# NATURAL RESOURCES CONSERVATION SERVICE

# CONSERVATION PRACTICE STANDARD

## Waste Facility Closure

(**Number**)

**Code 360**

### DEFINITION

The decommissioning of facilities, and/or the rehabilitation of contaminated soil, in an environmentally safe manner, where agricultural waste has been handled, treated, and/or stored and is no longer used for the intended purpose.

### PURPOSES

This practice may be applied as part of a resource management system to support one or more of the following purposes.

- Protect the quality of surface water and groundwater resources.
- Mitigate air emissions.
- Eliminate a safety hazard for humans and livestock.
- Safeguard the public health.

### CONDITIONS WHERE PRACTICE APPLIES

This practice applies to agricultural waste impoundments that are no longer needed as a part of a waste management system and are to be permanently closed or converted for another use. These facilities include liquid/dry waste storage facilities, confined animal housing, feedlots, livestock yards, or composting facilities.

This practice applies where impoundments that will be converted to fresh water storage meet current NRCS standards.

Where structures that include agricultural waste storage, such as confined animal housing, are to be decommissioned, this practice will apply to the removal of the waste and rehabilitation of soil within the facility.

This practice applies to remediation of soil contaminated by agricultural wastes that have been stored on-site.

This standard does not apply to sites contaminated by materials that require the issuance of a hazardous waste permit, such as fuel or pesticides.

This standard does not address the cleanup or remediation of existing groundwater pollution problems caused by the waste impoundment.

### CRITERIA

**General Criteria Applicable to All Purposes**

The closure will comply with all Federal, State, and local laws, rules, and regulations including national pollutant discharge elimination system (NPDES) requirements.

Existing waste transfer components that convey to waste facilities or provide drainage from the facility area will be removed and replaced with compacted earth material or otherwise rendered unable to convey waste.

Remove manure, agricultural waste, and contaminated soil to the maximum extent practicable. All manure and agricultural waste that could negatively impact water and/or air quality or pose a safety hazard will be removed as deemed practicable. All liquid, slurry, sludge, and solid waste, and soil removed from the facility will be utilized in accordance with Indiana (IN) Field Office Technical Guide (FOTG) Standard (590) Nutrient Management and/or IN FOTG Standard (633) Waste Utilization. The nutrient levels of the sludge will be tested before application.

**Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service State Office, or download it from the Field Office Technical Guide for your State.**

Precautions (fencing and warning signs) will be used where necessary to ensure that the facility is not used for purposes incompatible with the facility modification or, in the case of ponds, until water quality is adequate for swimming and/or livestock watering.

**Erosion and Pollution Control.** All disturbed areas will be re-vegetated or treated with other suitable measures used to control erosion and restore the aesthetic value of the site. Sites not suitable for re-vegetation through normal cropping practices, will be vegetated in accordance with IN FOTG Standard (342) Critical Area Planting. Measures will be taken during construction to minimize site erosion and pollution of downstream water resources.

**Liquid and Slurry Waste Removal.** Liquid and slurry wastes will be agitated and pumped to the maximum extent practical. Water will be added as necessary to facilitate the agitation and pumping. The wastewater will be utilized in accordance with IN FOTG Standard (590) Nutrient Management.

**Sludge Removal.** During sludge removal operations, the integrity of the liner, if one is present, will be maintained. Sludge will be removed to the maximum extent practical and utilized in accordance with IN FOTG Standard (590) Nutrient Management.

**Impoundment Closure.** Three options are associated with the decommissioning of liquid waste impoundments. One of the following will be used.

1. Embankment Impoundments (those with a depth of water at the design water level of three feet or more above natural ground) may be breached so that they no longer impound water. The embankment material can then be graded into the impoundment area, and the area vegetated for another use; or, the embankment may remain if the impoundment area surface has been sufficiently cleaned so that runoff leaving the site would not be considered as contaminated by the wastes.
2. Excavated Impoundments may be backfilled so that these areas may be reclaimed for other uses.
3. Impoundments may be converted to fresh water storage.

Embankment Impoundments. Waste and sludge will be removed from the impoundment before the embankment is breached. Concrete and flexible membrane liners will be removed or rendered unable to impound water and properly disposed of. The slopes and bottom of the breach will be stable for the soil material involved, however the side slopes will be no steeper than three horizontal to one vertical (3:1).

Excavated Impoundments. Concrete and flexible membrane liners will be removed or rendered unable to impound water and properly disposed of. The backfill height will exceed the height to the design finished grade by a minimum of 5 percent to allow for settlement. The top one foot of the backfill will be constructed of the most impervious soil material (highest clay content) readily available and mounded to shed rainfall runoff. Incorporate available topsoil where feasible to aid establishment of vegetation.

Conversion to Fresh Water Storage. The converted impoundment will meet the requirements as set forth in the appropriate NRCS practice standard for the intended purpose. Where the original impoundment was not constructed to meet NRCS standards, the investigation for structural integrity will be in accordance with National Engineering Manual (NEM) 501.23. If the existing liner is to be reused, waste removal will be done in such a manner as to not damage the lining or seal of the waste structure. When it is not practical to remove the sludge from a waste impoundment that is being converted to fresh water storage, the impoundment will not be used for fish production, swimming, or livestock watering until the water quality is adequate for these purposes.

**Fabricated Liquid Waste Facilities.** If fabricated structures are to be demolished, disassembled or otherwise altered, it will be done to such an extent that no water can be impounded. Disassembled materials such as pieces of metal will be temporarily stored in such a manner that they do not pose a hazard to animals or humans until their final disposition.

The only materials at a fabricated liquid storage facility which can be buried are those materials excluded under 329 IAC 10-3-1 of the solid waste rules. Those materials would be uncontaminated rocks, bricks, concrete, or road demolition material. Wood, metal, plastic and shingles will be disposed of at a permitted solid waste facility.

If allowable to be buried on-site, the materials will be covered with soil to a settled depth of at least one foot. The backfill height will exceed the height to the design finished grade by a minimum of 5 percent to allow for settlement, and the backfill will be sufficiently mounded such that runoff will be diverted from the site after the backfill settles.

**Dry Waste Storage or Treatment Facilities.** The soil at dry waste facilities such as confined animal housing, feedlots, livestock yards, or composting facilities with earthen floors must be evaluated to a minimum depth of two (2) feet below the floor level or bottom of liner.

The evaluation will include laboratory analyses of the soil profile for any nutrients for which specific information is needed to determine the required depth of rehabilitation. Soil samples will be taken at multiple locations and depths within the facility. One sample per depth interval per acre of the area being decommissioned with a minimum of 3 samples per depth interval will be taken. Samples taken for each specified sampling depth interval may be consolidated into a single set (e.g., 3 samples taken at the 0 to 6 inch depth interval may be consolidated into a single sample for testing). The samples will be collected, prepared and tested in accordance with IN FOTG Standard (590) Nutrient Management.

The results of the soil analysis will be used to prepare a plan to recover the site for its intended use. The following site appropriate options will be utilized, if needed:

- Adjust pH to restore desired crop growing conditions
- Plant salt tolerant plants to restore the site to desired crop conditions. The harvested vegetation quality should be monitored for N, P, and K removal.
- Select plants and erosion control practices to minimize phosphorus transport from the site and facilitate remediation of excessively high phosphorus levels.

Although in-situ processes are the preferred method for adjusting the soil conditions, removal of a portion of the soil may be necessary. The removed soil will be land applied in accordance with IN FOTG Standard (590) Nutrient Management. Excavated areas will be graded and or backfilled to shed rainfall and prevent ponding of runoff. Where feasible, use available topsoil to aid the establishment of permanent vegetation.

**Safety.** Precautions (fencing and warning signs) will be used to ensure that the pond is not used for swimming and livestock watering until water quality is adequate. Personnel will not enter an enclosed waste impoundment without breathing apparatus and taking other appropriate safety measures.

**CONSIDERATIONS**

Conduct pre-closure soil and water (surface and subsurface) testing to establish base line data surrounding the site at the time of closure. Establishing baseline data can be used in the future to address soil and water issues.

Where the surface is covered by a dense mat of floating vegetation, pumping effort to empty waste impoundments may be reduced by first applying herbicide to the vegetation and then burning the residue. Appropriate permits must be obtained before burning. When burning is conducted, take necessary actions to ensure that smoke is managed to minimize impacts to downwind populations.

Alternative methods of sludge removal may be required where the impoundments contain large amounts of bedding, oyster shells, soil, or other debris.

Minimize the impact of odors associated with land applying dry wastes and with agitation, emptying, and land applying wastewater and sludge from a waste impoundment by conducting these operations at a time when the humidity is low, when winds are calm, and when wind direction is away from populated areas. Adding chemical and biological additives to the waste prior to agitation and emptying can reduce odors. Odor impacts from land application can also be mitigated by using an incorporation application method.

Minimize agitation of the wastes to only the amount needed for pumping to reduce the potential for release of air emissions.

Soil to fill excavated areas should not come from important farmlands (prime, statewide, local, and/or unique).

Waste facility closure may improve utilization and aesthetics of the farmstead.

Breached embankments may detract from the

overall aesthetics of the operation. Embankments should be removed and the site returned to its original grade.

Disassembled fabricated structures may be suitable for assembly at another site. Care should be taken during closure to minimize damage to the pieces of the facility, particularly coatings that prevent corrosion of metal pieces.

Measures should be taken during contractor's activities to minimize site erosion and pollution of downstream water resources. This may include such items as silt fences, hay bale barriers, temporary vegetation, and mulching.

To minimize potential impacts to livestock, such as nitrate poisoning, initiate a testing and monitoring program of nutrient levels in crop products, particularly livestock feeds, harvested from sites of closed animal confinement facilities.

Excavation equipment may be required for sludge removal where the impoundments contain large amounts of sand, soil, or other debris.

If closing a waste impoundment in conjunction with state requirements, contact applicable regulating authority prior to backfilling the site.

**PLANS AND SPECIFICATIONS**

Plans and specifications for the decommissioning of abandoned waste facilities and the rehabilitation of contaminated soil will be in keeping with this standard and will describe the requirements for applying the practice to achieve its intended purpose. At a minimum, include the following:

1. A plan view showing the location and extent of the practice.
2. Pertinent elevations of the closed facility and excavation limits.
3. Number, capacity, and quality of facility(ies) and estimate of soil volume to be moved.
4. Location of known utilities.
5. Requirements for salvage and disposal of structural materials.
6. Vegetative requirements.
7. Utilization Plan for animal wastes and soil.
8. Odor management or mitigation requirement.
9. Safety plan requirements. Note: Per Occupational Safety and Health Administration (OSHA) confined space entry protocol, personnel will not enter confined space of an enclosed waste facility without breathing apparatus or taking other appropriate measures.

**OPERATION AND MAINTENANCE**

The proper decommissioning and rehabilitation of a waste facility should require little or no operation and maintenance. However, if it is converted to another use, such as a fresh water facility, operation and maintenance will be in accordance with the needs as set forth in the appropriate NRCS conservation practice standard for the intended purpose.

**REFERENCES**

Rice, J.M., D.F. Caldwell, and F.J. Humenik. Ed. 2006. Closure of Earthen Manure Structures in Animal Agriculture and the Environment: National Center for Manure and Animal Waste Management White Papers, pp. 263-282. ASABE. Pub. Number 913C0306.

Closure of Earthen Manure Storages, Purdue University, Cooperative Extension Service, West Lafayette, IN