

WASTE FACILITY CLOSURE OF WASTE IMPOUNDMENTS

(No.)
Code 360

Natural Resources Conservation Service
Conservation Practice Standard

I. 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.

The closure of waste impoundments (treatment lagoons and liquid storage facilities), that are no longer used for their intended purpose, in an environmentally safe manner.

II. Purpose

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

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

III. Conditions Where Practice Applies

This practice applies to agricultural waste storage impoundments and structures/facilities that are no longer needed as a part of a waste management system and are to be permanently closed or converted for another use.

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

This practice applies to removal of soil contaminated by agricultural wastes that have been stored at the animal production area¹.

This practice does not apply to sites contaminated by materials that are considered hazardous wastes or are

subject to specific clean-up criteria in state or federal laws, such as fuel or pesticides.

Where these impoundments and structures are to be converted to fresh water storage and the original facility was not constructed to NRCS standards, this practice will only apply where an investigation and evaluation shows structural integrity.

IV. Federal, Tribal, State, and Local Laws

The closure of waste impoundments or structures/facilities shall comply with all federal, tribal, state, and local laws, rules or regulations. The operator is responsible for securing required permits. This standard does not contain the text of the federal, tribal, state, or local laws governing closure of waste impoundments or structures/facilities, including national pollutant discharge elimination system (NPDES) requirements.

V. Criteria

A. General Criteria

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

Remove manure and agricultural waste from the storage facility and waste transfer system. All manure and agricultural waste that could negatively impact water and/or air quality or pose a safety hazard shall be removed. All liquid, slurry, sludge, and solid waste, and soil removed from the facility shall be utilized in accordance with Wisconsin NRCS Field Office Technical Guide, Section IV (WI FOTG), Conservation Practice Standard 590, Nutrient Management. In lieu of field application, removed soil may also be thinly spread as topsoil at the closure location and vegetated.

Conservation Practice Standards are reviewed periodically and updated if needed. To obtain the current version of this standard, NRCS, WI download it from the electronic Field Office Technical Guide, or contact the NRCS State Office or the Wisconsin Land and Water 3/13 Conservation Association office at (608) 441-2677.

¹Words in the standard that are shown in italics are described in IX. Definitions. The words are italicized the first time they are used in the text. Conservation Practice Standards are reviewed periodically and updated if needed. To obtain the current version of this NRCS, WI standard, contact your local NRCS office or the Standards Oversight Council (SOC) coordinator at (608) 833-1833. 11/06

Brick, building stone, concrete, reinforced concrete, broken pavement, and unpainted or untreated wood may be used in the fill pursuant to Chapter NR 500.08; however, they shall be covered with 3 feet of clean mineral fill. The top one foot of the backfill shall be constructed of the most impermeable material. After backfilling, the site shall also be covered with salvaged topsoil. Fill may include solid waste materials exempt for use pursuant to Wisconsin Administrative Code, Section NR 500.08, including used brick, building stone, concrete, reinforced concrete, broken pavement, and unpainted and untreated wood. If these materials are used, they shall be covered with at least 3 feet of clean mineral soil, with the most impermeable cover soil placed in the top one foot. If the area will have a soil surface, it shall also be covered with at least 3 inches of topsoil and be vegetated.

A minimum allowance of 5 percent of the fill height shall be provided for settlement. Finished grades shall provide a minimum 2 percent positive drainage from the closed facility and/or materials buried on site.

Precautions (fencing and warning signs) shall be used where necessary to ensure that the facility is not used for purposes incompatible with the facility modification.

Entry into an enclosed waste storage or waste transfer component shall not be allowed unless procedures published in ASABE Standard 470, Manure Storage Safety, are followed.

Erosion and Pollution Control. All disturbed areas shall 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, shall be vegetated in accordance with WI FOTG Standard 342, Critical Area Planting.

Measures shall be taken during construction 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.

Liquid and Slurry Waste Removal. Liquid and slurry wastes shall be agitated and pumped out to the maximum extent possible. Water shall be added as necessary to facilitate the agitation and pumping.

Sludge (Accumulated Solids) Removal.

During sludge removal operations, the integrity of the liner, if one is present, shall be maintained to the extent possible to minimize the volume of contaminated soil removal.

Liner Removal.

1. Flexible membrane liners shall be:

- Removed and properly disposed of, or
- Cleaned and rendered unable to impound water (punctured).

Removed flexible membrane liners may be buried within the closure with a minimum cover of 3 feet of mineral soil.

2. Concrete liners shall be:

- Removed and properly disposed of, or
- Cleaned and rendered unable to impound water (punctured), or
- Cleaned and remain in place if the site grade allows rainfall to drain off the concrete surface.

Removed concrete liners may be buried within the closure with a minimum cover of 3 feet of mineral soil.

Foundry sand previously placed under NR 538, Beneficial Use of Industrial Byproducts, will require site-specific Wisconsin Department of Natural Resources (WDNR) approval of the closure plan.

3. Constructed clay liners shall be:

- Completely removed, or
- Rendered unable to impound water (partially excavated), or
- Remain in place if the site grade allows rainfall to drain off the surface.

Contaminated Soil Removal. Earthen waste storage facilities shall have a minimum of 6 inches of soil removed from the bottom and sides of the entire facility.

Flexible membrane, concrete, or soil liners shall be systematically investigated for leaks and contaminated soils (soil mixed with waste) beneath them. When contaminated soils are found, the liner must be removed to the extent necessary and contaminated soil removed.

The extent (area and depth) of contaminated soil to be removed shall be determined by color, odor, or consistency of the soil indicating permeation or saturation with waste. A minimum depth of 6 inches of soil shall be removed.

B. Additional Criteria Applicable to Impoundment Closure or Conversion

1. Embankment Impoundments shall be breached so that they no longer impound waste. Portions of the embankment may remain in place. The slopes and bottom of the breach shall be stable for the soil material involved, however the side slopes shall be no steeper than three horizontal to one vertical (3:1).

The embankment material can be graded into the impoundment area; compacted in accordance with Wisconsin Construction Specification 3, Earthfill; and the area vegetated for another use.

2. Excavated Impoundments shall be backfilled and compacted in accordance with Wisconsin Construction Specification 3, Earthfill, so that these areas may be reclaimed for other uses.

3. Impoundments converted to fresh water storage.

The impoundment shall be closed in accordance with V.A. and converted to a use that meets 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 shall be in accordance with National Engineering Manual (NEM) 501.23. When it is not possible to remove all the sludge and contaminated soils from a waste impoundment that is being converted to fresh water storage, the impoundment shall not be used for fish production, swimming, or livestock watering until the water quality is adequate for these purposes.

C. Additional Criteria Applicable to Fabricated Liquid Waste Facilities

If fabricated structures are to be demolished, disassembled or otherwise altered, it shall be done to such an extent that no water can be

impounded. Disassembled materials such as pieces of metal shall be temporarily stored in such a manner that they do not pose a hazard to animals or humans until their final disposition.

Demolished materials shall be buried on-site within the facility or moved off-site to locations designated for such use by state or local officials. If buried on-site, the materials are to be covered with soil to a settled depth of at least 3 feet.

Under-building reception structures, channels, or storage structures may be filled with clean mineral soil, sand, or controlled low strength materials (flowable fill) after complete removal of manure. The fill shall be surfaced with concrete, gravel, or other material appropriate for the intended use following closure.

Waste impoundment or structure closure will require a site specific design and inspection during closure. Additional procedures may be required for remediation. A local permit may be required for the closure operation. The minimum procedure for closure shall include:

1. Removal and proper disposal of accumulated wastes in the facility in accordance with NRCS, Field Office Technical Guide (FOTG), Section IV, Standard 590, Nutrient Management.
2. Soil that is mixed with waste shall be removed and uniformly spread on cropland.
3. An additional 6 inches to 24 inches of soil shall be removed from the sides and bottom of the facility. The amount of soil to be removed shall be determined by the color and consistency indicating permeation or saturation with waste. Removed soil shall be uniformly spread on cropland.
4. Concrete or synthetic liners may be buried in the existing facility if the following requirements are met:
 - a. The liner is broken up or holes are made to allow movement of water through the profile after the facility is closed. A minimum of one outlet per 50 square feet of liner is required.
 - b. Soil borings are made below the liner to check for soil mixed with waste. If soil mixed with waste is present, the liner

~~must be pulled back to allow for the removal of the soil as stated in 3 above.~~

~~The liner material may then be buried in the closed facility. If the liner is removed from the closed site, it must be properly disposed of according to Wisconsin Department of Natural Resources (WDNR) regulations.~~

- ~~5.—The transfer system shall be permanently plugged or removed and replaced with compacted earth material.~~
- ~~6.—Waste storage structures shall be demolished or disassembled or otherwise altered to such an extent that no water can be impounded.~~

~~Disassembled or demolished materials may be stored or disposed of offsite in such a manner that they do not pose a hazard to animals or humans.~~

~~Materials buried onsite, outside the footprint of the structure, are to be covered with one foot of soil, and the backfill sufficiently mounded such that runoff will be diverted around the site after the backfill settles. After backfilling, the site shall also be covered with salvaged topsoil.~~

- ~~7.—Concrete floors for above ground facilities may be left in place if water is not impounded on the floor surface and the conditions listed in paragraph V.A.4.b. are satisfied.~~
- ~~8.—Below ground impoundments shall be filled with clean mineral soil meeting the compaction requirements contained in Wisconsin Construction Specification 3, Earthfill, and shaped to insure surface drainage away from the site. A minimum of 5 percent settlement shall be included.~~

~~Brick, building stone, concrete, reinforced concrete, broken pavement, and unpainted or untreated wood may be used in the fill pursuant to Chapter NR 500.08 (Wisconsin Administrative Code); however, they shall be covered with 3 feet of clean mineral fill. The top one foot of the backfill shall be constructed of the most impermeable material. After backfilling, the site shall also be covered with salvaged topsoil. B.~~

~~Conversion. The waste storage impoundment may be converted to other uses if applicable groundwater standards are~~

~~met. The converted impoundment shall meet the requirements as set forth in the applicable NRCS, FOTG, Section IV, practice standard for the intended purpose.~~

~~C.—Safety.~~

- ~~1.—Precautions (fencing and warning signs) shall be used to ensure that a facility converted to fresh water storage is not used for incompatible purposes such as swimming and livestock watering until water quality is adequate for these purposes.~~
- ~~2.—Personnel shall not enter an enclosed waste impoundment. If personnel must enter an enclosed waste impoundment, Confined Space Entry procedures published by the US Occupational Safety and Health Administration must be followed.~~

~~D.—Protection.~~

- ~~1.—All disturbed areas not returned to crop production shall be seeded and mulched in accordance with NRCS, FOTG, Section IV, Standard 342, Critical Area Planting, or other suitable measures used to control erosion and restore the aesthetic value of the site.~~
- ~~2.—Measures shall be taken during construction 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.~~

VI. Considerations

Considerations include additional design recommendations that are not required criteria, but may be used to enhance or avoid problems with the design and function of this practice.

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

~~Additional recommendations relating to design which may enhance the use of or avoid problems with this practice, but are not required to ensure its basic conservation function, are as follows.~~

~~4C.~~ Minimize the impact of odors associated with ~~emptying and land-~~ applying dry wastes and with agitation, emptying, and land applying wastewater and sludge from a waste impoundment by conducting these operations using an incorporation application method 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.

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

~~2E.~~ Soil to fill excavated ~~ponds-~~areas should not come from important farmlands (prime, statewide, local, and/or unique).

~~F.~~ If large-size material or wood is used as fill, consideration shall be given to filling methods and additional thickness of clean mineral soil cover to prevent and accommodate excess settling. It may be necessary to limit the quantity of wood, because it degrades.

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

~~3H.~~ Breached embankments may detract from the overall aesthetics of the operation. Embankments should be removed and the site returned to its original grade.

~~I.~~ 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.

~~J.~~ 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.

~~K.~~ 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.

~~4.~~ Materials should be recycled when possible.

VII. Plans and Specifications

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

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

~~Plans and specifications shall be prepared in accordance with the criteria of this standard and shall describe the requirements for applying the practice to achieve its intended use. A construction plan and inspection plan are required.~~

VIII. Operation and Maintenance

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

IX. Definitions

Animal Production Area (III.) – Means any part of the livestock operation that is used for the feeding and housing of livestock. This includes the entire animal confinement and feeding area, and any adjacent manure storage areas, raw materials storage areas, and waste containment areas. This does not include pasture and cropland.

Embankment Impoundments (V.B.1) – those with a depth of waste at the design level that is three feet or more above natural ground.

IX. References

USDA, NRCS National Engineering Handbook (NEH), Part 651, Agricultural Waste Management Field Handbook.

USDA, NRCS Wisconsin Field Office Technical Guide (FOTG), Section IV, Practice Standards and Specifications.

Wisconsin Administrative Code, Department of Natural Resources, Chapter NR 500, General Solid Waste Management Requirements.

Wisconsin Administrative Code, Department of Natural Resources, Chapter NR 538, Beneficial Use of Industrial Byproducts.

American Society of Agricultural and Biological Engineers (ASABE) Standard 470, Manure Storage Safety.

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. ASABE, Pub. Number 913C0306.