LAND APPLICATION OF MANURE

A supplement to Manure Management for Environmental Protection

Manure Management Plan
Standard Format

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

This plan was developed by the Clinton County Conservation District and is a condensed version of the Land Application of Manure document written by DEP

REQUIREMENTS FOR MANURE MANAGEMENT PLANS

Every farm in Pennsylvania that land applies manure or agricultural process wastewater, regardless of size, is required to have and implement a written manure management plan. This includes manure application by various types of equipment and/or direct application by animals on pastures and in animal concentration areas. By following the application requirements, the farmer will optimize yields and protect streams, rivers, ponds and groundwater. The attached Manure Management Plan format must be used for the written manure management plan unless the farmer gets approval from the DEP for an alternative plan format. Requests for approval of alternative formats should be directed to the DEP Division of Conservation Districts and Nutrient Management, PO Box 8465, Harrisburg, PA 17105-8465, phone number 717-783-7576. The farmer must also complete and maintain records to demonstrate compliance with the Manure Management Plan.

Once the plan is completed, it must be implemented. The staff from DEP or county conservation district may request to see a copy of this plan when they visit a farm. The farmer should also provide a copy of the summary worksheet to the individual that land applies manure at a farm or any rented land. Failure to follow the plan is a violation of state, and in some cases, federal law.

Manure Management Plans can be prepared by the farmer although the farmer may benefit from obtaining assistance from individuals trained and experienced in developing these plans. Assistance may be available from a variety or sources including certified nutrient management specialists, certified manure brokers and haulers, county conservation districts, NRCS staff, Penn State University staff, and farm organizations.

Farms defined as Concentrated Animal Feeding Operations (CAFOs) and Concentrated Animal Operations (CAOs) are required to develop nutrient management plans that are a more detailed process and must be developed by a Certified Nutrient Management Specialist.

The Manure Management Plan format includes Five sections.

Section 1 General Information. This section provides general information about the farm. This section is always required in a manure management plan.

Section 2 Manure application rates and timing for mechanical application of manure. This section also contains the farm maps and setback areas.

Section 3 Managing Manure Storage in Structures and Stockpiling/Stacking Areas. This section is only necessary if the farm has a manure storage facility or stockpiles or stacks manure.

Section 4 Managing Manure in Pastures. This section is only necessary if the farm has one or more pasture fields.

Section 5 Managing manure in Animal Concentration Areas (ACAs) This section is only necessary if the farm has an Animal Concentration Area.

For assistance with the development of a manure management plan, please contact the Clinton County Conservation District at 570-726-3798. The office is located at 45 Cooperation Lane, Mill Hall, PA 17751.

MANURE MANAGEMENT PLAN

Farm name _____

Name of Owner/Operator _____

Operation Street address _____

City, State and Zip Code _____

Phone number (home/barn)_____

(cell) _____

Email address _____

Name of person preparing the Manure Management Plan (if other than owner/operator)

Preparer name _____

Preparer organization _____

Street address _____

City, State and Zip Code _____

Phone number _____

Email address _____

Date of Development _____

Note: the manure management plan must be evaluated by the owner/operator annually and updated when necessary to keep the plan consistent with farm management practices.

Written records must be maintained as part of the manure management plan to document proper application of nutrients and that all plan requirements are being followed.

Section 1 - General Information
OPERATION INFORMATION

a. Total acres of the operation: Owned _____ Rented _____ Cropland acres _____

b. Farm Description: _____

_____

_____

_____

_____

_____

c. Animals on the operation:

Animal type	Animal #	Days on farm	Approximate amount of manure produced (if known)

d. Crop Rotation used on the Farm:

_____

_____

_____

e. Environmentally Sensitive Areas:

Private or public drinking water wells	Yes ☐	No ☐
Streams, lakes or ponds	Yes ☐	No ☐
Sinkholes	Yes ☐	No ☐
Areas of concentrated flow including swales, ditches, gullies, etc.	Yes ☐	No ☐
For winter application, above ground inlet to agricultural drainage system	Yes ☐	No ☐

f. Winter Application: Is manure applied during the winter? Yes ☐ No ☐
If yes, you must complete the Winter Application Worksheet.

g. Manure Storage Facilities. Is manure stored in a manure storage facility (concrete tank, metal tank, under building structure, earthen, clay, or synthetic lined pond or lagoon, etc.)?
Yes ☐ No ☐

h. Solid Manure Stockpiling or Stacking
Is manure stockpiled or stacked in outdoor areas? Yes ☐ No ☐
If yes, you must meet the requirements in Section 3 - Managing Manure Stockpiling/Stacking Areas.

i. Pasture Areas: Yes ☐ If yes list acres: Owned _____ Rented _____ No ☐

j. Animal Concentration Areas (ACAs): Yes ☐ If yes: Owned ☐ Rented ☐ No ☐
All farms containing ACAs must complete the ACA Worksheet.

Section 2. Mechanical Manure Application Rates and Timing

This portion of the plan identifies fields containing environmentally sensitive areas, plan requirements for winter application and the application rates and timing for each crop group. It also identifies fields containing environmentally sensitive areas, and includes plan requirements for winter application. The plan must include manure and agricultural process wastewater from all sources including both manure generated on the farm and manure imported to the farm.

The information developed under this section is placed on the Manure Management Plan Summary. You need to follow your completed summary when you apply manure to be sure that you meet your Manure Management Plan requirements.

Application Setbacks

Farmers may not mechanically apply manure within the following setback areas, regardless of the slope of the land or the ground cover:

1. Within 100 feet of the top of the bank of a stream which generally flows during the time of year when manure is being applied and within 100 feet of a lake or a pond. In other words, for a stream that only flows in April and May, the setback is only applicable to manure applications during that time of the year. In addition, a stream would not include a culvert outlet from a roadside swale that drains stormwater into a field where the stormwater infiltrates into the ground.

    * A farmer can reduce this setback to 50 feet where a soil test done within the last 3 years shows phosphorus levels (Mehlich 3-P levels) of less than 200 parts per million (ppm) and the farmer uses no-till practices and if residue is removed, plants a cover crop on the field .

    * The setback can be further reduced to 35 feet where the farmer establishes or maintains a permanent vegetated buffer along the stream.

    The 100 foot stream, lake, and pond setback cannot be reduced by use of the practices listed above for manure applied during the winter period. Winter applied manure requires a 100 foot setback from streams, lakes and ponds, regardless of conservation practices used within that 100 foot distance.

2. Within 100 feet of an existing open sinkhole.
3. Within 100 feet of an active private drinking water source such as a well or a spring.
4. Within, at a minimum, 100 feet of an active public drinking water source. In some cases state and federal laws may establish greater distances.
5. Within the channel of a non-vegetated concentrated water flow area such as a swale, gully, or a ditch. For example, this would include a rock lined swale but would not include a grassed waterway.
6. For winter application, a setback of 100 feet from an above ground inlet to an agricultural drainage system (such as inlet pipes to piped outlet terraces) where surface water flow is toward the above ground inlet.

Field Identification	Environmentally Sensitive Area (stream, lake, pond, sinkhole, drinking water source, concentrated flow area)	Setback or restricted distance (See prior page)

Refer to the farm map to view the setback areas.

Equipment Information

Manure spreading equipment used on the farm:

_____

_____

_____

Typical application rates used on the farm:

_____

_____

_____

Winter Application

For purposes of this portion of the Manure Management Plan, winter includes any one of the following:

1. December 15 through February 28; **or**
2. Anytime the ground is frozen at least 4 inches; **or**
3. Anytime that the ground is snow covered.

Winter application can lead to significant environmental problems if manure is not prevented from getting into streams, lakes and ponds. Winter application is discouraged. DEP encourages farmers to seek other management solutions such as solid manure stacking, and liquid manure storage. Assistance may be available through NRCS or the county conservation district. Farmers that apply manure in the winter will need to meet the following criteria:

1. The maximum application rate **for the winter season** is 5,000 gallons per acre of liquid manure or 20 tons per acre of dry non-poultry manure per acre and 3 tons of dry poultry manure per acre. As an alternative maximum rate, a farmer can choose to calculate and apply manure to the phosphorus removal rate for the coming year's crops.

2. A setback of 100 feet from an above ground inlet to an agricultural drainage system (such as inlet pipes to piped outlet terraces) where surface water flow is toward the above ground inlet.

3. All fields must have at least 25% crop residue at application time or an established and growing cover crop. Hay fields, sod and pasture fields and fields with an established cover crop should be given highest priority for winter application.
*The 25% cover provision would generally exclude winter manure application to corn silage fields that do not have an established cover crop, corn grain fields where a significant portion of the fodder has been removed, and low yielding soybean fields.

4. Manure may not be applied during winter on fields with slopes greater than 15%. NRCS soil survey slope designations of "A", "B" or "C" slopes are acceptable for winter application.

5. An application setback of 100 feet from the top of the bank of a stream which generally flows during the winter or spring, and within 100 feet of a lake or a pond, along with all the other application setbacks outlined earlier in this section.

Farmers using a Certified Nutrient Management Planner to develop a nutrient management plan for the farm under the Nutrient Management Act, (Act 38), or obtaining approval from the DEP or county conservation district, may be provided some added flexibility in the application of manure during the winter.

WINTER APPLICATION

Field Identification	Type of Manure (from the manure application charts)	Winter Season Application Rate	Percentage of Crop Residue	Type of Cover Crop (if applicable)	Field Slope Percentage

MANURE MANAGEMENT PLAN SUMMARY

Use Additional Sheets as Necessary

Crop Group and Yield (a)	Manure Group (b)	Application Season (c)	Planned Application Rate from C, NBS, PI * (d)	Incorporation Timing (e)	Commercial Fertilizer Application Rate (f)	Fields where this crop group can be used (g)

C – The application rate was taken from the charts in Appendix 1. **Page 2 of Appendix 1 contains an explanation and example of how to use the rate charts when filling out this Manure Management Plan Summary**
NBS – The application rate was calculated using Nutrient Balance Sheet
PI – The application rate was calculated by a qualified Nutrient Management Planner using the Phosphorus Index

No single application can exceed 9,000 gallons. For applications rates greater than 9,000 gallons, the application must be split into multiple applications with no evidence of pooling between applications.

SECTION 3. MANAGING MANURE STORAGE IN STRUCTURES AND STOCKPILING/STACKING AREAS (All farms must complete this)

The manure management plan must assure that manure and agricultural process wastewater not immediately applied is properly stored. Manure storage facilities are used for safely containing manure and agricultural process wastewater until it is able to be properly applied or processed. Manure storage facilities include structures such as earthen ponds or lagoons with various liners such as concrete, bentonite, and/or membrane products like HDPE, concrete tanks located outside or under the barn, above ground steel tanks and roofed stockpiling/stacking facilities. If agricultural process wastewater (such as milkhouse waste, wash down water, egg wash water, etc.) is stored in the manure storage facility this added agricultural process wastewater volume must be included in the plan. If the agricultural process wastewater is stored separately, the plan must describe the storage facility for this wastewater.

The plan must list all existing manure storage facilities and any planned expansion or additions. For liquid or semi-solid manure storage facilities, the plan must document the type, date of construction, estimated capacity, and documentation of the environmental evaluation of the structure as outlined below. For constructed solid manure stacking pads/facilities, the plan must document the type, size, date of installation and any problems identified with the structure.

Liquid or semi-solid manure storage facilities must be evaluated by the farmer, on at least a monthly basis. Specifically, for liquid or semi-solid manure storage facilities, the operator must document that there is:

1. No evidence of overtopping or leakage from the manure storage facility. **The operator must maintain a minimum 12-inch freeboard for all ponds and a minimum 6-inch freeboard for all other manure storage facilities at all times.**
2. No visible cracking, rodent holes, tree or shrub growth on the berms or other problems with manure storage facilities that would lead to leakage.
3. No visible slope failures, visible deterioration or tears of any liner, or knowledge of any local water pollution issues associated with the storage facility.

No specific monthly documentation is required for constructed solid manure storage facilities. Written records must be maintained as part of the Manure Management Plan to demonstrate that these requirements are being met.

Any problems identified in 1-3 above need to be addressed immediately. In addition, liquid or semi-solid manure storage facilities built in the year 2000 and later should have been and must continue to be designed by a licensed Pennsylvania Professional Engineer, and the farmer must maintain a copy of a certification from the engineer indicating that the storage facility was built according to the appropriate standards.

Manure Storage Facilities (for each facility provide):

Type of storage (concrete tank, metal tank, under building structure, earthen or clay or synthetically lined pond or lagoon, exposed concrete pad, roofed solid manure stacking pad, etc.) and year(s) of construction:

Approximate size and volume (for liquid or semi-solid manure) of existing manure storage(s), indicate if exposed to precipitation:

$V = \pi r^2 h$ **(**π=3.14**, subtract appropriate height for free board (see previous page),** conversion of 1 cubic foot = 7.48 gallons

Indicate if any additional materials are added to the manure including bedding, agricultural process wastewater (water system overflow, wash water, milkhouse waste, egg wash water, etc). Also include runoff from a barnyard.

Potential manure storage problems:

Manure storage(s) related practices that need to be installed on the farm to address identified problems (such as inadequate storage volume, leaking facilities, inadequate maintenance, runoff from a stack that directly reaches a waterbody, etc) and an implementation schedule (season and year) for installation of the practices:

NOTE – If you generate or import agricultural process wastewater at the farm, this wastewater must be included in your manure management plan. On many farms, this wastewater is mixed with manure within the manure storage facility. In that case, there is no separate planning requirement for the agricultural process wastewater. If the agricultural process wastewater is not mixed with manure in the manure storage facility, you should contact the county conservation district or the PADEP to discuss the process for managing that wastewater.

2. Manure Stockpiling/Stacking

Some operations typically have one or more stockpiling/stacking areas around the barn or in the field to handle situations when direct manure application is impractical. These conditions could be due to severe weather limits or field conditions unsuitable for spreading equipment.

Manure stacking in the farmstead area must use an improved stacking pad or covered area. NRCS or the county conservation districts can provide assistance with this requirement.

The requirements relating to stacking of manure in other areas, (not on the farmstead) such as on crop fields are:

1. Keeping all stockpiles/stacks at least 100 feet from environmentally sensitive areas such as streams, lakes and ponds, 100 feet from any open sinkhole, 100 feet from any drinking water well (public or private). These stacks cannot be placed within an area of concentrated water flow such as a swale, ditch, or waterway.

2. Stockpiling/stacking manure on properly constructed improved stacking pads whenever possible. When stockpiling/stacking on unimproved areas in crop fields, the stockpiles/stacks should not be in the same location each year.

3. Placing these areas at the top of a hill (this includes the area within 100 feet from the top of the slope), where possible, diverting upslope water away from stockpile/stacking areas.

4. Placing stacks on areas with less than 8% slope.

5. The manure must be dry enough to allow for stacking at least 4 feet in height . when stacked on the application field, the volume needs to be limited to the amount that can be spread on fields nearby to the stack.

6. When stacked on the application field, cover stockpiled/stacked manure with a plastic tarp or other similar water repellent cover if it will be in place for more than 120 days. Manure stacked on a properly managed improved stacking pad does not need to be covered.

Written records must be maintained as part of the manure management plan to demonstrate that these requirements are being met.

Description of the manure stacking area and related practices needed on the operation to address identified problems (such as cover, pile aeration, stacking location, rotation of location, etc):

_____

_____

_____

Section 4. Pasture Management

All pastures on the farm must be listed in the Manure Management Plan and identified on the farm map. Farms have several choices for managing pastures:

1. The farm can develop a grazing plan meeting the requirements of the Natural Resources Conservation Service Pennsylvania Technical Guide Practice Standard 528 for Prescribed Grazing, **or**

2. Farmers can manage pastures by assuring that there is dense vegetation in the pasture throughout the growing season. Dense vegetation means that the pasture is managed to minimize bare spots and to maintain an average vegetation height across the pasture during the growing season at least 3 inches high.

Grazed fields that do not have an NRCS grazing plan which are overgrazed (as defined as not meeting the management requirements described above in bullet "2") need either to be managed to restore dense vegetation or these areas will be defined as Animal Concentration Areas (ACAs) and will need to meet the requirements of that section in the manual.

Please identify your pasture management approach below:

☐ I have a grazing plan meeting the requirements of the Natural Resources Conservation Service Pennsylvania Technical Guide Practice Standard 528 for Prescribed Grazing

☐ I am managing my pastures by maintaining dense vegetation in the pasture throughout the growing season. Dense vegetation means that the pasture is managed to minimize bare spots and to maintain an average vegetation height across the pasture to at least 3 inches high.

Description of pastures on the farm (animal types, months & time on pasture, pasture condition, pasture location relative to sensitive areas, rotation and paddocks, potential ACA areas, etc):

Section 5. Animal Concentration Areas (Only farms with ACAs must complete this section)

ACAs (sometimes also called "Animal Heavy Use Areas") are barnyards, feedlots, loafing areas, exercise lots or other similar animal confinement areas that will not maintain the dense vegetative of a pasture. ACAs do not include areas managed as pastures, meeting the requirements of the prior section, or other cropland. However, ACAs may exist within areas maintained as a pasture and must be addressed. Animal access ways, feeding areas, watering areas, and shade areas or walkways are not considered ACAs if water from or precipitation onto these areas does not result in runoff of manure or sediment to streams, lakes, ponds, or sinkholes.

ACAs need to be managed to:

1. Divert clean water flow from upslope fields, driveways, barn roofs, etc., away from the ACA;
2. Direct polluted runoff or allow it to flow from the ACA area into a storage facility or best management practice such as a correctly sized and well maintained vegetative filter strip;
3. Limit animal access to surface waters to only properly implemented livestock crossings. Animals may not have free access to streams adjacent to or within ACAs;
4. Minimize the size of denuded areas such as sacrifice lots;
5. Keep areas where animals congregate, such as feed racks, shade, and gates as far away from a water body as practical;
6. Where appropriate, include relocation of movable structures creating ACAs, such as hay rings, at least annually where practical, to minimize ACA development and manure concentration; and
7. Routinely, generally four times per year, remove accumulated manure from ACAs, where practical, to minimize the potential for pollution discharges.

Farms that have ACAs must list the ACA on the Operation Information Page of the Manure Management Plan, as well as complete the ACA Worksheet and locate the ACA on the plan map. The plan needs to identify Best Management Practices (BMPs) that are currently being implemented to prevent pollution and, where necessary, include a schedule for obtaining assistance to develop and implement additional BMPs that require appropriate expertise in design or where additional time is needed to obtain the financial resources to implement the necessary BMPs.

Farmers working with a design professional (conservation district, NRCS, Certified Nutrient Management Planner, etc.) can be provided up to October 29, 2013, to develop a plan addressing the ACA and up to 3 years from the date the plan is developed to implement that plan. DEP believes that most farms will be able to begin implementation on a much shorter time frame but recognizes that more time may be needed for costly BMPs.

SECTION 5 ANIMAL CONCENTRATION AREAS

Description and location of animal concentration areas (include pastures with less than 3" of grass):

_____

_____

_____

_____

_____

_____

Farmers with ACAs requiring corrective actions need to immediately contact the local conservation district, Natural Resources Conservation Service office (NRCS), or a private consultant and must document that contact and the time frame for developing and implementing BMPs.

Location of ACA	List Yes if BMP has been implemented and if BMP is planned, list date for installation				
	Divert clean water around ACA	Direct polluted water to storage or vegetated treatment area	Limit access to streams through stabilized crossings and watering areas	Limit size of denuded areas	Locate area where animals congregate (feed areas, shade, etc.) away from streams
All crop fields & pastures should have soil samples taken every 3 years					

Description of any additional best management practices to be implemented to better manage the ACA:

_____

_____

_____

List date contact was made to the assisting agency/party to help in these efforts:

_____

List who was contacted to assist in these efforts:

_____

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RECORDKEEPING FORMS

pennsylvania
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MANURE APPLICATION RATE RECORD
JANUARY 1, _____ THROUGH December 31,_____
Use Additional Sheets as Necessary

Date	Field Identification	Acres	Manure Group	Crop Group	Application Rate	Notes

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MANURE APPLICATION RATE RECORD
JANUARY 1, _____ THROUGH December 31,_____
Use Additional Sheets as Necessary

Date	Field Identification	Acres	Manure Group	Crop Group	Application Rate	Notes

CROP YIELD RECORD
JANUARY 1, _____ THROUGH December 31, _____
Use Additional Sheets as Necessary

*** Manure application rates are determined using expected crop yields. Manure and fertilizer nutrients should only be applied at an amount that the crops will use during the growing season. If yields change over time, then the manure rates should be recalculated.**

Field Identification	Crop Group	Date Harvested	Yield Goal	Actual Yield Harvested	Notes

MANURE TRANSFER RECORD
JANUARY 1, _____ THROUGH December 31, _____
Use Additional Sheets as Necessary

*** Complete this sheet if your manure is spread on another farm or land that is not identified in your plan.**

Date	Name of Importer/Broker	Address and Phone Number Importer/Broker	Manure Group	Amount of Manure Transferred	Crop Group and Application Rate

MANURE STORAGE FACILITY RECORD
MONTHLY INSPECTION FORM
Use Additional Sheets as Necessary

Storage Name	Inspection Date	Manure Depth (liquid)	Depth to Freeboard (liquid)	Leak Detection System Inspections. Are there any leaks, overflows, or seepages. Describe.	Structural Integrity. Are there cracks, erosion, slope failures, liner deterioration, rodent holes, large vegetation, excessive or lush vegetation, fencing

MANURE MANAGEMENT PLAN
CHECKLIST

	Manure Management Manual Page No.	Completed	Not Needed
Section 1 General Information (Required)			
Cover Page			
Operational Information Page			
Section 2 Manure Application Rates			
and Timing (Required)			
Manure Management In Environmentally Sensitive Areas			
Winter Application			
Manure Management Plan Summary			
Section 3 Managing Manure Storage in Structures			
and Stockpiling Areas Only use if the			
Farm Pastures Animals			
Manure Storage Inspection Record Sheet			
Section 4 Managing Manure in Pastures			
Only use if the farm has pastures			
Step 1 Pasture Screening Assessment			
Step 2 Nutrient Balance Assessment			
Section 5 Animal Concentration Areas			
Only use if the farm has ACAs			
ACA Worksheet			
			.
Please note that all farms with crops or ACAs must			
also have an Agricultural Erosion and Sediment Control			
Plan meeting the requirements of 25 Pa. Code Chapter			
102. Additional information can be obtained from the			
county conservation district.			