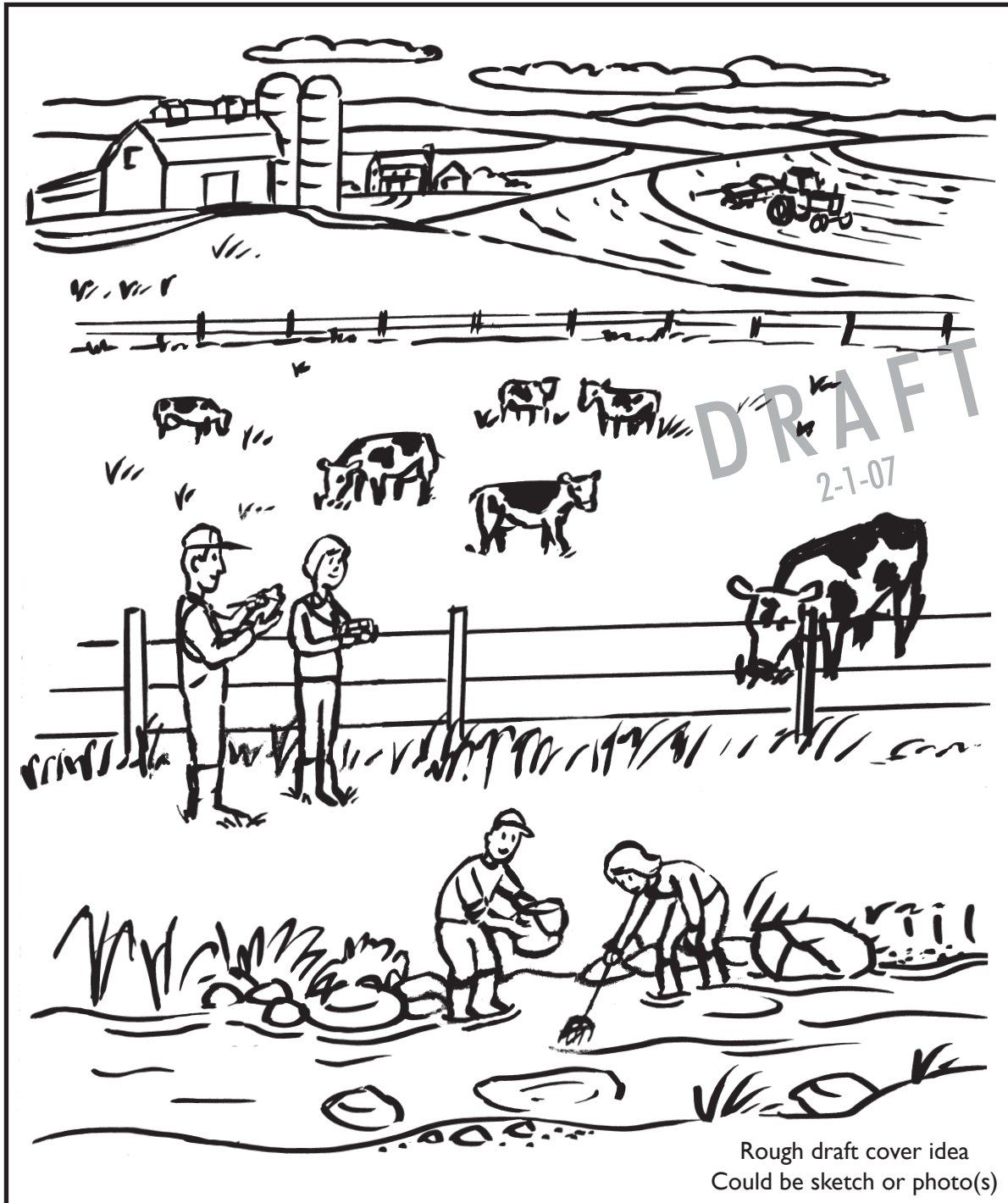


Good Farmland Stewardship

Your Key to Compliance with PA Erosion and Sediment and Nutrient Management Regulations (Chapters 102 & 91)



Rough draft cover idea
Could be sketch or photo(s)

An easy to use Self Assessment and Farm Planning Guide



Introduction

As a farmer, you are already very much aware of your relationship with soil and water. To succeed as a farming steward of the land, you have to be. As an operation that involves tilling or “disturbing” the land and applying nutrients such as manure, you also need to be aware that, like other industries that disturb the soil and apply chemicals (nutrients, pesticides, etc.) in Pennsylvania you are subject to regulations that protect water quality. These regulations were created under the PA Clean Streams Law in the 1937 and include the Dept. of Environmental Protection (DEP) regulations Chapter 102, which deals with erosion and sediment pollution control, and Chapter 91, which deals with manure management.

ALL FARMS in Pennsylvania are subject to these basic requirements for managing nutrients and providing erosion and sediment (E&S) controls.

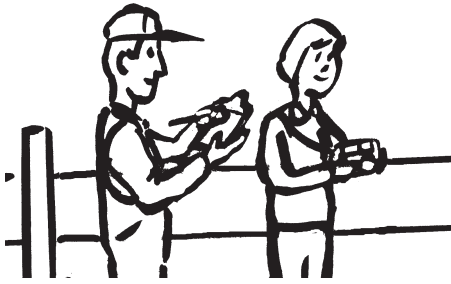
Additional requirements apply to farming operations (sometimes referred to as regulated farms) defined as Concentrated Animal Operations (CAOs) (Act 38 and chapter 83) and Concentrated Animal Feeding Operations (CAFOs) (Chapter 92). But remember – ALL FARMS are subject to manure management and erosion control regulations of the Commonwealth. The basic requirements of the Clean Stream Law are to prevent manure nutrients (nitrogen and phosphorus) and sediment runoff from causing surface or ground-water pollution.

Both of these regulations require farmers to have a plan for how they are protecting both surface waters and ground water quality. This packet was developed to help you organize and document just how you are protecting those water resources. Farmers, with a basic understanding of the requirements, can apply their

practical experience, knowledge and good judgement, using the guidance provided in this packet, to achieve compliance. When the practices implemented on a farm are not sufficient to protect water quality, additional actions need to be taken to correct these problems. These can be in the form of practices commonly called best management practices or BMP's. County conservation districts, NRCS, Extension and others can provide assistance, including information about financial and technical support. A list of potential sources of assistance are included in this packet.

It is very important to note that the utilization of the guidance included in this packet does not necessarily constitute a sound agronomic or conservation plan, nor does it address the requirements for CAOs or CAFOs. The intent of this packet is to assist farmers in meeting the baseline water quality requirements as noted above. Good nutrient and conservation planning is the ideal for the long term sustainability of any agricultural operation. By considering the questions on your farming operations contained in this packet, and installing planned practices, you help assure not only the protection of water quality, but also in attaining compliance with the above regulations. **The practices included in the packet are broad and often meant to be applicable to as many operations as possible. Since this plan is meant for broad application, it includes general safe recommendations such as designated buffer areas.** You may wish to ask for technical advice from an outside source to assure that the practices installed meet both the DEP regulations and the PA Technical Guidelines. **In many instances, a refinement of the practices recommended here can be made through site specific design and implementation.** The folks at the Conservation District or NRCS can provide this assistance.

A Self Assessment of Your Farming Operation and Developing a Farm Plan

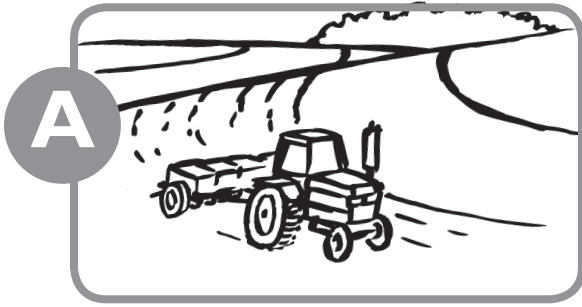


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2-1-07

The information contained in this packet is provided to help you first conduct an assessment of your needs in addressing water quality related issues and then consider the practices that will help you address any areas of concern. Additional resources are contained in the packet to help you decide what is best for you and your operation.

To Complete Your Farm Plan Do the Following:

1. Look over the **self assessment** on pages 2 through 10.
If you grow crops on our farm answer the questions in Section A.
If you have animals on your farm answer the questions in Section B.
List the areas of concern under each.
2. Determine the best solution and protection measures or practices that fit into your operation. The brief description at each question should help direct you to some of those practices. Additional information is enclosed in this packet. You may also want to talk to some of the people at the locations listed in the resources section.
3. **Fill out the farm plan** on pages 11 to 21 by indicating what sections are applicable to your farming operation and what practices you are going to use. Be as specific as possible. Be sure to complete your farm map and attach it to the plan. Have all the practices indicated on your map that you list in the plan.
4. Attach all your record sheets and nutrient balance sheets to your plan if you are utilizing manure or have livestock operations.
5. Store your materials in an easily accessible location so that you can consult it, keep it up to date and verify it's existence and implementation should you need to.
6. **Remember, good advice is usually only a phone call away.**
See the reference section of this packet.



Conservation – Assessing Erosion and Sediment Control (Chapter 102)

Do you have a current conservation plan approved by either the County Conservation District or the Natural Resources Conservation Service?

- ☐ Yes (*if yes and it is implemented and on record, you have met your requirements under Chapter 102*)
- ☐ No (*continue your self assessment*)

DRAFT
2-1-07

1. Maintenance of Existing Erosion Control BMPs

If no operation and maintenance plan exists, create one. Maintain proper vegetation in channels. Capacity of diversions and waterways must be maintained by removing sediment periodically. Monitor channel outlets to stay ahead of any erosion. Regular maintenance goes a long way to protect your investment in productivity and the environment.

Are all conservation practices or best management practices maintained according to a regular schedule, in accordance with a written operation and maintenance plan?

- ☐ Yes
- ☐ No (*address in plan*)

2. Soil Erosion Control on Crop Fields

Soil erosion can be controlled by altering the amount, concentration and velocity of storm water and by altering soil conditions such as residue or crop cover. A variety of best management practices can be considered to slow runoff or stabilize the soil such as: diversions, contour farming, waterways, reduced tillage, no-till, cover crops, residue management, crop rotations, field border filter strips, grazing systems, grass land farming to name a few. **A minimum of 35 feet of a vegetated filter strip is essential for water quality protection in the absence of site specific, professionally designed BMPs between all tilled fields and a stream or channel that outlets into a stream.**

Are any fields plowed to the edge of a stream, waterway or ditch that empties into a stream, lake or pond?

- ☐ Yes (*address in plan*)
- ☐ No

Can sediment be observed leaving crop fields, farm lanes and roads and entering a stream, waterway or ditch that enters into a stream, lake or pond?

- ☐ Yes (*address in plan*)
- ☐ No

3. Pasture Riparian Zone Management

Risk of nutrients entering surface water is high especially if animals concentrate near the stream. Fence placed at least 12 feet from the top of bank will allow vegetation to be established and maintained which will help stabilize the banks from erosion. This will also prevent direct manure nutrient and pathogen contamination of the stream water. Crossings can be incorporated. A new drinking water system may be needed for cattle if they previously used the stream. These buffers can greatly increase water quality and stream bank stability. Plantings can be done to help stabilize the banks. Rotational paddocks help to prevent overgrazing.

Does rainwater and other clean storm water flow uncontrolled through the barnyard, farmstead, animal concentration areas, etc. and washes sediment into a stream, waterway, lake, pond or ditch that enters into a stream?

☐ Yes (*address in plan*)

☐ No

Do animal concentration areas near streams, waterways, lakes, ponds or ditches that enter into a stream result in elimination of vegetation that results in sediment entering those channels?

☐ Yes (*address in plan*)

☐ No

4. Soil Erosion Control from Farmstead

Soil erosion from the farmstead can be a significant source of sediment to our water. Pay particular attention to driveways, roof water, ditches and pipe outlets. Minimize water concentration on roads and in ditches. Spread concentrated water out in a vegetated area wherever possible to allow filtering of sediment.

Are there any bare ground areas on the farm or farmstead where sediment is observed being washed and leaving the farm and entering a stream, waterway, lake, pond or ditch that enters into a stream?

☐ Yes (*address in plan*)

list: _____

☐ No

5. Farm Lanes/Walkways/Forest Lane Management

This requires managing the profile of the lane. Where possible the lane should crown and allow water to run off onto surrounding vegetated land and away from the lane. Water bars and broad based dips in the lane itself are used to divert water from the lane. Avoid ditches where they are not needed. Where ditches are necessary use cross pipes or cut-outs approximately every 150' (or closer together on steeper slopes) to spread water back out onto the landscape in a non-erosive fashion. Ditches required to carry water for long distances must be properly stabilized and sized to handle the flow. See the contacts below for assistance with design of these ditches. Rock and/or geotextile may be used to reinforce the road base in wet areas with frequent traffic.

Are there any roads or animal pathways on the farm or farmstead where sediment is observed entering a stream, waterway, lake, pond or ditch that enters into a stream?

☐ Yes (*address in plan*)

list: _____

DRAFT
2-1-07

☐ No

6. Channel Outlet Management

Outlets to channels are particularly vulnerable to erosion. Channel outlets often dump water onto steeper slopes where velocity increases and erosion begins. In some cases a waterway could be installed to carry water in a non-erosive fashion. If erosion can be noticed early, outlets can be properly stabilized. "Head cutting" occurs when erosion at a channel outlet begins to work its way upstream into the channel. This is prevented by repairing the erosion when it first begins. In extreme cases where channel outlets have eroded large gullies over a long period of time repairs are possible. They are often expensive and may require some engineering assistance. Any new channel should be designed with the proper outlet in mind.

Are there any channels on the farm or farmstead where outlets are eroding and sediment is observed entering a stream, waterway, lake, pond or ditch that enters into a stream?

☐ Yes (*address in plan*)

list: _____

☐ No

7. Erosion Above Channels of Conveyance

Erosion directly above any road ditch, diversion, waterway, or any other channel poses high risk to deliver sediment to surface water. Permanently vegetated buffers of sufficient width (35') should be maintained above these channels to filter sediment from runoff.

Are there any areas above channels on the farm or farmstead where erosion is happening and sediment is observed entering the channel and enters into a stream?

☐ Yes (*address in plan*)

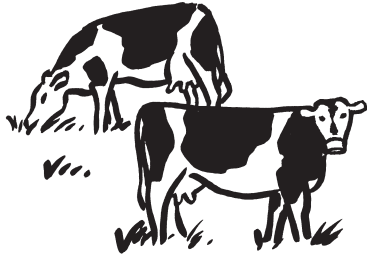
list: _____

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Manure – Assessing Nutrient Management (Chapter 91)

A current **NUTRIENT MANAGEMENT PLAN** is an approved plan which meets PA Act 38 or Act 6 guidelines, NRCS 590 specifications or PA Chapter 91 guidelines.

Do you have a current nutrient management plan approved by either the County Conservation District or the Natural Resources Conservation Service or has been developed under the guidelines outlined in the DEP Manure Management Guide?

- ☐ Yes (*if yes and it is implemented you have met your requirements under Chapter 91*)
- ☐ No (*continue your self assessment*)

1. Maintenance of Existing Nutrient Management BMPs

Proper maintenance of existing nutrient management BMPs is critical. Review the operation and maintenance plan for any conservation practices currently installed. If no operation and maintenance plan exists, create one. Regular maintenance goes a long way to protect your investment in productivity and the environment.

Do you have installed best management practices for the utilization of manure or chemical nutrients or animal concentration areas?

- ☐ Yes
- ☐ No (*address in plan*)

2. LONG TERM Manure Storage Facility

Nitrogen is lost into the atmosphere and all nutrients can be lost when runoff carries manure from the field, causing a water quality concern as well as loss of valuable nutrients from the field. Optimum storage period in many Counties is about 6-8 months. The facility can be constructed from earth, steel, or concrete depending upon the site conditions. Prior to design, soil test pits need to be dug to determine what type of storage will best suit the site. Manure can be transferred to a storage by gravity, pump or by direct scraping. Manure could be handled as a solid or a liquid. The farm operator needs to consider the spreading equipment necessary to empty

the storage and field apply the manure. ALL liquid and semi-solid manure storage facilities are required to be certified by a Pennsylvania Professional Engineer as meeting PA Technical Guide Standards.

Do you have any permanent long term manure storage areas or structures that are not designed to meet DEP Manure Management Manual Guidelines or the PA Technical Guide?

☐ Yes (*address in plan*)

☐ No

DRAFT
2-1-07

3. SHORT TERM Manure Storage

An area needs to be identified to stack manure temporarily when field conditions do not allow access with manure spreader. This storage needs to be located where runoff from the stored manure can not enter surface or ground water. You may find an appropriate area in a nearby field where no construction is necessary. Some reinforcement of this area with gravel or concrete may be needed or a storage can be constructed near the barn, treating runoff in a designated grass filter area. When spreading manure in the winter, the manure management plan will identify fields to receive manure in the winter. All liquid and semi-solid manure storage facilities are required to be certified by a Pennsylvania Professional Engineer as meeting PA Technical Guide Standards.

Do you utilize temporary manure stacking areas and does surface water run through manure stacking areas and enter any streams, waterways, lakes, ponds or ditches that enter a stream or groundwater inlets?

☐ Yes (*address in plan*)

☐ No

4. Heavy Use Area Protection Controls

Often the best first step is to divert all clean surface water (including roofs) from entering manure concentration areas. Surface runoff can stay clean and the manure concentration areas stay drier. The barnyard and manure handling areas can be reinforced with gravel or concrete to provide a stable wearing surface and make manure collection easier and more efficient. Nutrient rich runoff from animal concentration areas is best treated on a grass filter area. Curbing around the perimeter can help contain waste, direct runoff to a collection point, and eliminate surface water. Runoff can also be collected in a tank and pumped to a spreader for field application although tank size requirements can be quite large.

Vegetation can be used to filter nutrient and sediment laden water. Milk house waste and runoff from animal concentration areas are often treated by filtering through vegetation. A permanent grass area with a slight to moderate slope is established. The size is determined by the amount of material and its nutrient content. Contaminated water is distributed evenly over the top of

the filter by gravity or pump and then flows down slope through the vegetation. Nutrients are used by vegetation and solids are filtered. The filter would be harvested by grazing or mowing to remove nutrients in the vegetation.

Does surface water run through animal concentration areas, where manure has accumulated, that drain into any streams, waterways, lakes, ponds or ditches that enter a stream or groundwater inlet?

☐ Yes (*address in plan*)

☐ No

DRAFT
2-1-07

5. Manure Application and Record Keeping

Written records help you track success and failure of your decisions. They help you pin point ways to improve efficiency including manure application, commercial fertilizer needs, crop yields, etc. A record keeping system should be simple, written or computerized, and compiled in one place. At a minimum, you are required to keep the last three years of records on site and available for inspection. Required records are: location, date and rate of all nutrient applications (manure and others), crop yields and exported manure. You should also consider including: soil samples updated every three years and manure analysis.

When the farm operator does not have enough land to utilize the manure produced, additional acres must be found to receive the manure. These will be documented in the nutrient management plan.

Pennsylvania's Chapter 91 regulations specifies minimum setbacks from surface water for manure application. These setbacks apply to all farms. If a vegetated buffer exists, manure can be applied within 100 feet of surface water. If no buffer exists, manure can not be applied within 150 feet of surface water. If a nutrient management plan is developed using the Phosphorus Index, then manure can be applied closer to surface water according to the plan. Contact the Conservation District or a certified nutrient management planner with questions about the Phosphorus Index or for help developing this plan.

Do you apply manure or chemical nutrients to any fields that may have an impact on surface or ground water (wells, sink holes, etc.) or are observed leaving the farm and entering a stream, waterway, lake, pond or ditch that enters into a stream?

☐ Yes (*address in plan*)

☐ No

6. Surface and Roof Water Control

Wet conditions in an animal concentration area are often compounded by surface and roof runoff. Any surface water entering the barnyard should be diverted. Roof water should be collected with gutters or drip trenches and directed to a clean, stable outlet before it is contaminated with manure nutrients. When possible, it is best to keep the barnyard drier and keep clean stormwater from being contaminated.

Do you have areas that contribute to the surface water running through barnyards and other animal concentration areas that may wash manure, milk house waste, silage discharge or other nutrients to surface or groundwater ?

☐ Yes (*address in plan*)

☐ No

DRAFT
2-1-07

7. Milk House and Silo Waste Treatment

Milk house and silo waste discharged to surface water can be considered industrial waste. Milk solids have a high demand for oxygen when they break down. When milk house waste enters a stream, oxygen levels in the water decrease, and nutrients increase. This waste is often treated in a grass filter area. If long term manure storage is used, milk house waste is often piped to the storage for field application with the manure. Milk house waste could also be collected in a tank and pumped to spreader for routine field application.

Silo drainage is very toxic and concentrated with nutrients. It must be diluted for field application. If long term manure storage is used, silo drainage is usually piped to the storage for dilution and field application. The drainage can be piped to a tank and pumped directly into a spreader. Silo drainage can be treated in a grass filter area with milk house waste or barnyard runoff if its dilution can be controlled. If silo drainage is not properly diluted it will burn and kill vegetation in the filter.

Are there any areas on the farm where milk house drainage, silo drainage or other farm waste waters may have an impact on surface or ground water (wells, sink holes, etc.) or are observed leaving the farm and entering a stream, waterway, lake, pond or ditch that enters into a stream?

☐ Yes (*address in plan*)

list: _____

☐ No

8. Well Head and Groundwater Protection

Surface and ground water around a well, sinkhole or other subsurface inlets can potentially enter the aquifer. Surface water should be diverted from well head and these other locations. Nutrient sources should be far removed from well locations. Any animal concentration area or field application should remain at least 100 feet back from any well and farther away if upslope of a well on steeper slopes. Well heads can be capped around the casing with concrete and bentonite to prevent surface water from following the casing. New wells should be installed with bentonite grout sealing between the soil and casing to prevent all water flow along the casing. Pollution entering the aquifer at one well can pollute other neighboring wells.

Are you applying nutrients (manure and chemical) to your crop fields or have animal concentration areas within 100 feet of a well, sinkhole or other potential source of groundwater connection?

☐ Yes (*address in plan*)

☐ No

DRAFT
2-1-07



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A

Describe Sediment Related Issues which Apply to Your Farm (Chapter 102).

- Refer to your self assessment pages 2-5.
- Mark the locations on your farm map.

OBSERVED Sediment pollution to surface or ground waters, including streams, waterways, lakes, ponds or ditches that enters into a stream

☐ yes (if yes explain)

☐ no

DRAFT
2-1-07

POTENTIAL Sediment pollution to surface or ground waters, including streams, waterways, lakes, ponds or ditches that enters into a stream

☐ yes (if yes explain)

☐ no

Soil Erosion Control on Crop Fields

Vegetated Filter Strip – (Circle here and indicate width on map from table below)

Slope of Land Between
Crop Field & Stream (%)

Minimum width of
Filter Strip (feet)

0

35

10

45

20

65

30

85



**Agronomic Practices that reduce soil loss to a tolerable level or “T”
(See Soil Survey information available from NRCS or Conservation District
to determine) over a planned crop rotation schedule**

☐ Cover Crops

list:

DRAFT
2-1-07

☐ Residue Management (*see Attachment # & describe*)

☐ Crop Rotation (*see Attachment # & describe*)

Pasture Riparian Zone Management (check practices to be implemented)

- ☐ Fencing installed _____ feet from the stream, pond or channel to exclude animals
- ☐ Animal stream crossings installed as indicated on map
- ☐ Off stream watering facility located as indicated on map

Erosion Above Channels of Conveyance

Description of practices utilized to stabilize area above channel:

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2-1-07

Channel Outlet Management

Location and description of practices utilized to stabilize outlets:

Farm Lanes/Walkways/Forest Lane Management

Location and description of practices utilized to stabilize walkways and lanes:

Soil Erosion Control from Farmstead

Location and description of practices utilized to stabilize farmstead areas:

Maintenance of Existing Erosion Control BMPs

Description of maintenance practices:

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2-1-07

B

Describe Manure/Nutrient Management Issues which Apply to Your Farm (Chapter 9I).

- Refer to your self assessment pages 6-10.
- Mark the locations on your farm map.

OBSERVED Nutrient Pollution to Surface or Ground Waters, including Streams, Waterways, Lakes, Ponds or Ditches that Enters into a Stream

☐ yes (*if yes explain*)

☐ no

DRAFT
2-1-07

POTENTIAL Nutrient Pollution to Surface or Ground Waters, including Streams, Waterways, Lakes, Ponds or Ditches that Enters into a Stream

☐ yes (*if yes explain*)

☐ no

Maintenance of Existing Manure Management BMPs

Description of maintenance practices:

DRAFT
2-1-07

Heavy Use Area Protection/Control

Location and description of practices utilized for heavy use area protection:

LONG TERM Manure Storage Facility

Location and description of practices utilized for manure storage,
include design verification to PA Tech Guide:

SHORT TERM Manure Storage

Location and description of practices utilized for short term manure storage, include design verification to PA Tech Guide:

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2-1-07

Grass Filter Area

Location and description of filter areas and what sources of nutrients they are addressing:

Insert table for filter strip

Surface and Roof Water Control

Location and description of practices utilized for surface and roof water control:

DRAFT
2-1-07

Milk House Waste Treatment

Location and description of practices utilized for milkhouse waste treatment:

Silo Leachate Treatment

Location and description of practices utilized for silo leachate treatment:

**Manure Application Setback Acres:
Well Head, Sink Hole and Other Ground Water Sites that
Need to be Protected**

Location and description of practices utilized for well and ground water protection:

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2-1-07

Acres to Receive Manure

Location and description of areas receiving manure:

☐ Record Keeping

Attach record sheet of manure application (see Attachment #)

Attachment #						
Manure Application Record Sheet Example						
Field Identification	Crop	Acres	Manure Type	Application Rate	Date	Weather

A sample record sheet is included with the attachments in the Agriculture Action Pack.

DRAFT
2-1-07