Natural Resources Conservation Service

CONSERVATION PRACTICE STANDARD

WASTE FACILITY CLOSURE

CODE 360

(no)

DEFINITION

The decommissioning of a facility where agricultural waste has been treated or stored, and is no longer used for the intended purpose.

PURPOSE

The practice is implemented to—

- 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 an agricultural waste facility or livestock production site that is no longer needed as a part of a waste management system and is to be permanently closed or converted for another use. These facilities include liquid/dry waste storage or treatment facilities, confined animal housing, feedlots, livestock yards, and animal mortality or composting facilities.

This practice applies where impoundments that are to be converted to fresh water storage meet the current NRCS conservation practice standard to which the impoundment is proposed to be converted.

This practice applies to rehabilitation of soil contaminated by agricultural wastes that have been stored or treated onsite.

It does not apply to an agricultural waste facility that will be expanded or rehabiliated. Use NRCS Conservation Practice Standards (CPSs) Waste Storage Facility (Code 313) or Waste Treatment Lagoon (Code 359), respectively, for rehabiliation or expansion of an existing waste storage facility or treatment lagoon.

This practice does not apply to the demolition of components such as confined animal housing, feedbunks, or fencing. Use NRCS CPS Obstruction Removal (Code 500).

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

CRITERIA

General Criteria Applicable to All Purposes

All Federal, State, Tribal and local laws, rules, and regulations, including National Pollutant Discharge Elimination System (NPDES) requirements, apply to the closure of a waste facility.

Remove existing waste transfer components that convey waste materials to a treatment or storage facility and facility components that provide drainage from the waste facility. Replace transfer components with compacted earth material or otherwise render transfer components unable to convey waste.

Remove all agricultural waste and associated material as much as deemed practicable that could negatively affect water or air quality, or pose a safety hazard. Utilize all liquid, slurry, sludge and solid waste, and soil removed from the facility in accordance with NRCS CPS Nutrient Management (Code 590).

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

Erosion and pollution control
Revegetate or treat all disturbed areas with other suitable measures used to control erosion and restore the aesthetic value of the site. Treat areas not suitable for revegetation through normal cropping practices in accordance with NRCS CPS Critical Area Planting (Code 342).

Liquid and slurry waste removal
Agitate and pump all liquid and slurry wastes to the maximum extent practicable. Add water as necessary to facilitate the agitation and pumping. Utilize the wastewater in accordance with NRCS CPS Nutrient Management (Code 590).

Sludge removal
During sludge removal operations, maintain the integrity of the liner, if one is present. Remove sludge to the maximum extent practicable and utilized in accordance with NRCS CPS Nutrient Management (Code 590).

Impoundment closure
Three options are associated with the decommissioning of liquid waste impoundments. Use one of the following options.

Breach embankment impoundments
Remove waste and sludge from the impoundment before breaching the embankment. Breach embankment impoundments (those with a depth of water at the design water level of 3 feet or more above natural ground) so that they no longer impound water. Grade the embankment material into the impoundment area, and vegetate the area for another use or retain the embankment if the impoundment area surface has been sufficiently cleaned so that runoff leaving the site would not be considered as contaminated by the wastes. Remove concrete, pipe appurtenances, and flexible membrane liners or render the liner unable to impound water. Properly dispose of removed concrete, pipe, and membrane liner materials. Design stable side slopes and bottom of the breach for the soil material involved. However, three horizontal to one vertical (3:1) is the steepest side slope allowed for a finished breech slope.

Backfill excavated impoundments
Remove concrete and flexible membrane liners. Properly dispose of removed concrete, pipe and membrane liner materials. Render the excavated area unable to impound water. Backfill the excavated area to a design height a minimum of five percent above the finished grade to allow for settlement. Construct the top 1 foot of the backfill using the most impervious soil material readily available and mound the fill to shed precipitation runoff without causing erosion. Incorporate available topsoil where feasible to aid the establishment of vegetation.

Conversion to fresh water storage
Convert the impoundment to meet the requirements as set forth in the appropriate NRCS CPS for the intended water storage purpose. Use the National Engineering Manual (NEM), Section 501.23 for the investigation of structural integrity if the original impoundment was not constructed according to NRCS standards. When a waste impoundment is converted to fresh water storage, the impoundment must not

be used for fish production, swimming, or livestock watering until the water quality is adequate for these purposes.

Fabricated liquid waste facilities
Demolish, disassemble, or otherwise alter fabricated structures so water is not impounded. Temporarily store disassembled materials such as pieces of metal, concrete, etc., in such a manner that they do not pose a hazard to animals or humans.

Bury demolished materials onsite or move material offsite to locations designated by State or local officials. If buried onsite, cover the materials with soil to a settled depth of at least 2 feet. Backfill finished grade must exceed the finished design height by a minimum of five percent to allow for settlement. Mound the backfill sufficiently to divert runoff from the site after the backfill settles.

Dry waste storage or treatment facilities
Remove walls and other structural members or otherwise render the site unsuitable for stacking or treating waste.

Determine the depth of soil remediation by evaluating the soil at dry waste facilities such as confined animal housing, feedlots, livestock yards, or composting facilities with earthen floors.

Include laboratory analyses of the soil profile in the evaluation for any nutrients needed to determine the required depth of rehabilitation. Take soil samples at multiple locations and depths within the facility. Take one sample per depth interval per acre, of the area being decommissioned with a minimum of three samples per depth interval. Samples taken for each specified sampling depth interval may be consolidated into a single set (e.g., three samples taken at the 0-to 6-inch-depth interval may be consolidated into a single sample for testing). Collect, prepare, and test soil samples in accordance with NRCS CPS Nutrient Management (Code 590).

Use the results of the soil analysis to prepare a plan to recover the site for its intended use. Utilize the following site appropriate options, if needed:

- Adjust pH to restore desired crop growing conditions.
- Plant salt-tolerant plants to restore the site to desired crop conditions. Monitor the harvested vegetation for nitrogen, phosphorus, and potassium 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. Land apply the removed soils in accordance with NRCS CPS Nutrient Management (Code 590). Grade or backfill the excavated areas to shed rainfall and prevent ponding of runoff. Where feasible, use available topsoil to aid in the establishment of permanent vegetation.

CONSIDERATIONS

Conduct preclosure soil and water (surface and subsurface) testing to establish baseline 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 a dense mat of floating vegetation covers the surface, reduce pumping effort to empty waste impoundments by first applying herbicide to the vegetation and then burning the residue. Obtain appropriate permits before burning. When conducting burning, 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 or 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 used to fill excavated areas should not come from important farmlands such as prime, statewide, local, or unique farmlands.

A breached embankment may detract from the overall aesthetics of the operation. Remove the embankment and return the site to its original grade.

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

Take measures during closure activities to minimize site erosion and pollution of downstream water resources. This may include such items as silt fences, haybale 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.

Consider revegetating using species or diverse mixes that are native or adapted to the site and have multiple benefits. Native species may be used when appropriate for the site. To benefit pollinators and other wildlife, flowering shrubs and wildflowers with resilient root systems and good soil-holding capacity also should be considered for incorporation as a small percentage of a larger grass-dominated planting. Where appropriate consider a diverse mixture of forbs to support pollinator habitat.

PLANS AND SPECIFICATIONS

Prepare plans and specifications that describe the requirements for applying the practice to achieve its intended use. As a minimum, include—

- A plan view showing the location and extent of the practice.
- Pertinent elevations of the closed facility and excavation limits.
- Number, capacity, and quality of facility and estimate of soil and waste volume to be moved.
- Estimate of demolition quantities (concrete, etc.) to be removed or buried.
- Location of known utilities.
- Requirements for salvage and disposal of structural materials.
- Vegetative requirements.
- Utilization plan for animal wastes and soil. This may include the location and details for temporary storage of sludge or solids until properly removed from the site.
- Odor management or mitigation requirement.
- Safety plan requirements. Note: Per Occupational Safety and Health Administration (OSHA) confined space entry protocol, there will be NO entry of personnel into the confined space of an enclosed waste facility without breathing apparatus or taking other appropriate measures.

OPERATION AND MAINTENANCE

Develop an operation and maintenance plan that is consistent with the purposes of the practice, its intended life, safety requirements, and the criteria for its design.

The proper decommissioning of a waste facility and rehabilitation of any contaminated soil a waste facility requires little or no operation and maintenance.

For the conversion of a waste facility to any other use, such as a fresh water facility, the operation and maintenance will be in accordance with the appropriate NRCS CPS for the intended facility conversion purpose.

REFERENCES

Rice, J.M., D.F. Caldwell, and F.J. Humenik. Ed. 2006. "Closure of Earthen Manure Structures (including Basins, Holding Ponds and Lagoons)" ; National Center for Manure and Animal Waste Management White Papers, pp. 263-282. ASABE. Pub. Number 913C0306.