



Nutrient Management Legislation in Pennsylvania: A Summary of the New Regulations, 2006

INTRODUCTION

In spring 1993, the Pennsylvania Nutrient Management Act (Act 6) became law. On October 1, 1997, the State Conservation Commission's regulations detailing the requirements under Act 6 went into effect in Pennsylvania. Before this legislation became effective, problems with nutrient pollution were handled primarily under the Clean Streams Law. Regulations implementing the Clean Streams Law stated that if a farmer follows practices in the Department of Environmental Protection (DEP) publication *Manure Management for Environmental Protection* (Manure Manual), no special permits or approvals are required for using manure on farms. Since Act 6 regulations went into effect, high-density animal operations were required to develop and implement approved nutrient management plans. Also, many other animal operations voluntarily developed and implemented nutrient management plans. In 2002, the State Conservation Commission was required by law to review the Act 6 regulations. This extensive review along with a concurrent policy initiative known as Agriculture, Communities, and Rural Environment (ACRE) resulted in a new law (Act 38), which replaced Act 6, and in revised regulations that went into effect October 2006. The Clean Streams Law requirements still apply to all farms using manure. However, Act 38 imposes additional requirements on high-density animal operations.

This fact sheet summarizes the nutrient management provisions of Act 38 and the 2006 revised regulations associated with this law.

Authority under the Act

The primary authority to develop and implement regulations and policies under this act is held by The State Conservation Commission (SCC). Administration and enforcement of the act can be delegated to local conser-

vation districts. The revised regulations described here were approved by the State Conservation Commission in March 2006 with an effective date of October 1, 2006.

WHO IS AFFECTED BY THESE REGULATIONS?

Concentrated Animal Operations (CAOs)

CAOs will be required to develop and implement nutrient management plans. CAOs are defined as operations where the animal density exceeds 2 animal units (AUs) per acre on an annualized basis (AEU). An AU is defined as 1,000 pounds of animal live weight.

AEU Calculation

To determine the number of AEUs on a farm, the following formula is to be used for each different type of animal on the farm:

$$\text{Number of animals (i.e., average number on a typical production day)} \times \text{average animal weight over production period (lb)} \div 1,000 \times \text{number of production days per year} \div 365 = \text{total AEUs for each type of animal}$$

The total AEUs for each type of animal are then summed to get the total AEUs on the farm.

A significant change in the regulations requires horse and other nonproduction animal operations to now comply with the law if they meet the CAO criteria described above. Dairy, beef, veal, swine, and poultry were included in the original regulations.

Also, the new regulations set a lower limit of 8 AEUs total on the farm. This means that farms with less than 8 AEUs are not required under this law to have an approved nutrient management plan regardless of the animal density on the farm.

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Acres Suitable for Manure

The other factor in this calculation is the total number of acres of land suitable for the application of manure. These acres include cropland, hay land, or pastureland (owned or rented) that

- is an integral part of the operation;
- is or will be used for the application of manure from the operation.

Farmstead and forestlands cannot be included. However, manure application is not restricted only to the acres described above, but these acres are the acres to be used in the animal density calculations to identify CAOs.

AEU/Acre

The animal density is determined by dividing the total AEU's by the acres suitable for the application of manure.

The animal density criterion does not prohibit development or expansion of agricultural operations that would exceed 2 AEU's/acre. It simply means that these farms will be required to implement an approved nutrient management plan under the act. Farms with an animal density of more than 2 AEU's/acre are likely to have more manure nutrients than can be fully used by crops on the farm. Thus, nutrient management plans will often describe on-farm manure use and procedures for removing some manure from the farm.

Any farm that violates the Clean Streams Law also may be required by DEP to develop a nutrient management plan regardless of their animal density.

Penn State Cooperative Extension's *Agronomy Facts #54: Pennsylvania's Nutrient Management Act (Act 38): Who Is Affected?* provides standard animal weights and a worksheet to assist farmers in determining their CAO status.

Volunteers

Five to 10 percent of Pennsylvania's farms fall into the CAO category. The other 90 percent are encouraged to develop and implement nutrient management plans voluntarily to maintain and improve health, safety, and the environment for the people of the Commonwealth. Voluntary nutrient management plans follow the same planning criteria as plans developed for CAOs.

Voluntary nutrient management plans on non-CAOs can often save the farmer money and improve yields on the operation. Also, properly implemented Act 38 nutrient management plans provide liability protection for the operator from civil penalties and actions. Opportunities to receive financial assistance from various agencies may be available to operators who develop and implement voluntary nutrient management plans. Reimbursements (for plan development), low-interest loans, and grants (for plan implementation) will be provided to eligible operators to the extent that funds are available. For more information on volunteer participation under Act 38, contact the local county conservation district or the State

Conservation Commission at 2301 N. Cameron Street, Harrisburg, PA 17110-9408 or phone 717-787-8821.

NUTRIENT MANAGEMENT PLAN CONTENT REQUIREMENTS

Standard Plan Requirements and Format

Any farm classified as a CAO must have a nutrient management plan prepared by a certified nutrient management specialist. The Pennsylvania Department of Agriculture oversees the program to certify specialists to write and review nutrient management plans. Farmers may obtain certification to write their own plans. Farmers who are not certified planners themselves will need to consult with a certified nutrient management specialist, who will help to develop a nutrient management plan for the operation. All plans are to be reviewed by the county conservation district or SCC for approval. Details concerning the certification process will be discussed on page 7.

Volunteer plans also must be prepared by a certified nutrient management specialist and be reviewed and approved.

Plans developed under Act 38 (CAO or volunteer) follow a standard plan format approved by the commission. The following is a list of the things that are included in the standard nutrient management plan format.

Farm Identification and Operator Agreement Elements

Specific information describing the operation must be included in the plan. This information is mainly for the benefit of the reviewer, but it also will assist the planner in developing future plan updates to the approved plan. A good farm description can greatly simplify and speed up the review process as well as the development of future plan updates. The following farm identification issues are included in the plan:

- operator and planner name and contact information
- general description of the farm operation
- operator agreement to carry out the plan
- record-keeping requirements
- maps showing
 - field and operation boundaries
 - soil types and slopes
 - proposed and existing manure storage and barnyard dimensions
 - location of proposed structural best management practices (BMPs)
 - location of in-field stacking areas
 - manure application setback and buffer areas
 - year-round: including 100 feet from streams, lakes, ponds, or open sinkholes. If a minimum 35-foot permanent vegetative buffer exists along the sensitive area, then a 35-foot manure application setback is acceptable

- year-round: 100-foot setback from active drinking water well or spring
- Winter: 100 feet from aboveground intakes to agriculture drainage systems; also 100 feet from prior delineated wetlands adjacent to exceptional value streams
- manure application equipment capacity and practical application rates

Nutrient Management Plan Summary

The nutrient management plan summary includes all information necessary for the farmer to implement the plan. The assumption is that although the farmer may want to review the detailed information and calculations used to develop the plan, the plan summary is the only part of the plan that the operator will need in making management decisions. This summary must be prominently placed at the front of the plan. Some of the major issues addressed in the plan summary include the following:

- amount of manure generated, used, and exported from the operation
- field application summary, including
 - field identification
 - field acreage and expected yields
 - manure and fertilizer application rates and timing
 - setback and site-specific application direction (e.g., split applications)
- winter manure application procedures and restrictions
 - for winter application, the field must have at least 25 percent cover or be planted to a crop or cover crop that will provide ground cover
 - if winter application is planned, site-specific application procedures and acceptable soil conditions for application must be included in the plan
- in-field stacking criteria specifying
 - location (based on soils, topography, sensitive areas, and so on) and year-to-year rotation of pile location
 - shape and management of piles
 - piles must be covered if the manure will be stacked for more than 120 days
- planned BMPs to address manure management and stormwater concerns on the operation

NUTRIENT MANAGEMENT PLAN CALCULATIONS

Required Information and Calculations

The information and calculations required to determine the manure applications outlined in the nutrient management plan summary must be included in appendices as part of the standard nutrient management plan format. The list below outlines the major elements that are included in these required appendices to the nutrient management plan:

- amount of each type of nutrient source used on the operation
- amount of manure generated on the operation
 - measured or calculated if necessary
- nutrient content of the manure used on site
 - use actual manure analysis
 - book values acceptable when actual testing is not possible
- crop nutrient requirements
 - expected crop yields
 - soil test recommendations
 - residual nitrogen based on past manure applications or legume crops
- planned spreading periods and incorporation time for the manure and other nutrient sources
- nutrient application rates (manure and other organic sources and chemical fertilizers)
 - application rates limited based on amount of nitrogen (N) required, or in the case of legumes, removed by the crop
 - application rates may be further limited based on the Phosphorus (P) Index analysis
- manure irrigation restrictions where this application process is used
- restriction on application of liquid manure at rates greater than 9,000 gallons/acre at any one time

ALTERNATIVE USES FOR EXCESS MANURE

Excess Manure

For operations where manure is to be used for other than land application on the operation, i.e., excess manure, a strategy for using this manure is to be included as part of the nutrient management plan.

Exemption for Small Amounts of Manure

The following requirements for alternative uses of excess manure are not required for importing operations receiving small amounts of manure defined as

- 5 tons of poultry manure
- 25 tons of nonpoultry solid manure
- 10,000 gallons of liquid manure

Certified Manure Haulers and Applicators

All manure transfers from, or manure applications on, the operation conducted by commercial manure haulers and applicators or brokers must be done by a certified manure hauler or broker certified by the Pennsylvania Department of Agriculture under Act 49 of 2004.

Manure Exported to a Known Location for Land Application

When manure will be transferred to known landowners or operators for application to agricultural land, the plan shall contain

- a signed agreement between the exporter and the importing operator(s)
- nutrient balance sheet (NBS) detailing the manure application locations, rates, and methods of application for each importing site
 - Three options are available with the NBS for determining N and P application rates:
 1. No manure applied within 150 feet of water and the total P applied from all sources cannot exceed crop P removal, N applications cannot exceed crop N removal.
 2. For fields with soil test levels less than 200 ppm P (using the Mehlich 3 soil test), manure may not be applied within 150 feet of water, and manure can be applied at an N-balanced application rate (no P limitations relating to application rate).
 3. Use of the P Index to determine P application limitations, N applications cannot exceed crop N removal.
 - An approved nutrient management plan can be developed and used instead of an NBS.
- operators who export manure also will be required to give the importer an informational packet, including
 - appropriate sections of the *Manure Manual*
 - educational publications relating to nutrient management
 - manure export sheets

Manure Exported through a Broker

For operations where the manure will be transferred through a manure broker, the broker, who must be certified under Act 49, assumes responsibility for the manure once he or she takes control of the manure. For operations using a broker, the plan must include

- a signed agreement between the exporter and the broker

Manure Exported for Other Than Land Application

For operations where manure will be transferred to a known importer for use other than application to agricultural land, the plan must include

- a signed agreement between the exporter and the importer, including a brief description of the planned use for the imported manure, and the amount of manure the operator plans to transfer to the importer

Manure Processed or Used on the Operation for Other Than Land Application

When manure will be processed or used on the operation where it is produced for a purpose other than the application to agricultural land, the plan is to include

- a brief description of the planned use for the manure, including the estimated amount expected to be processed or used and when

Manure Marketed through an Open Marketing System

If manure is to be marketed from an existing agricultural operation by using an open marketing system (this option is not available for a new operation) and the importers cannot be identified at planning time, the plan must include

- proposed marketing scheme
- estimated amount of manure to be marketed and when

An operator using this exporting scheme must be a certified broker under Act 49. NBSs must be developed for all importing sites where the manure will ultimately be land applied (with the exception of small quantity importers as explained above).

MANURE MANAGEMENT

Manure and Barnyard Management

In preparing the plan, the nutrient management specialist must conduct an on-site review of the adequacy of existing manure management practices to prevent surface water or groundwater pollution and to identify these problem areas in the plan.

The plan will list areas on the operation where water pollution would be expected under normal climatic conditions and the practices required to be implemented to correct these problem areas.

Practices to Be Evaluated During Site Visit

- manure handling, collection, barnyard runoff control, emergency manure stacking provisions, in-field manure stacking provisions, and manure storage practices

Manure Management BMPs

- The plan is to include a list of BMPs that are necessary to correct any identified water contamination sources. BMP design work is not required as part of the plan; however, during implementation of the approved plan, the operator will be responsible for obtaining the necessary BMP designs. The BMP designs must be kept on site.

Manure Storage Standards

In the implementation of an approved plan, new or expanded manure storage and handling facilities must be designed, constructed, located, operated, maintained, and, when no longer used for the storage of manure, removed from service in such a way as to prevent the pollution of surface water and groundwater and the off-site migration of nutrients by meeting *Pennsylvania Technical Guide* specifications. Manure storages include

- storage ponds or tanks
- permanent stacking and composting pads

- containment structures under confinement buildings
- reception pits
- transfer pipes

Animal confinement areas of the following are not considered to be manure storages:

- poultry houses
- horse stalls
- bedded packs

The designer of the manure storage facility must conduct an on-site investigation to evaluate the site suitability for a facility. For liquid or semisolid manure storage facilities, the facility must be designed by a professional engineer and the construction of the facility must be signed off by the engineer and contractor as meeting the design and construction standards. Two weeks before construction of these liquid or semisolid manure storage facilities, the engineer must submit verification that the design and location meet *Pennsylvania Technical Guide* specifications and Act 38.

The repair of existing manure storage and handling facilities is to meet the same criteria as for new and expanded storages with the exception of the location standards explained below.

Manure Storage Setbacks

Manure storage facilities (except reception pits and transfer pipes) being built under an Act 38 nutrient management plan may not be constructed in the following locations:

- within 100 feet of a stream, river, spring, lake, or reservoir
- within 100 feet of a private water well or open sinkhole
- within 100 feet of a wetland delineated on the National Wetlands Inventory maps, if the wetland is within the 100-year floodplain of an exceptional value stream
- within 100 feet of an active public drinking water well, water source surface intake, or both, unless other state or federal laws require a greater distance
- within 100 feet (200 feet for new operations) of a property line, unless the landowners agree and execute a waiver
- within 200 feet of any perennial stream, river, lake, pond, reservoir, wetland (as described above), or any water well where such facilities (except permanent stacking and composting facilities) are located on slopes exceeding 8 percent or have a capacity of 1.5 million gallons or greater
- within 200 feet (300 feet for new operations) of any property line where such facilities (except permanent stacking and composting facilities) are located on slopes exceeding 8 percent where the slope is toward the property line or have a capacity of 1,500,000 gallons or greater, unless the landowners agree and execute a waiver

Manure Storage Setback Waivers

These distance restrictions may be waived by the SCC or delegated conservation district if the operator can adequately demonstrate the need for the waiver and also can demonstrate that the facility will protect water quality to the satisfaction of the commission or district.

Property line setbacks can only be waived by the affected neighboring property owner.

STORMWATER MANAGEMENT

Stormwater Runoff Control

In the preparation of a plan, the nutrient management specialist or specialist and other individuals with nutrient management runoff experience must conduct a review of the adequacy of the existing field runoff control practices on the farm.

Conservation Plan Requirements

- The operation must have a current agricultural erosion and sedimentation control plan (in accordance with 25 PA Code Chapter 102).
 - Existing operations have until October 1, 2009, to meet this requirement.
- The nutrient management plan must be consistent with the Ag Erosion and Sedimentation Plan, including issues such as
 - crop rotation
 - tillage system
 - planned conservation BMPs
- The nutrient management plan must identify any critical runoff problem areas on the operation.
- The nutrient management plan must include a list of specific runoff-control BMPs to address critical runoff problem areas.
 - The BMP designs are to be kept on record at the operation and are not required to be included in the plan. However, the operator is responsible for obtaining the necessary designs upon BMP implementation.

EMERGENCY RESPONSE PLAN

A written, site-specific emergency response plan must be developed and maintained on the operation before approval of an Act 38 nutrient management plan. The emergency response plan must provide necessary contact information for those who need to be immediately contacted in case of a manure leak or spill. Also, the emergency response plan will outline practices to be taken in case there is a manure leak or spill relating to the implementation of this plan.

The emergency response plan needs to be provided to the local emergency management agency for their files in case they are called to assist with an incident on the site.

NUTRIENT MANAGEMENT PLAN REVIEW AND APPROVAL

Plan Review and Approval

Plans must be submitted to the local conservation district or SCC for review and approval. Approved plans must be implemented as planned and records are required to verify implementation and to provide information for subsequent plan updates and amendments.

Submission Time Frame

Plans must be submitted according to the following time frame:

- Operations defined as CAOs before the October 1, 2006, regulation changes should have an approved plan at this time.
- Existing operations on October 1, 2006, that become CAOs because of the changes in the CAO definition in these regulations have until October 1, 2008, to submit a plan for approval.
- New CAOs must get an approved plan before the start of manure operations.
- Existing operations that are expanding and as a result will be classified as CAOs must get an approved plan before the expansion.
- Existing operations that become a CAO because of the loss of land suitable for manure application must submit a plan within 6 months of the loss of land.
- Volunteers may submit a plan at any time.

Plan Review and Approval

Conservation districts and the State Conservation Commission have 90 days to act on a plan or plan amendment.

If the plan is not acted on by the reviewing agency within 90 days, the operator is authorized to implement the plan. If the reviewing agency fails to act on the plan within a second 90-day period (therefore a total of 180 days), the plan shall be deemed approved.

NUTRIENT MANAGEMENT PLAN IMPLEMENTATION AND RECORD KEEPING

Plan Implementation Requirements

A plan must be implemented within 3 years of the date that it is approved unless the deadline is extended by the SCC or conservation district. Management BMPs must be implemented immediately after approval.

Plans can be transferred to subsequent owners of an operation if the transfer does not result in operational changes.

An amendment is required to make significant changes to the originally approved plan.

Plan Implementation Reviews

The operator must ensure that the plan remains consistent with the operation. Plan updates or amendments are

needed to address operational changes that will result in a change to the nutrient management plan.

Plans must be formally reviewed every 3 years by a certified nutrient management specialist. If the agricultural operation is still consistent with the approved plan, the specialist will notify the reviewing agency of this consistency; if not, a plan update or amendment is to be submitted to the reviewing agency. As part of this 3-year review, the P Index must be rerun with current soil test results.

On-Site Status Reviews by Conservation Districts

Conservation district or SCC staff will conduct periodic on-site plan implementation reviews for all approved nutrient management plans.

Plan Amendments

Plan amendments are required under certain circumstances and must be developed by a certified individual or commercial nutrient management specialist and be submitted to the reviewing agency for review and approval.

When Are Plan Amendments Required?

- If an operation has significantly changed from that described in the original approved plan, a plan amendment is required. Significant changes that require the approval of a plan amendment include the following:
 - net increase of greater than 10 percent in AEUs/acre
 - change in crop management that results in a farmwide reduction of greater than 20 percent in N necessary for realistic expected crop yields
- A change in excess manure use arrangements, except when
 - loss of an importer will not impair the operator's ability to properly management manure generated on the operation.
 - a new importer is added as long as the signed agreement and nutrient balance sheet are provided to the reviewing agency by the time of the manure transfer. These new importers will be formally acted on by the district or commission at the 3-year review time.
- When calculation errors or incorrect figures are found in the original plan
- When a different BMP, other than that in the approved plan, is proposed
- When after the first 3 years of implementation of the plan, actual yields average less than 80 percent of the expected crop yields
- The P Index requires a change in manure application rates
- Alternative organic sources will replace all or some of the nutrient sources listed in the plan
- Additional lands are brought into the operation (purchased or rented)

- A change is made in the manure management system that will result in a change in the nutrient content of the manure and thus results in a change in the manure application rates

Changes Due to Unforeseen Circumstances

Changes in plan implementation due to unforeseen circumstances (such as outbreaks of contagious disease, equipment failures, etc.) shall be documented by a certified nutrient management specialist and submitted to the district within 30 days of implementation. These amendments do not require the review and approval of the commission or delegated conservation district, but shall temporarily become part of the plan until normal operations are resumed.

Record Keeping

Records of plan implementation must be kept by the operator. However, unless otherwise specified, necessary records are not required to be submitted to the State Conservation Commission or conservation district, but shall be retained by the agricultural operation complying with the act for a minimum of 3 years.

Required Records

The operator shall keep the following accurate records:

- records of soil testing results
- records of analysis of manure and other nutrient sources
- nutrient application records:
 - location, date, and rate of nutrient application by crop management unit
- annual crop yield levels for each crop management unit
- annual manure production
- for each pasture:
 - number of animals on the pasture
 - number of days grazed
 - hours per day grazed
- copies of completed manure export sheets
- records of the amount and use of manure on the operation for other than land application

Record Keeping for Manure Transfers

A manure transfer sheet is required to document all manure-exporting activities from the operation. This form contains an identification of the exporter and importer plus other information related to the nutrient content and the amount of manure. The exporter is required to provide a copy of the completed Manure Transfer Sheet to the importer.

ADMINISTRATIVE

Enforcement

Although the commission intends to work with farmers to encourage voluntary compliance, the commission is provided the authority to take legal steps if that approach does not succeed. Act 38 allows the commission, or an authorized agent of the commission, such as a conservation district, to conduct investigations of agricultural operations thought to be in violation of Act 38.

Penalties

Civil penalties are limited to not more than \$500 for the first day of each offense and \$100 for each additional day of continuing violation. The amount of the penalty will be determined by the gravity of the violation, potential harm to the public, potential effect on the environment, willfulness of the violation, previous violations, and economic benefit to the violator for failing to comply.

Protections

If an operator is found to be causing nutrient pollution while fully implementing a valid nutrient management plan consistent with Act 38 and these regulations, the implementation of the plan will be used as a mitigating factor in determining whether any enforcement action is appropriate.

Nutrient Management Specialist Certification Program

The Pennsylvania Department of Agriculture administers the Nutrient Management Specialist Certification Program for the purpose of certifying persons who have demonstrated the competency necessary to develop and/or review nutrient management plans.

For additional information on the Nutrient Management Specialist Certification Program, please contact the Pennsylvania Department of Agriculture, Nutrient Management Program, Bureau of Plant Industry, 2301 N. Cameron Street, Harrisburg, PA 17110-9408 or call 717-772-5218.

Types of Certification

The certification program recognizes four types of nutrient management specialists (NMSs):

- Individual (farmer), commercial, public review, and public dual
 - Individual NMSs are certified to prepare plans for their own agricultural operation.
 - Commercial NMS may prepare plans for others.
 - Public review NMS are authorized to review plans for approval.
 - Public dual NMS are authorized to write and review plans for approval.
- Public specialists may not review plans that they have written

Certification Requirements

NMS candidates are required to complete precertification training course work and pass an examination. In addition, commercial and public specialists are required to demonstrate their competency by correctly completing several actions, namely,

- commercial specialists are required to correctly prepare three plans;
- public review specialists must correctly prepare one plan and successfully review two plans;
- public dual specialists must correctly prepare two plans and successfully review two plans.

Continuing Education Requirements

At 3-year intervals, NMSs are required to complete continuing education credits to remain certified.

Financial Assistance

Operators who develop a nutrient management plan under these regulations may be eligible of financial assistance to develop and implement the nutrient management plan.

For additional information on plan development incentives and financial assistance for plan implementation, contact your local county conservation district or the Pennsylvania Department of Agriculture, Nutrient Management Program, Bureau of Plant Industry, 2301 N. Cameron Street, Harrisburg, PA 17110-9408 or call 717-772-4187.

Plan Development Incentives Program

The operator of a CAO or other agricultural operation planning under the act may apply for funding to develop an Act 38 compliant nutrient management plan. The Plan Development Incentive Program (PDIP) is designed to assist existing operations by offsetting the cost of developing a nutrient management plan meeting the Act 38 criteria.

Plan Maintenance Program Funding

In addition to the plan development assistance provided by PDIP for initial Act 38 plan development, additional assistance is available to support continual plan amendments and updates to ensure that the plan remains current with the farm operation.

Plan Implementation Financial Assistance

An owner or operator of an existing agricultural operation may apply for financial assistance to implement nutrient management plans including alternate technology projects. A special nutrient management fund has been established for this purpose. The SCC and the Pennsylvania State Treasury provide financial assistance in the form of low-interest loans and grants for implementation of nutrient management plans.

The Pennsylvania State Treasury, in cooperation with the SCC, issues loans and sets applicable terms and conditions it deems appropriate. A grant will be considered when the commission determines that the financial condition of the recipient is such that repayment of a loan is unlikely and that the recipient will be financially distressed by the implementation of BMPs without a grant.

Eligibility for Financial Assistance

The criteria to allow a farm to be eligible to receive financial assistance under Act 38 are as follows:

- A farm must have an approved nutrient management plan.
- You must be the owner or operator of the operation as of October 1, 2006.
- Eligible BMPs must be listed in the approved nutrient management plan.
- For the grant program, applicants must demonstrate a need for financial assistance.

PERSPECTIVE

The criteria outlined in this act are required of a small but important sector of the farm community in Pennsylvania. However, all farmers and agricultural industries have a stake in protecting the environment from potential agricultural nutrient pollution. Although a formal, approved nutrient management plan is not required of most farmers under this law, all farmers use a nutrient management program that guides their nutrient management activities, and all farmers are encouraged to develop an approved nutrient management plan. Most of these informal nutrient management programs are based on optimizing the economics of their production system. An effort should be made to regularly review such nutrient management programs from an economic and agronomic as well as an environmental perspective. Nutrient management programs should be appropriately modified to reduce potential environmental damage.

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