NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

WASTE UTILIZATION

(Ac.)

CODE 633

DEFINITION

Using agricultural wastes such as manure and wastewater or other organic residues.

PURPOSE

- Protect water quality.
- Protect air quality.
- Provide fertility for crop, forage, fiber production and forest products.
- Improve or maintain soil structure.
- Provide feedstock for livestock.
- Provide a source of energy.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies where agricultural wastes including animal manure and contaminated water from livestock and poultry operations; solids and wastewater from municipal treatment plants; and agricultural processing residues are generated and/or utilized.

CRITERIA

General Criteria Applicable to All Purposes

All federal, state and local laws, rules and regulations governing waste management, pollution abatement, health and safety shall be strictly adhered to. The owner or operator shall be responsible for securing all required permits or approvals related to waste utilization, and for operating and maintaining any components in accordance with applicable laws and regulations.

Use of agricultural wastes shall be based on at least one analysis of the material during the time it is to be used. The waste and wastewater shall be sampled and analyzed at least once each year. As a minimum, the waste analysis should identify total nitrogen, total phosphorus, total potassium, and percent solids or percent moisture, as appropriate for effluent or solids. Where the metal content of municipal wastewater, sludge, septage and other agricultural waste is of a concern, the analysis shall also include determining the concentration of metals in the material.

When agricultural wastes are land applied, application rates shall be consistent with the requirements of the NRCS conservation practice standard for nutrient management (590). A

Phosphorus Index will be completed on each field where application of waste is planned, see current Texas NRCS Agronomy Technical Note 15, “Phosphorus Assessment Tool for Texas”, for additional information.

Where agricultural wastes are to be spread on land not owned or controlled by the producer, the waste management plan, as a minimum, shall document the amount of waste to be transferred and who will be responsible for the environmentally acceptable use of the waste.

Records of the use of wastes shall be kept a minimum of five years as discussed in OPERATION AND MAINTENANCE, below.

Additional Criteria to Protect Water Quality

All agricultural waste shall be utilized in a manner that minimizes the opportunity for contamination of surface and ground water supplies.

A minimum 100 ft. vegetated buffer will be established and maintained between the application area and all surface water bodies, sink holes and watercourses as designated on Soil Survey sheets, or USGS topographic maps.

A minimum application distance (setback) from private or public drinking water supply wells will be 150 ft. and 500 ft. respectively. A minimum application distance for water wells used exclusively for agricultural irrigation will be 100 ft. An exception to the full well setback zone for a private drinking water well or a water well used exclusively for agricultural irrigation may be approved if a licensed Texas professional engineer or licensed Texas professional geoscientist provides accurate documentation showing that additional wellhead protective measures will be or have been implemented that will prevent pollutants from entering the well and contaminating groundwater. Additional protective measures may include a sanitary seal, annular seal, a steel sleeve, or surface slab.

Wastes will not be applied to slopes steeper than 8%with a runoff curve >80 or steeper than 16% slope with a runoff curve 70 or greater, unless applied as a component of an erosion control plan, i.e., Critical Area Planting (342), reclamation work, etc.

If land application of composted or treated animal mortality residues is planned, a description of planned routine and catastrophic mortality management activities will be included in the Waste Utilization Plan.

Agricultural waste shall not be land-applied on soils that are frequently flooded or ponded, as defined by the National Cooperative Soil Survey, during the period when flooding is expected.

When liquid wastes are applied, the application rate shall not exceed the infiltration rate of the soil, and the amount of waste applied shall not exceed the moisture holding capacity of the upper 24 inches of the soil profile at the time of application. Effluent application rates shall be determined in accordance with “Determining Effluent Application Rates”, and NRCS Program Aid 1619 - “Estimate Soil Moisture by Feel and Appearance”. Wastes shall not be applied to frozen, snow-covered or saturated soil if the potential risk for runoff exists. The basis for the decision to apply waste under these conditions shall be documented in the waste management plan.

A Texas NRCS Nitrogen leaching index will be completed on all fields that have a sandy, loamy sand, or gravelly surface texture. Appropriate measures will be planned to reduce leaching potential on sites with a leaching index greater than 2.

Additional Criteria to Protect Air Quality

On cropland, incorporate surface applications of solid forms of manure or other organic by-products into the soil within 24 hours of application to minimize emissions and to reduce odors. On grazing land or forest land where incorporation is not an option, timing and placement of waste will be managed to reduce the impact of odor on adjacent land owners

When waste is being injected into the subsurface, it shall be applied at a depth and rate that minimize leaks onto the soil surface and disturbances to the soil surface and plant community.

All materials shall be handled in a manner to minimize the generation of particulate matter, odors and greenhouse gases.

Solid wastes should be handled and applied when weather conditions are calm and there is less potential for blowing and emission of particulates in the atmosphere. The basis for applying manure under these conditions shall be documented in the nutrient management plan (Conservation Practice Standard, Code 590).

Liquid forms of manure should be applied when there is high humidity, little or no wind, a rainfall event predicted in the near future and/or other conditions that will minimize volatilization losses into the atmosphere. The basis for applying manure under these conditions shall be documented in the nutrient management plan.

Additional Criteria for Providing Fertility for Crop, Forage and Fiber Production and Forest Products

Where municipal wastewater and solids are applied to agricultural lands as a nutrient source, the single application or lifetime limits of heavy metals shall not be exceeded.

The concentration of salts shall not exceed the level that will impair seed germination or plant growth, see NRCS, Agricultural Waste Management Field Handbook or Texas Cooperative Extension publications for salt tolerance of crops.

Additional Criteria for Improving or Maintaining Soil Structure

Wastes shall be applied at rates not to exceed the crop nutrient requirements or salt concentrations as stated above.

Residue management, prescribed grazing, and/or forage harvest management practices shall be used, as applicable, for maintenance of soil structure.

Additional Criteria for Providing Feedstock for Livestock

Agricultural wastes to be used for feedstock shall be handled and stored in a manner to minimize contamination and preserve its feed value. A qualified animal nutritionist shall develop rations that utilize wastes. Chicken litter stored for this purpose shall be covered.

Additional Criteria for Providing a Source of Energy

Use of agricultural waste for energy production shall be an integral part of the overall waste management system.

All energy producing components of the system shall be included in the waste management plan and provisions for utilization of residues of energy production identified.

Where the residues of energy production are to be land-applied for crop nutrient use or soil conditioning, the criteria listed above shall apply.

CONSIDERATIONS

The effect of Waste Utilization on the water budget should be considered, particularly where a shallow ground water table is present or in areas prone to runoff. Limit waste application to the volume of liquid that can be stored in the root zone.

Consult conservation practice standards Field Border (386), Filter Strip (393), and Riparian Forrest Buffer (391) for requirements and design criteria to address water quality concerns.

Agricultural wastes contain pathogens and other disease-causing organisms. Wastes should be utilized in a manner that minimizes their disease potential

Priority areas for land application of wastes should be on gentle slopes located as far as possible from waterways. When wastes are applied on more sloping land or land adjacent to waterways, other conservation practices should be installed to reduce the potential for offsite transport of waste.

It is preferable to apply wastes on pastures and hayland soon after cutting or grazing before re-growth has occurred.

Consider the net effect of waste utilization on greenhouse gas emissions and carbon sequestration.

PLANS AND SPECIFICATIONS

Plans and specifications for Waste Utilization must adhere to this standard and describe the requirements for applying the practice to achieve its intended purpose. When applying agricultural waste to the land, all planning and specification requirements in the Nutrient Management (Code 590) standard must be followed. The current TX NRCS 590-633 spreadsheet may be used. When applying non-agricultural wastes, or in agricultural situations where nitrogen and phosphorus are not the primary nutrients of concern, additional resources may be needed to determine land application rates.

The waste management plan must account for the utilization or other disposal of all animal wastes produced, and all waste application areas shall be clearly indicated on a plan map as applicable.

OPERATION AND MAINTENANCE

Records shall be kept for a period of five years or longer, and include when appropriate:

- Quantity of manure and other agricultural waste produced and their nutrient content.
- Soil test results.
- Dates and amounts of waste application where land applied, and the dates and amounts of waste removed from the system due to feeding, energy production or export from the operation.
- Describe climatic conditions during waste application such as: time of day, temperature, humidity, wind speed, wind direction and other factors as necessary.
- Waste application methods.
- Crops grown and yields (both yield goals and measured yield).
- Other tests, such as determining the nutrient content of the harvested product.
- Calibration of application equipment.

The operation and maintenance plan shall include the dates of periodic inspections and maintenance of equipment and facilities used in waste utilization. The plan should include what is to be inspected or maintained, and a general time frame for making necessary repairs.

APPROVAL AND CERTIFICATION

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PRACTICE SPECIFICATIONS APPROVED:

/s/ Lori Ziehr	**12/18/2006**
State Agronomist	**Date**
/s/ Susan Baggett	**12/2006**
State Resource Conservationist	**Date**

CERTIFICATION:

Reviewed and determined adequate without need of revision.

Zone Agronomist	**Date**
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