and side walls of the EMS to a maximum depth of 0.3 metres • Land apply excavated soil from the EMS at a rate that takes into consideration the clay, nitrogen, and salt content of the material • Fill and mound the structure with soil to prevent surface water ponding
Catch basins	**Required for all risk levels:** • Remove all liquid and solid manure contents in the catch basin, including sludge • Seal or remove all inlets and outlets • Record and document all closure activities (see accompanying worksheet) • Retain records documenting the removal, transfer and spreading of all manure • Control surface water flow without significantly altering the volume, quality or rate of flow in or to natural discharge areas ***Additional requirements for moderate or high-risk levels*** **Moderate risk:** • Fill and mound the structure with soil to prevent surface water ponding **High risk:** • Excavate manure impacted soils from the base and side walls of the catch basin to a maximum depth of 0.3 metres • Land apply excavated soil from the catch basin at a rate that takes into consideration the clay, nitrogen and salt content of the material • Fill and mound the structure with soil to prevent surface water ponding

Facility Types	Requirements
Solid manure storages	• Remove all solid and liquid manure contents • Contour the area around the solid manure storage to prevent surface water ponding • Control surface water flow without significantly altering the volume, quality or rate of flow in or to natural discharge areas • Establish vegetation in the area of the closed storage facility to remove excess nutrients and prevent soil erosion. Some solid manure, in quantities comparable to recommended levels applied to arable lands for agronomic purposes, may be left in place to aid revegetation • Record and document all closure activities (see accompanying worksheet) • Retain records documenting the removal, transfer and spreading of all manure from the manure storage
Concrete and steel manure Storages (solid and liquid manure)	• Remove all liquid and solid manure contents of the manure storage, including sludge • Seal or remove all inlets and outlets • Record and document all closure activities (see accompanying worksheet) • Retain records documenting the removal, transfer and spreading of all manure
Manure storage areas with a synthetic liner	• Remove all liquid and solid manure contents of the manure storage, including sludge • Maintain the liner or remove the liner and mound the structure with soil • Additional remediation work may be required by the NRCB depending on the level of risk and damage to the liner • Record and document all closure activities (see accompanying worksheet) • Retain records documenting the removal, transfer and spreading of all manure

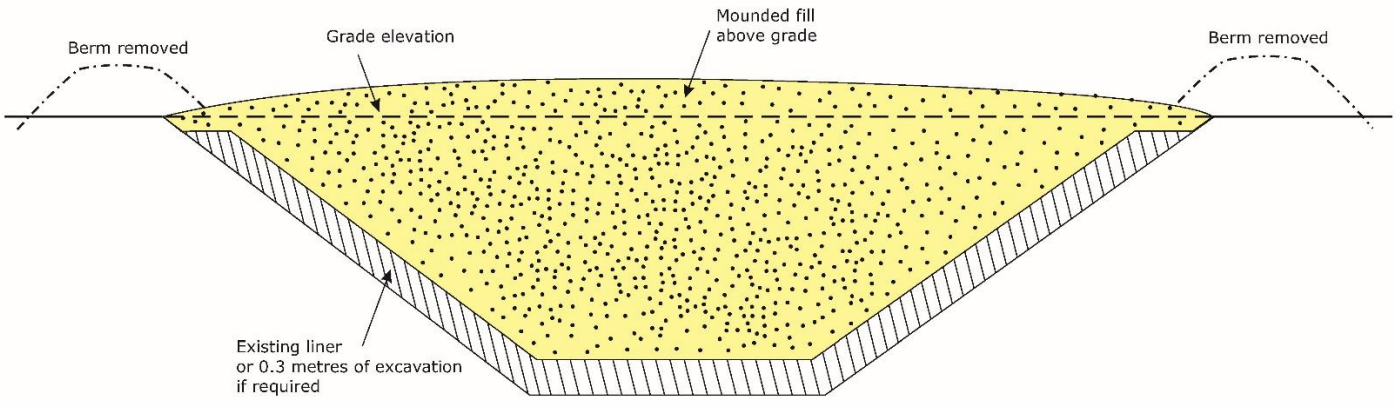

Figure 1. Soil mounding of earthen liquid manure storage facility, catch basin or synthetically lined manure storage

4. Reclamation of groundwater monitoring wells

Groundwater monitoring wells associated with the manure facility that is being closed should be properly reclaimed so that they do not pose a risk to shallow groundwater quality. Information on reclaiming groundwater monitoring wells is provided in Technical Guideline Agdex 096-50. NRCB staff can be contacted if additional information is required.

5. Definitions

Closure – the discontinued use, removal or conversion to a non-AOPA use of a manure storage facility or manure collection area; this means the facility will no longer be used for manure storage or as a manure collection area.

Manure[1] – livestock excreta, associated feed losses, bedding, litter, soil and wash water, but does not include manure to which the *Fertilizers Act* (Canada) applies.

Manure collection area[1] – the floor of a barn, the under-floor pits of a barn, the floor of a feedlot pen and a catch basin where manure collects but does not include the floor of a livestock corral.

Manure storage facility[1] – a facility for the storage of manure, composting materials and compost and a facility for composting but does not include such a facility at an equestrian stable, an auction market, a race track or exhibition grounds.

[1]*Source: Agricultural Operation Practices Act, RSA 2000, Chapter A-7*

For more information

Contact your nearest NRCB field office or Alberta government staff

Government of Alberta
alberta.ca/manure-management-guidelines-and-legislation

Phone	310-FARM (3276)
Publications	see Technical Guideline Listing on open.alberta.ca
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This guideline was developed by the Technical Advisory Group, a partnership among the Government of Alberta, the Natural Resources Conservation Board (NRCB) and the agriculture industry.