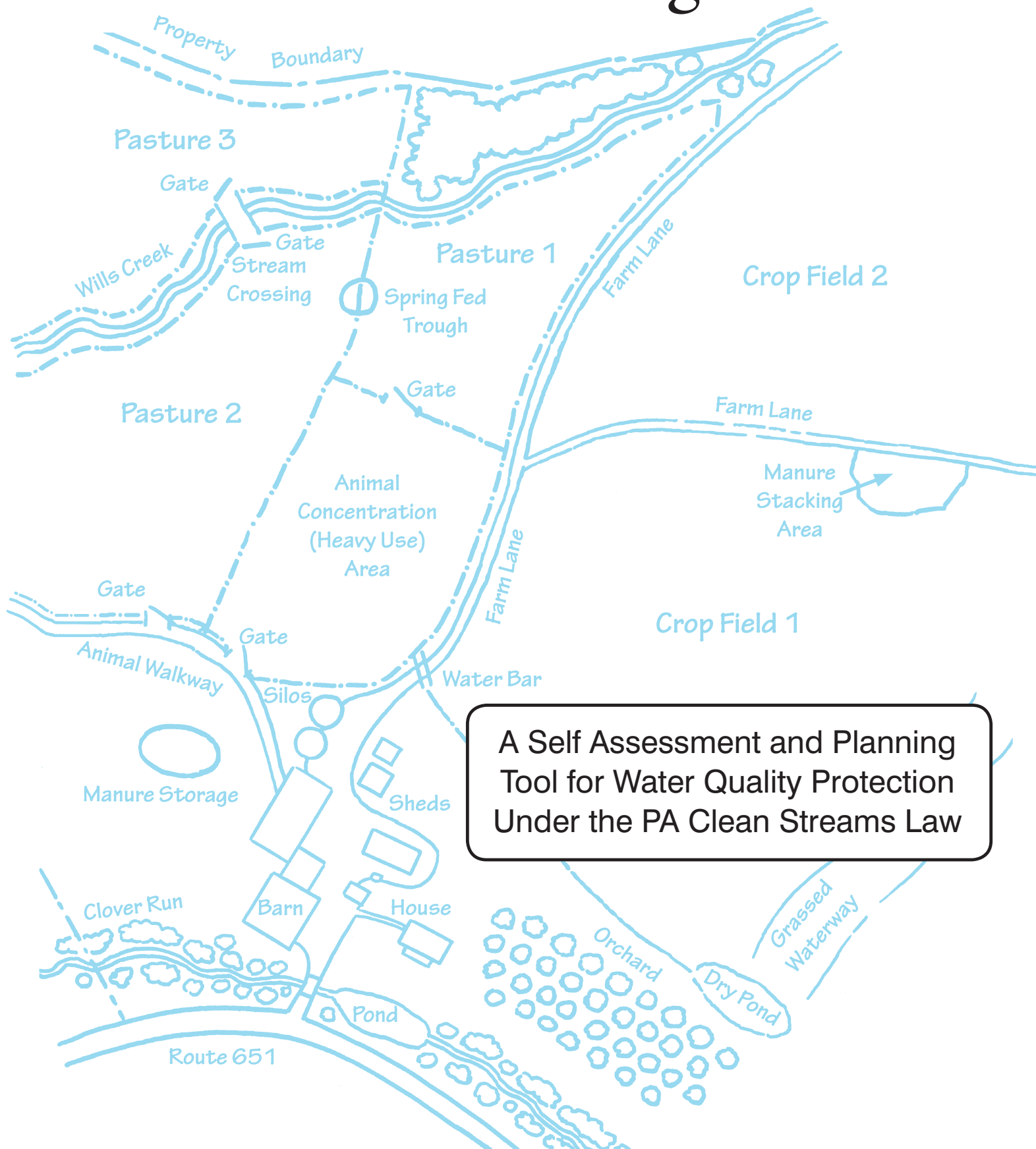


Pennsylvania Water Quality Action Packet for Agriculture



Funded by

Pennsylvania Department of Environmental Protection
under an ACRE Special Project Grant

This Action Packet is not intended to be used
by the Pennsylvania Department of Environmental
Protection for interpreting regulatory requirements.

This document was created by

Bradford and Lancaster Conservation Districts
with graphic design services provided by
Westmoreland Conservation District in
an effort to help farmers make a good faith
effort in protecting water quality.

IMPORTANT - READ THIS BEFORE YOU BEGIN

All Pennsylvania farmers are subject to water quality regulations...



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 and include the Dept. of Environmental Protection (DEP) regulations Chapter 102 (1972), which deals with erosion and sediment (E&S) pollution control, and Chapter 91(1977), which deals with manure management. For copies of these regulations see Attachments #1 and # 2, pages PC-1 through PC-7.

All Pennsylvania Farms involved in tillage and/or manure use are subject to water quality regulations.

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 E&S regulations of the Commonwealth.

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 judgment, 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 Best Management Practices (BMPs.) County conservation districts, the Natural Resources Conservation Service (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. (See Attachments #6 & 7.)

Application of the guidance in this packet may or may not assure agronomic efficiency or full compliance with water quality regulations and it does not address the requirements for CAOs or CAFOs. It will however demonstrate intent and efforts to accomplish compliance which are important considerations if violations do occur.

The intent of this packet is to assist farmers in meeting the baseline water quality requirements as noted previously. Good nutrient and conservation planning is the ideal for the long term sustainability of any agricultural operation. By considering and answering the questions on your farming operations contained in this packet, and installing planned BMPs, you help assure not only the protection of water quality, but also attainment of compliance with the above regulations.

The BMPs 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 generic recommendations such as buffer areas.

In many instances, a refinement of the BMPs recommended here can be made through site specific design and implementation. You may wish to ask for technical advice from an outside source to assure that the BMPs installed meet both the DEP regulations and the PA Technical Guidelines.

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

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 BMPs 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:

STEP 1. Look over the **self assessment** on pages A-2 through A-8.

Answer the questions in Section A.

If you store, handle, or land apply manure on your farm, answer the questions in Section B.

List the areas of concern under each.

STEP 2. Determine the best solution and protection measures or BMPs that fit into your operation. The brief description at each question should help direct you to some of those BMPs. 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.

STEP 3. **Fill out the farm plan** on pages P-1 to P-10 by indicating what sections are applicable to your farming operation and what BMPs you are going to use. Be as specific as possible. Be sure to complete your farm map and attach it to the plan. Place all the BMPs listed in your plan on your map.

STEP 4. Attach all your record sheets and nutrient balance sheets to your plan if you are utilizing manure or have livestock operations.

STEP 5. Keep your farm plan and records in an easily accessible location so that you can consult them. Keep them up to date and implemented.

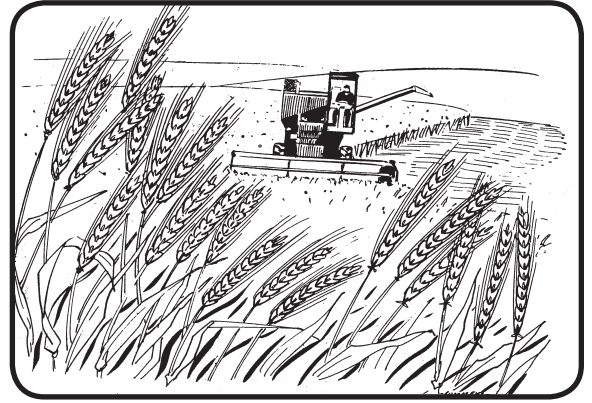
STEP 6. When considering minimum requirements under regulations, consult Attachments #1 & #2 pages PC-1 through PC-7.

STEP 7. To further assess the completeness and adequacy of your plan, you may want to review it with the Conservation District and/or NRCS in your county.

**Remember, good advice is usually only a phone call away.
See the reference section of this packet.**

SECTION A

Assessing Erosion and Sediment Control (PA Clean Streams Law & Chapter 102)



Do you have a current conservation plan?

- Yes (*If yes, and it is implemented and includes items #1 – #6 below, go to Section B, page A-5.*)
- No (*continue your self assessment*)

1. Crop Field Soil Erosion and Sediment Control § 102.4(a)

Soil erosion and sediment 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 BMPs 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, and grass land farming to name a few. Erosion directly above any road ditch, diversion, waterway, or any other channel poses a high risk to deliver sediment to surface water. A minimum of 35 feet of a vegetated filter strip is highly recommended for water quality protection in the absence of site specific, professionally designed BMPs on all tilled fields adjacent to a stream or a channel that outlets into a stream.

Are any fields tilled within 35 feet of a stream, waterway or ditch that empties into a stream, lake or pond?

- Yes (*Address in plan. See page P-3.*)
- No

Is there evidence that sediment might be leaving crop fields and entering a stream, waterway or ditch that enters into a stream, lake or pond?

- Yes (*Address in plan. See page P-3.*)
- No

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

Yes (*Address in plan. See page P-3.*)

No

2. Streamside Pasture Management PA Clean Streams Law

Risk of sediments entering surface water is high especially if animals concentrate near the stream. Fence placed a significant distance from the top of bank will allow vegetation to be established and maintained which will help stabilize the banks from erosion. Stabilized stream 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.

Do animal concentration areas near streams, waterways, lakes, ponds or ditches result in the elimination of vegetation or streambank damage that causes accelerated erosion?

Yes (*Address in plan. See page P-4.*)

No

3. Farmstead Area Concerns PA Clean Streams Law

Soil erosion from the farmstead can be a 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 around the farmstead where sediment might be washed into a stream, waterway, lake, pond or ditch that enters into a stream?

Yes (*Address in plan. See page P-4.*)

No

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

Yes (*Address in plan. See page P-4.*)

No

4. Farm Lanes/Walkways/Forest Lane Management PA Clean Streams Law

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 (Attachment #7) 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 might be running off and entering a stream, waterway, lake, pond or ditch that enters into a stream?

Yes (*Address in plan. See page P-4.*)

No

5. Channel Outlet Management PA Clean Streams Law

Channel outlets are particularly vulnerable to erosion. These 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; however, 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 might be entering a stream, waterway, lake, pond or ditch that enters into a stream?

Yes (*Address in plan. See page P-5.*)

No

6. Maintenance of Existing Erosion Control BMPs § 102.4(a) and PA Clean Streams Law

If no operation and maintenance plan exists, create one. Maintain proper vegetation in channels. Maintain capacity of diversions and waterways 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 BMPs maintained according to a regular schedule, in accordance with a written operation and maintenance plan?

Yes

No (*Address in plan. See page P-5*)

SECTION B

Assessing Manure Management (Chapter 91)



Do you have a current Nutrient Management Plan approved by the County Conservation District which meets Act 38 or Act 6, or a plan that meets NRCS' 590 standard, or a plan that has been developed under the guidelines in the DEP Manure Management Manual?

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

1. Manure Storage § 91.36 (a)

You may need to identify areas to store manure when field conditions do not allow access. This storage needs to be located where runoff from the stored manure can not enter surface or ground water. For stackable manure, you may find an appropriate area in a nearby field where no construction is necessary. Some improvement 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 built after 1-29-2000 are required to be certified by a Pennsylvania Professional Engineer as meeting PA Technical Guide Standards.

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

- Yes** (*Address in plan. See page P-7.*)
- No**

Do you need a manure storage area?

- Yes** (*If yes, seek technical assistance.*)
- No**

2. Heavy Use Area Protection Controls § 91.36 (c)

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 of the heavy use area 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.

Adequately sized vegetation areas 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 across the top of the filter area by gravity or pump and then flows downslope 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. **(Technical expertise in hydraulics, soils and agronomics is needed to adequately design and size vegetative filter areas to be consistent with the Pennsylvania Technical Guide standards.)**

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

Yes (*Address in plan. See page P-7.*)

No

3. Manure Application and Record Keeping § 91.36 (b)

Written records help you track implementation 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 should keep the last three years of records on site and available for inspection. Records should include: location, date and rate of all nutrient applications (manure and others), crop yields and exported and imported 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 manure management plan.

If utilizing manure from a CAO or CAFO, then Pennsylvania's Chapter 91 regulations specify minimum setbacks from surface water for manure application. If a vegetated buffer exists, manure can be applied within 35 feet of surface water. If no buffer exists, manure can not be mechanically applied within 100 feet of surface water. (While not required of all farms, this practice helps protect water quality.) 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 to any fields where there may be an impact on ground water (wells, sink holes, etc.) or where manure might leave the farm and enter a stream, waterway, lake, pond or ditch that enters into a stream?

Yes (*Address in plan. See page P-8.*)

No

4. Surface and Roof Water Control § 91.36 (c)

Wet conditions in an animal concentration area are often compounded by surface and roof runoff. Any runoff should be diverted around the barnyard. Roof water should be collected with gutters or drip trenches and directed to a clean, stable outlet. When possible, it is best to keep the barnyard drier and to keep clean storm water 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 ground water?

Yes (*Address in plan. See page P-9.*)

No

5. Well Head and Ground Water Protection § 91.36 (c)

Surface and ground water around a well, sinkhole or other subsurface inlets can potentially pollute the aquifer. Surface water should be diverted from well head and these other locations. Manure 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 manure to your crop fields or have animal concentration areas within 100 feet of a well, sinkhole or other potential source of ground water connection?

Yes (*Address in plan. See page P-9.*)

No

6. Maintenance of Existing Manure Management BMPs § 91.36 (a)(b)(c)

Proper maintenance of existing manure management BMPs is critical. Review the operation and maintenance plan for any conservation BMPs 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. Each BMP should have a specific maintenance need and should be incorporated as part of the maintenance plan.

Are all nutrient management BMPs maintained according to a regular schedule, in accordance with a written operation and maintenance plan?

Yes

No (*Address in plan. See page P-10.*)

Important

Other common water quality farm related issues may include:

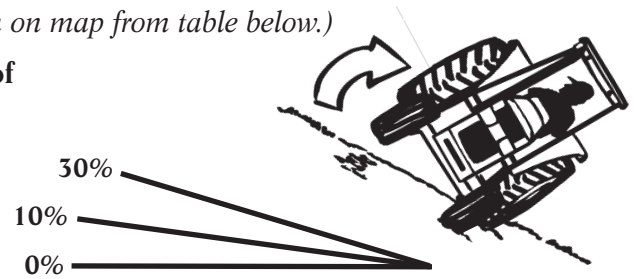
- **Milk house wastes**
- **Silage leachate**
- **Activities impacting streams and wetlands**

Contact your regional DEP or County Conservation District Office for water quality protection compliance information.

1. Crop Field Soil Erosion and Sediment Control

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

Slope of Land Between Crop Field and Stream	Minimum Width of Filter Strip (feet)
0	35
10	45
20	65
30	85



Agronomic Practices that reduce soil loss over a planned crop rotation schedule.
(See Attachment #4.)

Cover Crops

list:

Residue Management *(See Attachment # 4 and describe.)*

Crop Rotation *(See Attachment # 4 and describe.)*

**2. Streamside Pasture 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

3. Farmstead Soil Erosion and Sediment Control

Location and description of practices utilized to stabilize farmstead areas:

4. Farm Lanes/Walkways/Forest Lane Management

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

3. Manure Application and Record Keeping

Acres to Receive Manure

Location and description of areas receiving manure:

Record Keeping

Attach record sheet of manure application. (See Attachment #5.)

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.

Attachment # 1

Commonwealth of Pennsylvania

Pennsylvania Code

Title 25. Environmental Protection

Department of Environmental Protection

Chapter 102.4



§ 102.4. Erosion and sediment control requirements.

(a) For agricultural plowing or tilling activities, the following erosion and sediment control requirements apply:

(1) The implementation and maintenance of erosion and sediment control BMPs are required to minimize the potential for accelerated erosion and sedimentation, including for those activities which disturb less than 5,000 square feet (464.5 square meters).

(2) Written Erosion and Sediment Control Plans are required for agricultural plowing or tilling activities that disturb 5,000 square feet (464.5 square meters) or more of land.

(3) The landowner, and any lessee, renter, tenant or other land occupier, conducting or planning to conduct agricultural plowing or tilling activities are jointly and individually responsible for developing a written Erosion and Sediment Control Plan and implementing and maintaining BMPs, including those identified in the Erosion and Sediment Control Plan.

(4) The Erosion and Sediment Control Plan shall be designed to minimize the potential for accelerated erosion and sedimentation from agricultural plowing or tilling activities.

(5) The Erosion and Sediment Control Plan shall contain plan maps, soils maps, the location of waters of this Commonwealth, drainage patterns and a description of BMPs including tillage systems, schedules, and cost effective and technically practical conservation measures.

(6) The Erosion and Sediment Control Plan shall be available for review and inspection at the project site during each stage of the agricultural plowing or tilling activity.

(b) For earth disturbance activities other than agricultural plowing or tilling, the following erosion and sediment control requirements apply:

(1) The implementation and maintenance of erosion and sediment control BMPs are required to minimize the potential for accelerated erosion and sedimentation, including for those activities which disturb less than 5,000 square feet (464.5 square meters).

(2) A person proposing earth disturbance activities shall develop a written Erosion and Sediment Control Plan under this chapter if one or more of the following criteria apply:

(i) The earth disturbance activity will result in a total earth disturbance of 5,000 square feet (464.5 square meters) or more.

(ii) The person proposing the earth disturbance activities is required to develop an Erosion and Sediment Control Plan pursuant to this chapter under Department regulations other than those contained in this chapter.

(iii) The earth disturbance activity, because of its proximity to existing drainage features or patterns, has the potential to discharge to a water classified as a High Quality or Exceptional Value water pursuant to Chapter 93 (relating to water quality standards).

(3) The Erosion and Sediment Control Plan shall be prepared by a person trained and experienced in erosion and sediment control methods and techniques, and shall be designed to minimize the potential for accelerated erosion and sedimentation.

(4) Earth disturbance activities shall be planned and conducted to minimize the extent and duration of the disturbance.

(5) The Erosion and Sediment Control Plan shall contain the following:

(i) The existing topographic features of the project site and the immediate surrounding area.

(ii) The types, depth, slope, locations and limitations of the soils.

(iii) The characteristics of the earth disturbance activity, including the past, present and proposed land uses and the proposed alteration to the project site.

(iv) The amount of runoff from the project area and its upstream watershed area.

(v) The location of waters of this Commonwealth which may receive runoff within or from the project site and their classification pursuant to Chapter 93.

(vi) A written depiction of the location and type of perimeter and onsite BMPs used before, during and after the earth disturbance activity.

(vii) A sequence of BMP installation and removal in relation to the scheduling of earth disturbance activities, prior to, during and after earth disturbance activities.

(viii) Supporting calculations.

(ix) Plan drawings.

(x) A maintenance program which provides for inspection of BMPs on a weekly basis and after each measurable rainfall event, including the repair of the BMPs to ensure effective and efficient operation.

(xi) Procedures which ensure that the proper measures for the recycling or disposal of materials associated with or from the project site will be undertaken in accordance with this title.

(6) Where an earth disturbance activity may result in a discharge to a water of this Commonwealth classified as High Quality or Exceptional Value pursuant to Chapter 93, the person proposing the activity shall, as applicable, use the following Special Protection BMPs to maintain and protect the water from degradation:

(i) Special sediment basin requirements.

(A) Principal spillways shall be designed to skim water from the top 6 inches (15 centimeters) of the dewatering zone, or shall have permanent pools greater than or equal to 18 inches (46 centimeters) deep.

(B) The basin shall be designed with a flow length to basin width ratio of 4:1 or greater.

(C) The basin shall be designed so that it dewateres in at least 4 days and no more than 7 days when at full capacity.

(ii) Channels, collectors and diversions shall be lined with permanent vegetation, rock, geotextile or other nonerosive materials.

(iii) BMPs that divert or carry surface water shall be designed to have a minimum capacity to convey the peak discharge from a 5-year frequency storm.

(iv) Upon completion or temporary cessation of the earth disturbance activity, or any stage thereof, the project site shall be immediately stabilized.

(v) The Department or county conservation district may approve alternative BMPs which will maintain and protect existing water quality and existing and designated uses.

(7) The Erosion and Sediment Control Plan shall be available for review and inspection by the Department or the county conservation district at the project site during all stages of the earth disturbance activity.

(8) Upon complaint or site inspection, the Department or county conservation district may require that the Plan be submitted for review and approval to ensure compliance with this chapter.

(c) The Department or county conservation district may require other information necessary to adequately review a plan, or may require additional BMPs, on a case-by-case basis, when necessary to ensure the maintenance and protection of water quality and existing and designated uses.

Authority

The provisions of this § 102.4 amended under sections 5 and 402 of The Clean Streams Law (35 P. S. §§ 691.5 and 691.402); section 1920-A of The Administrative Code of 1929 (71 P. S. § 510-20); and section 11(2) of the Conservation District Law (3 P. S. § 859(2)).

Source

The provisions of this § 102.4 adopted September 29, 1972, effective October 30, 1972, 2 Pa.B. 1796; amended June 3, 1977, effective June 20, 1977, 7 Pa.B. 1478; amended February 3, 1978, effective February 20, 1978, 8 Pa.B. 288; amended December 30, 1999, effective January 1, 2000, 30 Pa.B. 111. Immediately preceding text appears at serial pages (234603) to (234604).

Attachment # 2

Commonwealth of Pennsylvania

Pennsylvania Code

Title 25. Environmental Protection

Department of Environmental Protection

Chapter 91.36



§ 91.36. Pollution control and prevention at agricultural operations.

(a) *Animal manure storage facilities.*

(1) Except when more stringent requirements are contained in paragraphs (2)—(5), a manure storage facility shall be designed, constructed, operated and maintained in accordance with current engineering and agronomic practices to ensure that the facility is structurally sound, water-tight, and located and sized properly, to prevent pollution of surface water and groundwater, including design to prevent discharges to surface waters during a storm up to and including a 25-year/24-hour storm.

(i) The Manure Management Manual and the Pennsylvania Technical Guide contain current engineering and agronomic practices which can be used to comply with the requirements in paragraph (1).

(ii) If the criteria in the Manure Management Manual and the Pennsylvania Technical Guide are not followed, the owner or operator shall obtain a water quality management permit or other approval from the Department for the manure storage facility.

(2) For liquid or semisolid manure storage facilities constructed after January 29, 2000, the owner or operator shall obtain a water quality management permit from the Department for the manure storage facility unless the design and construction of the facility are certified to meet the “Manure Management Manual” and “Pennsylvania Technical Guide” by a registered professional engineer. The owner or operator shall retain a copy of the certification at the operation and provide a copy to the Department upon request.

(3) In the case of a new or expanded liquid or semisolid manure storage facility located at an animal operation with over 1,000 AEUs for the first time after January 29, 2000, a water quality management permit is required.

(4) For a new or expanded liquid or semisolid manure storage facility after October 22, 2005:

(i) Where the manure storage capacity is between 1 million and 2.5 million gallons, a water quality management permit is required for any manure storage facility that is a pond and one of the following applies:

(A) The nearest downgradient stream is classified as a High Quality or Exceptional Value water under Chapter 93 (relating to water quality standards).

(B) The nearest downgradient stream has been determined by the Department to be impaired from nutrients from agricultural activities.

(ii) Where the manure storage capacity is 2.5 million gallons or more, a water quality management permit is required.

(5) For new or expanded CAFOs that commenced operations after April 13, 2003, and that include swine, poultry or veal calves, the CAFO shall prevent discharges to surface waters during a storm event up to and including a 100-year/24-hour storm from manure storage facilities that contain manure from those swine, poultry or veal calves.

(6) For a liquid or semisolid manure storage facility, the following minimum freeboard requirements apply and shall be maintained:

(i) For an agricultural operation with over 1,000 AEUs that was a new or expanded operation after January 29, 2000, a minimum 24-inch freeboard, except for enclosed facilities that are not exposed to rainfall, which must have a minimum freeboard of 6 inches.

(ii) For all other facilities, a minimum 12-inch freeboard for manure storage facilities that are ponds, and a minimum 6-inch freeboard for all other manure storage facilities.

(7) The requirements in this section are in addition to and do not replace any more stringent requirements in Chapter 83, Subchapter D (relating to nutrient management).

(b) *Land application of animal manure and agricultural process wastewater; setbacks and buffers.*

(1) The land application of animal manures and agricultural process wastewater requires a permit or approval from the Department unless the operator can demonstrate that the land application meets one of the following:

(i) The land application follows current standards for development and implementation of a plan to manage nutrients for water quality protection, including soil and manure testing and calculation of proper levels and methods of nitrogen and phosphorus application. The Manure Management Manual contains current standards for development and implementation of a plan to manage nutrients for water quality protection which can be used to comply with the requirements in paragraph (1).

(ii) For CAOs, the land application is in accordance with an approved nutrient management plan under Chapter 83, Subchapter D.

(iii) For CAFOs, the land application is in accordance with a CAFO permit as described in § 92.5a (relating to CAFOs).

(2) Unless more stringent requirements are established by statute or regulation, the following agricultural operations may not mechanically land apply

manure within 100 feet of surface water, unless a vegetated buffer of at least 35 feet in width is used, to prevent manure runoff into surface water:

- (i) A CAO.
- (ii) An agricultural operation receiving manure from a CAO directly, or indirectly through a broker or other person.
- (iii) An agricultural operation receiving manure from a CAFO directly, or indirectly through a broker or other person.
- (3) CAFOs shall meet the setback requirements in § 92.5a(e)(1)(i).
- (4) For purposes of paragraph (2) only, “surface water” means a perennial or intermittent stream with a defined bed and bank, a lake or a pond.

(c) *Discharge of pollutants.*

(1) It is unlawful for agricultural operations to discharge pollutants to waters of this Commonwealth except as allowed by regulations or a permit administered by the Department. The Department is authorized to take an enforcement action against any agricultural operation in violation of this requirement.

(2) An operation that has a discharge that is not authorized under the act and that meets the definition of either a medium or small CAFO under 40 CFR 122.23 (relating to concentrated animal feeding operations (applicable to State NPDES programs, see 123.25)) is considered to have an illegal discharge and is subject to enforcement action under the act.

(3) When an agricultural operation is found to be in violation of the act, the Department may require the agricultural operation to develop and implement a nutrient management plan under Chapter 83, Subchapter D, for abatement or prevention of the pollution.

Authority

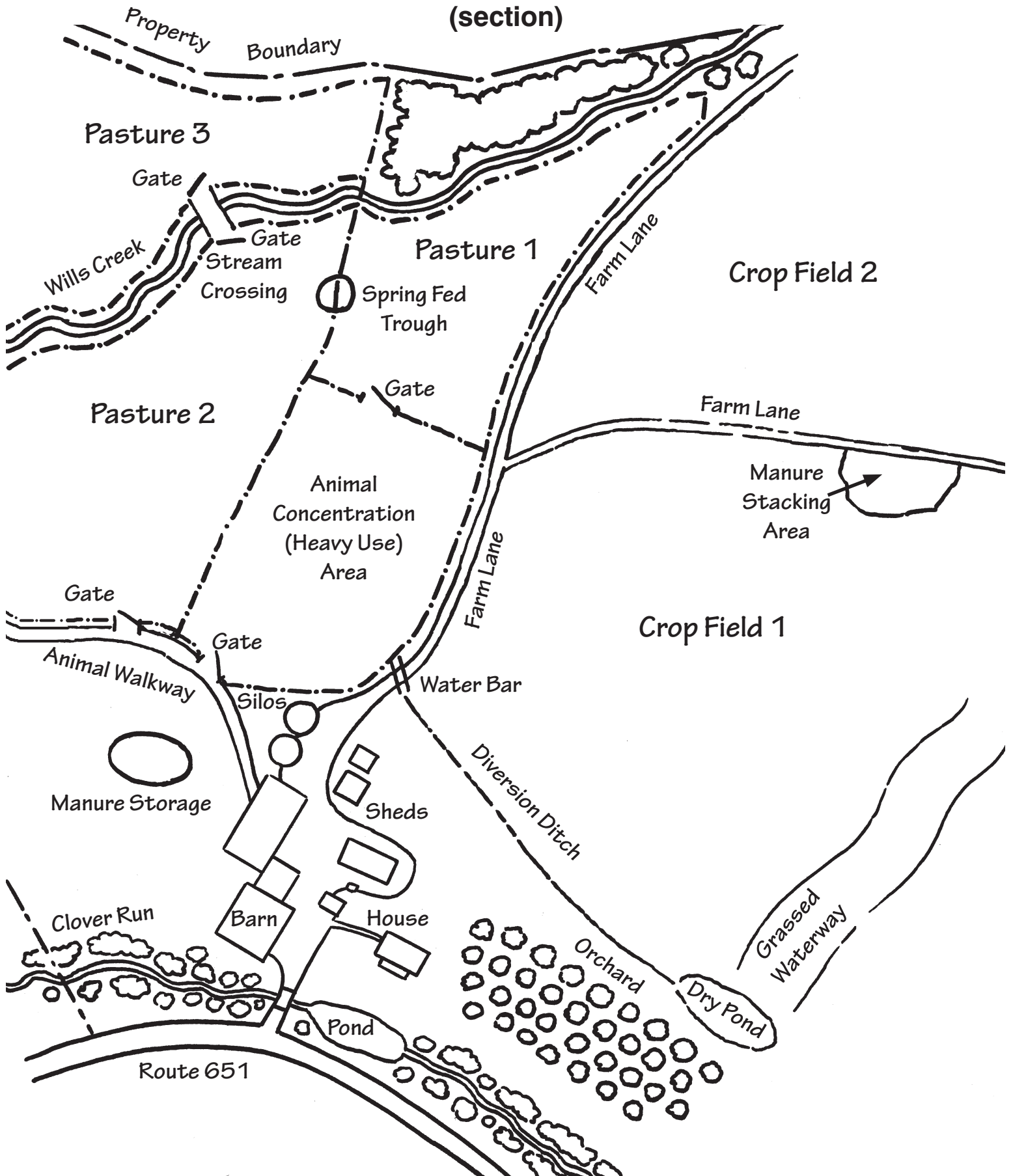
The provisions of this § 91.36 issued under sections 5(b)(1) and 402 of The Clean Streams Law (35 P. S. §§ 691.5(b)(1) and 691.402); and section 1920-A of The Administrative Code of 1929 (71 P. S. § 510-20).

Source

The provisions of this § 91.36 adopted January 28, 2000, effective January 29, 2000, 30 Pa.B. 521; amended October 21, 2005, effective October 22, 2005, 35 Pa.B. 5796. Section 91.36(b)(2)(i) and (ii) shall remain in effect until the effective date of regulations promulgated by the State Conservation Commission that establish requirements which provide, at a minimum, the same setback and buffer requirements for concentrated animal operations, and for agricultural operations that import manure from those operations, established in § 91.36(b)(2). The Department will publish notice in the *Pennsylvania Bulletin* if those regulations are promulgated. Nothing in this order is intended to affect the duty of any agricultural operation to comply with The Clean Streams Law or any other provision of Chapters 91 and 92. Immediately preceding text appears at serial pages (276356) and (271951).

Attachment #3

Farm Map Example



Attachment #4

Cropping Sequences for Minimizing Soil Loss to Tolerable Levels

Instructions for Utilizing Attachment #4

Step 1

Locate the County your farm is located on the Rainfall Areas – Pennsylvania Map that is part of the attachment. Determine which of the 3 Areas you are located in.

Step 2

Go to the appropriate Area Sheet (Area 1, Area 2, or Area 3)

Step 3

Determine the closest estimate of the slope of the field you are considering. Slope is determined by calculating the difference in feet or rise in one hundred feet.

“A” slope is 0 to 3 %

“B” slope is 3 to 8 %.

“C” slope is 8 to 15 %.

“D” slope is 15 to 25 %.

Step 4

Select a Cropping Sequence (tillage and rotation) that is listed under the field slope that is most appropriate for your farming operation. Note, that you may use a selection that has been listed under a steeper slope. For example if your field is within the “B” slope range you may select a cropping sequence that is listed under a C-Slope, or an D-Slope.

Definitions

Conventional Tillage: - These systems involve primary tillage utilizing moldboard plows or heavy disks followed by one or more secondary tillage, planting and row cultivation operations that bury nearly all previous crop residue. All of the soil is disturbed.

Conservation Tillage: - These systems involve primary tillage of chisel plows, disks or other non inversion implements followed by one or more secondary tillage, planting and row cultivation operations that leave some previous crop residue on the surface. All of the soil is disturbed. Tillage methods are limited to those that leave a minimum of 30% residue on the surface after planting.

Attachment #4 Pennsylvania Water Quality Action Packet for Agriculture
Cropping Sequences for Minimizing Soil Loss to Tolerable Levels

No-Till: - These systems consist of fertilizer and planting operations in narrow strips or slots that involve disturbance of less than one third of the inter row area. The remaining soil and residue is undisturbed and should be evenly distributed over at least 80% of the soil surface. Residue is left undisturbed from harvest through planting.

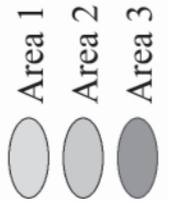
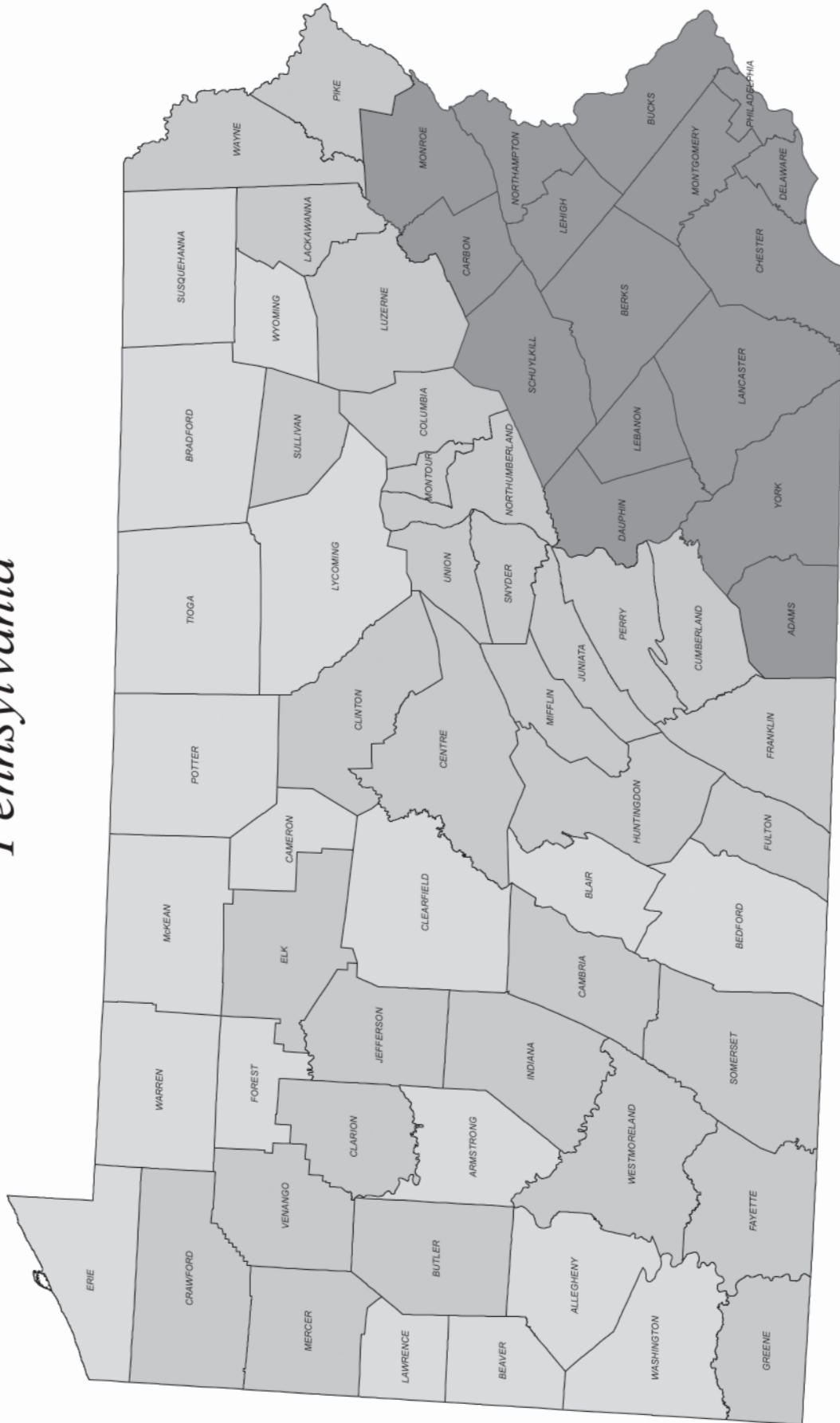
Contour Farming: - Farming operations are conducted with the contour of the land rather than up and down the hill.

Winter Grain Cover Crop: - Growing a crop of winter grain (rye, wheat, barley) for seasonal soil protection. Cover crops may be killed chemically, by rolling, a combination of chemical and rolling or may be removed only as forage.

Guiding Principles for Soil Erosion Control

- Using less intensive tillage systems; replacing Conventional Tillage with Conservation Tillage or Conservation Tillage with No-Till reduces soil loss.
- Grain Corn can be substituted for Silage Corn in any cropping sequence if the tillage remains the same or becomes less intensive.
- Planting crops on the contour will reduce soil loss, if a sequence specifies contour farming it is required for the cropping sequence.
- Fields may be split to apply different cropping sequences if multiple slopes exist in the field and it is practical to manage the areas separately.
- More years of grass hay or mixed hay can be added to a cropping sequence.
- Cover crops can be added to any cropping sequence.
- Sequences assume crop residues left on the field, if crop residues are removed (baling, burning, etc.) a cover crop needs to be used to replace the crop residue.

Rainfall Areas Pennsylvania



AREA 1

Cropping Sequences

A-Slope

- Continuous Grain Corn, Conservation Tillage
- Continuous Silage Corn, all No-Till
- Grain Corn, Conventional Tillage: Wheat, Conservation Tillage: Soybeans, Conservation Tillage
- 2 Years Silage Corn, Conventional Tillage: 2 Years Grain Corn, Conventional Tillage: 4+ Years Mixed Hay (Legume and Grass), No-till

B-Slope

- Continuous Grain Corn, No-Till
- Continuous Silage Corn, all No-Till with Winter Grain Cover Crop
- Grain Corn, Conventional: Wheat, No-Till: 3+ Years Mixed Hay (Legume and Grass), Conventional
- 1 Year Silage Corn, No-Till: 3+ Years Alfalfa Hay, No-Till
- 2 Years Silage Corn, No-Till: 2 Years Grain Corn, No-Till: 4 Years Alfalfa, Conventional Tillage
- Continuous Grass Hay, Conservation Tillage to Re-establish

C-Slope

- Continuous Grain Corn, No-Till
- Silage Corn, No-Till: Wheat, No-Till
- Grain Corn, No-Till: Soybeans, No-Till: Wheat, No-Till
- 2 Years Silage Corn, No-Till: 2 Years Grain Corn, No-Till: 4 Years Mixed Hay (Grass and Legume), No-Till
- Continuous Grass Hay, No-Till to Re-establish

D-Slope

- Continuous Grain Corn, No-Till
- Grain Corn, No-Till: Soybeans, No-Till: Wheat, No-Till
- Continuous Grass Hay, No-Till to Re-establish

AREA 2

Cropping Sequences

A-Slope

- Continuous Grain Corn, No-Till
- 1 Year Silage Corn, No-Till: 3 Years Grain Corn, No-Till
- **Contour Farming:** Grain Corn, Conservation Tillage: Wheat, Conservation Tillage: Soybeans, Conservation Tillage
- **Contour Farming:** 2 Years Silage Corn, Conventional Tillage: 2 Years Grain Corn, Conventional Tillage: 4+ Years Mixed Hay (Legume and Grass), No-till

B-Slope

- Continuous Grain Corn, No-Till
- 2 Years Silage Corn, No-Till: 2 Years Grain Corn, No-Till: 4 Years Alfalfa, No-Till
- Contour Farming: 1 Year Silage Corn, No-Till: 3+ Years Alfalfa Hay, No-Till
- 1 Year Silage Corn, No-Till: 2 Years Grain Corn, No-Till: 4 Years Alfalfa, Conventional Tillage
- Continuous Grass Hay, No-Till to Re-establish

C-Slope

- Continuous Grain Corn, No-Till
- Grain Corn, No-Till: Wheat, No-Till
- Grain Corn, No-Till: Soybeans, No-Till: Wheat, No-Till
- 1 Year Silage Corn, No-Till: 2 Years Grain Corn, No-Till: 4 Years Mixed Hay (Grass and Legume), No-Till
- Continuous Grass Hay, No-Till to Re-establish

D-Slope

- **Contour Farming:** Grain Corn, No-Till: Soybeans, No-Till: Wheat, No-Till
- Continuous Grass Hay, No-Till to Re-establish

AREA 3

Cropping Sequences

A-Slope

- Continuous Grain Corn, No-Till
- 1 Year Silage Corn with Winter Grain Cover Crop, No-Till: 3 Years Grain Corn, No-Till
- **Contour Farming:** Silage Corn, No-Till: Soybeans, No-Till
- **Contour Farming:** 2 Years Silage Corn, Conventional Tillage with No-Till Winter
- Grain Cover Crop: 2 Years Grain Corn, Conventional: 4+ Years Mixed Hay (Legume and Grass), No-till

B-Slope

- Continuous Grain Corn, No-Till
- **Contour Farming:** 2 Years Silage Corn, No-Till: 2 Years Grain Corn, No-Till: 4 Years Alfalfa, No-Till
- 1 Year Silage Corn, No-Till: 2 Years Grain Corn, No-Till: 4 Years Alfalfa, No-Till
- Continuous Grass Hay, No-Till to Re-establish

C-Slope

- Grain Corn, No-Till: Wheat, No-Till
- **Contour Farming:** Grain Corn, No-Till: Soybeans, No-Till: Wheat, No-Till
- 1 Year Silage Corn, No-Till: 2 Years Grain Corn, No-Till: 4 Years Mixed Hay (Grass and Legume), No-Till
- Continuous Grass Hay, No-Till to Re-establish

D-Slope

- Continuous Grass Hay, No-Till to Re-establish

Attachment #6

Guidance Documents

- DEP Manure Management Manual for manure storage and land application practices (web link)
<http://www.dep.state.pa.us/eps/docs/cab200149b1126000/fdr200149e0051190dr200149e32221af/doc20026sb4948013/361-0300-001.pdf>
<http://www.dep.state.pa.us/eps/docs/cab200149b1126000/fdr200149e0051190/fldr200149e32221af/doc20033fa5358002/361-0300-002.pdf>
- DEP Erosion and Sedimentation Pollution Control Manual for E&S practices and standards and county specific rainfall information (web link) (couldn't find it!)
- Penn State *Agronomy Guide* practices for land application of manure – (web link) <http://agguide.agronomy.psu.edu/cm/default.cfm>
- NRCS Conservation Catalog for guidelines for E & S and manure storage and land application guidelines (web link) <http://www.pa.nrcs.usda.gov/news/FTPPublications/conscatalog.pdf>
- *Pennsylvania Technical Guide* for agricultural water quality protection practices and standards (web link) <http://efotg.nrcs.usda.gov/treemenuFS.aspx?Fips=42027&MenuName=menuPA.zip>
 - o (The list would be more than a page, and is continually being updated. The standards are listed in eFOTG section IV.)
- The PennState Fact Sheets 254 through 257 and the *NRAES-89 Liquid Manure Application System Design Manual* for manure application provide recommended application rates.
- The NRCS National Irrigation Guide for other types of irrigation (web link) <http://www.wcc.nrcs.usda.gov/nrcsirrig/irrig-handbooks.html>

Sources of Technical Assistance

- a. Conservation districts www.pacd.org/
- b. Cooperative Extension www.extension.psu.edu/
- c. Certified Nutrient Management Specialists http://panutrientmgmt.cas.psu.edu/pdf/cert_county_listing.pdf
- d. Certified Crop Advisors http://www.agronomy.org/cca/search_cca.html, other qualified consultants Phone book, newspapers
- e. Farm organizations
- f. SCC <http://www.agriculture.state.pa.us/agriculture/cwp/view.asp?a=3&q=127144>
- g. Natural Resources Conservation Service <http://www.pa.nrcs.usda.gov>
- h. Soil Survey <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

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<http://www.dep.state.pa.us/eps/docs/cab200149b1126000/fdr200149e0051190/fdr200149e32221af/doc20033fa5358002/361-0300-002.pdf>
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- a. Conservation districts www.pacd.org/
- b. Cooperative Extension www.extension.psu.edu/
- c. Certified Nutrient Management Specialists http://panutrientmgmt.cas.psu.edu/pdf/cert_county_listing.pdf
- d. Certified Crop Advisors http://www.agronomy.org/cca/search_cca.html, other qualified consultants Phone book, newspapers
- e. Farm organizations
- f. SCC <http://www.agriculture.state.pa.us/agriculture/cwp/view.asp?a=3&q=127144>
- g. Natural Resources Conservation Service <http://www.pa.nrcs.usda.gov>
- h. Soil Survey <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

Attachment #7

Local Sources of Technical Assistance

1. County Conservation District Name/Address/Phone/email/WEB
2. County NRCS Name/Address/Phone/email/WEB
3. County Extension Service Name/Address/Phone/email/WEB
4. DEP Regional Office Name/Address/Phone/email/WEB
5. PDA State Office Name/Address/Phone/email/WEB
6. SCC State Office Name/Address/Phone/email/WEB