On the Road to Clean Water
Ag Water Quality and Nutrient Management Education

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and

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Extension Education Efforts

- Land Grant Institution
  - Delivering research-based information to improve quality of life
- Field days
- Publications
- Farm visits
Regulatory Considerations

- Federal Regulations
  - Clean Water Act (1948, 1972)
    - KPDES/KNDOP
  - Safe Drinking Water Act (1974)
  - Spill Prevention Control and Countermeasure (2013)
Regulatory Considerations

- State Regulation
  - Ag Water Quality Act (1994, 2001)
KY Ag Water Quality Act
KY Agriculture Water Quality Act

- 10+ acres in agriculture or forestry must develop a water quality plan
- Anyone applying for cost share needs a water quality plan
  - Kentucky Soil Erosion and Water Quality Cost Share Program (State cost share)
  - NRCS Environmental Quality Incentives Program (EQIP)
  - GOAP County Ag Investment Program (CAIP)
How Does a Landowner Get a Water Quality Plan?

1) Local Conservation District
2) Web Tool

www.ca.uky.edu/awqqa
Best Management Practices for Your Farm

This web site contains an on-line tool to be used by landowners to assess their operation and identify best management practices to be included in their individual plan. After identifying the best management practices, landowners/land users implement these practices on their land. Assistance to implement the plan can be obtained by contacting your local Conservation District Office or your local Cooperative Extension Service Office.

Create Plan
How Does a Landowner Get a Water Quality Plan?

1) Local Conservation District
2) Web Tool
3) Producer Workbook
Kentucky Agriculture Water Quality Plan

Producer Workbook

PLAN YOUR FARM

FARM YOUR PLAN

[Image of a cartoon farmer looking at maps and plans]
<table>
<thead>
<tr>
<th>Field No.</th>
<th>Date to Complete Practice</th>
<th>BMP Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Livestock BMP #2 Proper Grazing Use</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Livestock BMP #11 Nutrient Management</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Crops BMP #3 Conservation Tillage</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Crops BMP #13 Cover Crop</td>
</tr>
<tr>
<td>N/A</td>
<td></td>
<td>Farmstead BMP #2 Septic System</td>
</tr>
<tr>
<td>1, 2</td>
<td></td>
<td>Forestry BMP #4 Sinkholes</td>
</tr>
</tbody>
</table>
## Comprehensive BMP List

<table>
<thead>
<tr>
<th>IMPLEMENTED</th>
<th>RECOMMENDED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CROPS</strong></td>
<td></td>
</tr>
<tr>
<td>BMP#2: Conservation Cover</td>
<td>BMP#1: Conservation Cropping Sequence</td>
</tr>
<tr>
<td>BMP#3: Conservation Tillage / Crop Residue Use</td>
<td>BMP#4: Contour Faming</td>
</tr>
<tr>
<td>BMP#5: Nutrient Management</td>
<td>BMP#6: Filter Strip</td>
</tr>
<tr>
<td></td>
<td>BMP#7: Grasses and Legumes in Rotation</td>
</tr>
<tr>
<td></td>
<td>BMP#8: Milking</td>
</tr>
<tr>
<td></td>
<td>BMP#9: Pasture and Hay Land Management</td>
</tr>
<tr>
<td></td>
<td>BMP#10: Strip Cropping</td>
</tr>
<tr>
<td></td>
<td>BMP#11: Critical Area Planting and Treatment</td>
</tr>
<tr>
<td></td>
<td>BMP#12: Pest Management Including Cultural Control</td>
</tr>
<tr>
<td></td>
<td>BMP#13: Cover Crop</td>
</tr>
<tr>
<td></td>
<td>BMP#14: Nutrient Management</td>
</tr>
<tr>
<td></td>
<td>BMP#15: Grassed Waterways</td>
</tr>
<tr>
<td><strong>FARMSTEAD</strong></td>
<td></td>
</tr>
<tr>
<td>BMP#1: Solid Waste Procedures</td>
<td></td>
</tr>
<tr>
<td>BMP#2: Septic Systems and On-Site Disposal</td>
<td></td>
</tr>
<tr>
<td>BMP#3: On Farm Petroleum Storage and Handling</td>
<td></td>
</tr>
<tr>
<td>BMP#4: Well Protection</td>
<td></td>
</tr>
<tr>
<td><strong>FORESTRY</strong></td>
<td></td>
</tr>
<tr>
<td>BMP#1: Construction of Access Roads and Skid Trails</td>
<td></td>
</tr>
<tr>
<td>BMP#2: Revegetation</td>
<td></td>
</tr>
<tr>
<td>BMP#3: Streamsides Management Zones</td>
<td></td>
</tr>
<tr>
<td>BMP#4: Sinkholes</td>
<td></td>
</tr>
<tr>
<td>BMP#5: Logging Debris</td>
<td></td>
</tr>
<tr>
<td>BMP#6: Proper Planting of Tree Seedings by Machine</td>
<td></td>
</tr>
<tr>
<td>BMP#7: Fertilization</td>
<td></td>
</tr>
<tr>
<td>BMP#8: Application of Pesticides</td>
<td></td>
</tr>
<tr>
<td>BMP#9: Site Preparation for Reforestation</td>
<td></td>
</tr>
<tr>
<td>BMP#10: Silviculture in Wetland Area</td>
<td></td>
</tr>
<tr>
<td><strong>LIVESTOCK</strong></td>
<td></td>
</tr>
<tr>
<td>BMP#2: Proper Grazing Use</td>
<td>BMP#1: Planned Grazing System</td>
</tr>
</tbody>
</table>
AWQP: Certification

I understand my obligations under the Agriculture Water Quality Act to implement the applicable requirements of the statewide water quality plan, and I have developed a water quality plan for my individual operations based on its guidance. I am aware of the need to review my plan periodically to record those practices or measures that I have completed, and to modify my plan as major changes are made in my operation. If my management practices are questioned by regulatory agencies or through civil actions, these updated records will serve as documentation of my efforts to improve and protect the natural resources. This plan entitles me to:

- **The Corrective Measures Process.** A process to correct any identified water quality problems that may be the result of the activities conducted on my operation.
- **Availability of technical assistance** through the conservation districts to develop or modify as needed my water quality plan, practices, and/or measures to recommend changes to the statewide water quality plan.
- **Financial Assistance** needed for implementation of my plan as resources become available.
- **Possible extensions of time for compliance** with a water quality plan based on the availability of technical and financial assistance.

I would like to be kept informed, through the conservation district's mailing list, of new information as it becomes available regarding resource needs, water quality, environmental conditions, new or more effective best management practices, new and beneficial technologies, and new or expanded sources of technical and financial assistance such as cost share or incentive programs.

AWQP Plan Certification and/or Plan is Filed at the Robertson County, Kentucky, Conservation District

Farm ID: 217  
Farm Name: Big Red Farm  
Farm Owner: Amanda Gumbert  
Address: Blue Licks Pike  
Farm Operator: Amanda Gumbert  
Date Plan Developed: 5/20/2008 10:37:19 AM

Signed  
Date Signed
KY Ag Water Quality Act Compliance Survey (2010-2011)

- 62% of respondents were aware of the Kentucky Agriculture Water Quality Act prior to the survey

- 58.7% of respondents had an Ag Water Quality Plan
  - 51.9% of the plans were developed during the years 2001-2005
Only 16.7% of respondents have updated Ag Water Quality plans since initial development.

Over half (56.9%) of respondents reported more than five years since updating their Ag Water Quality plan.

Only 33.3% of respondents had implemented 100% of their Ag Water Quality Plan.
How is Nutrient Management Related to the KY Ag Water Quality Plan?

- Livestock BMP #11 – Nutrient Management
- Crops BMP #14 – Nutrient Management

This is NOT new!
AWQA Minimum Requirements - Old

- Comply with NRCS Code 590 (2001)
- Manage manure in a manner that prevents degradation of water, soil, air, and that protects public health and safety.
- Sufficient land must be available for a disposal area without overloading soils or exceeding crop requirements.
- Minimize edge-of-field delivery of nutrients where no setbacks are required.
What Changed?

- Updates to KY NRCS 590
- N and P Risk Assessments must be used on every field
  - A new N and P Index have been developed
  - Producers no longer have the choice to choose a P threshold vs. a P index approach for planning nutrient applications (2001)
- Every application field must have a RUSLE2 soil loss assessment
  - Soil loss tolerance levels must not be exceeded
What Changed?

- The KY NRCS 590-based CNMP is complicated to develop, requires TSPs, and a waiting period

- The AWQA has added another option for developing NMPs
AWQA Minimum Requirements - New

- Manage manure in a manner that prevents degradation of water, soil, air, and that protects public health and safety.
- Sufficient land must be available for a disposal area without overloading soils or exceeding crop requirements.
- Minimize edge-of-field delivery of nutrients where no setbacks are required.
Kentucky Nutrient Management Plan Flow Chart

Do you own 10 or more acres being used for agriculture or silviculture operations?

Yes

KY’s 1994 Ag Water Quality Act requires that I complete a KY Ag Water Quality Plan.

When completing the KY Ag Water Quality Plan, nutrient management is required?

No

A nutrient management plan is not required.

Yes

I want NRCS financial or technical assistance for a nutrient management plan.

I want NRCS financial or technical assistance for a nutrient management plan.

KY Division of Water requires that I obtain a federal NPDES* permit.

I want a federal NPDES* permit.

I need to meet KY Ag Water Quality Plan requirements.

I need a KY Division of Water, KNDOP** or KPDES*** State Permit.

I need assistance from USDA-Farm Service Agency in the form of payments or loans.

Animal Waste is produced on my operation?

Yes

NRCS Practice Standard 590 Comprehensive Nutrient Management Plan (CNMP) is required.

I only land apply nutrients or animal waste. My operation does not produce nutrients.

NRCS Practice Standard 590 Nutrient Management Plan (NMP) is required.

Possible planning options:

- Conservation District Employee
- Fee for service planner
- Use online tools to develop your own plan
- UK County Extension Agent

Financial assistance may be available in the future.

Contact a NRCS Technical Service Provider to write a plan.

Financial assistance for plans and practices may be available from NRCS.

*NPDES=National Pollutant Discharge Elimination System
**KNDOP=KY No Discharge Operational Permit
***KPDES=KY Pollutant Discharge Elimination System
### WORKSHEET 1 - ESTIMATING NUTRIENTS GENERATED PER CONFINEMENT PERIOD

1. **Nutrients Generated (As Excreted)**

<table>
<thead>
<tr>
<th>Animal Type</th>
<th>Number</th>
<th>Percent Waste as Solids</th>
<th>Avg. Weight</th>
<th>Confinement Period (days/yr)</th>
<th>= Animal Unit Table 1 Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef (all cattle and calves)</td>
<td>200</td>
<td>1.00</td>
<td>650</td>
<td>120</td>
<td>15,600</td>
</tr>
</tbody>
</table>

   \[ \text{Animal Unit} = \text{Number} \times \text{Percent Waste as Solids} \times \frac{\text{Avg. Weight}}{1000} \times \text{Confinement Period (days/yr)} \]

   \[ \text{Step 1 Total} = 5,304 \text{ } 3,276 \text{ } 3,900 \]

2. **Manure Generated (As Excreted)**

<table>
<thead>
<tr>
<th>Animal Unit</th>
<th>x Manure/A.U. = Volume of Manure</th>
</tr>
</thead>
<tbody>
<tr>
<td>15,600</td>
<td>15,600 cu.ft.</td>
</tr>
</tbody>
</table>

   \[ \text{Step 2 Total} = 15,600 \text{ cu.ft.} \]

3. **Daily Bedding or Wasted Forage (cu.ft.)**

   \[ \text{Step 3 Total} = 0 \text{ cu.ft.} \]

4. **Total Tons = Step 2 + Step 3 / 33 Cu.Ft./Ton**

   \[ \text{Step 4 Total} = 472.72 \text{ Tons} \]

5. **Weighted Nutrient Value Before Nutrient Losses (lbs/ ton)**

   \[ \text{Step 5 Total} = 11.22 \text{ } 6.93 \text{ } 8.25 \]

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**Note:** All manure calculations are carried to two decimal points with no rounding. All commercial fertilizer calculations will be rounded to whole numbers.

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**SOLIDS WORKSHEET**

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Print Worksheet  | Worksheet 2 (Solids)  | Go to Worksheet 1 (Liquids)
### WORKSHEET 2 SOLIDS - NUTRIENT BALANCE

<table>
<thead>
<tr>
<th>Tract</th>
<th>Field No.</th>
<th>Acres</th>
<th>Soil Test P Value (Mehlich 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td></td>
<td>50</td>
<td>266</td>
</tr>
</tbody>
</table>

1. **Crop or Crop Sequence/Rotation**
   - Corn Silage (Ton)
   - 20

2. **Realistic Yield (Average from 5-10 Years)**
   - (must enter a value for proper results)

3. **Plant Nutrients Needed or Allowed (lbs/ac)**
   - (Using crop removal rates in Table S)
   - N: 194, P₂O₅: 72, K₂O: 160

4. **Adjusted P₂O₅ Application Rate according to Threshold.**
   - Choose P₂O₅ x 0
   - (P₂O₅ x 0 for Soil Test P <400; 1 x for Soil Test P 401-600; 0.5 x for Soil Test P 601-800; >800 = Manure cannot be applied)

5. **Fertilizer Credits (Starter or Other) (lbs/ac)**
   - 0

6. **Nitrogen credits from Previous Manure Applications (lbs/ac)**
   - From Table 4 value x net application of manure nutrients N in previous year(s)

7. **Plant Nutrients Needed Minus Credits (lbs/ac)**
   - (Step 3 for N minus Steps 5 & 6 or Step 4 for P₂O₅ minus Step 5)
   - N: 194, P₂O₅: 72, K₂O: 160

8. **Nutrients in Manure (lbs/ton)**
   - (Use labtest or weighted value as determined in Worksheet 1)
   - N: 11.22, P₂O₅: 6.93, K₂O: 8.25

9. **Percent Nutrients Retained in System**
   - Table 2
   - 80%, 95%, 95%

10. **Net Retained Nutrients in Manure (lbs./ton)**
    - (Step 8 x Step 9) Enter zero with lab analysis
    - N: 8.97, P₂O₅: 6.58, K₂O: 7.83

11. **Percent of Available Nutrients**
    - Table 3
    - 35%, 80%, 100%

12. **Net Available Nutrients (lbs./ton)**
    - (Step 10 x Step 11 without lab analysis. Step 8 x Step 11 with lab analysis)
    - N: 3.13, P₂O₅: 5.26, K₂O: 7.83

13. **Application Rate (tons/ac)**
    - (Step 7/Step 12)
    - Note: Application limitations may apply
    - N: 9.5, P₂O₅: 9.5, K₂O: 9.5

14. **Net Application Amount for All Nutrients (lbs/ac)**
    - [Step 12 x Step 13]
    - N: 29.73, P₂O₅: 49.97, K₂O: 74.38

15. **Nutrient Needs or Surpluses (lbs/ac)**
    - (Step 14 minus Step 7) “+” sign indicates need
    - N: -164.27, P₂O₅: -22.03, K₂O: -85.62

| Uniform Application Rate = | 9.4544 ton/ac |

**Tons Available**
- Solids: 472.72

**-Tons Applied in Field**
- (Step 13 x Field Acres): 475

**= Balance**: -2.27
## WORKSHEET 3 - APPLICATION RATES AND LAND REQUIREMENTS

<table>
<thead>
<tr>
<th>Tract No.</th>
<th>Field No.</th>
<th>Acres</th>
<th>Crop Rotation / Sequence &amp; Realistic Yield</th>
<th>Expected Application Date or Timing</th>
<th>Expected Application Rate</th>
<th>Actual Application Rate</th>
<th>Form</th>
<th>Total per Field (tons or lbs)</th>
<th>Soil Test Phosphorus</th>
<th>Planned BMPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>50</td>
<td>Corn Silage</td>
<td>Spring 2012</td>
<td>9.5 tons/ac</td>
<td>3/31/2012</td>
<td>15 T/A</td>
<td>Solid</td>
<td>750</td>
<td>266</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>20</td>
<td>Wheat</td>
<td>Fall 2012</td>
<td>6.5 tons/ac</td>
<td></td>
<td></td>
<td>Solid</td>
<td>0</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>20</td>
<td>Wheat</td>
<td>Fall 2012</td>
<td>6.5 tons/ac</td>
<td></td>
<td></td>
<td>Solid</td>
<td>0</td>
<td>380</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>32</td>
<td>Wheat</td>
<td>Fall 2012</td>
<td>6.5 tons/ac</td>
<td></td>
<td></td>
<td>Solid</td>
<td>0</td>
<td>268</td>
<td></td>
</tr>
</tbody>
</table>

1. Where land application is occurring under long term lease or agreement with adjacent landowner, fields must be included in the above table.
2. Reference maximum rate per application from Worksheet 2. For phosphorus based applications, a one time application can occur for crops grown in multiple years (e.g., corn following by winter wheat followed by soybeans).
3. When soil test P exceeds 400, use Phosphorous Threshold.
4. Fields that have a “High” soil test phosphorus (>400) should implement Best Management Practices (BMPs) to reduce the risk of nutrient movement to sensitive waterbodies. BMPs may include, but not be limited to: installing conservation buffers, reducing P₂O₅ application rate, incorporating manure, adding chemical treatments to litter that tie up soluble P and keep it from moving over the landscape, and/or adjusting application timing.
KyNMP Summary

- Similar concept as in NRCS 590 (2001/2013)
  - Inventory nutrients available (manures)
  - Determine crop needs
  - Distribute nutrients so that crop needs are met without overloading soils
- Producer can write his/her own plan
- Benefit = better understanding of their operation and nutrient management concepts
- Adaptive management can improve efficiency, production, and economic returns
Educational Need – How Do We Help Producers?

- Partnerships
- Existing Extension Programs
  - Master Cattlemen
  - Master Stocker
- Demonstrations
Educational Need – How Do We Help Producers?

- Commodity Associations
  - Annual Meetings/Leadership
- Train-the-Trainer
  - Conservation District Staff, County Agents, Extension Specialists
- Train-the-Regulator - WHAT?!?!?
Educational Need – How Do We Help Producers?

- Field Days
- Publications/Newsletters
The Kentucky Agriculture Water Quality Act

What is the Agriculture Water Quality Act?
The Agriculture Water Quality Act was passed by the Kentucky General Assembly in 1994. The act protects surface and groundwater resources from pollution from agriculture and forestry practices.

What is an Agriculture Water Quality Plan?
The Kentucky Agriculture Water Quality Plan consists of best management practices (BMPs) from six areas: silviculture (forestry); pesticides and fertilizers; farmstead; crops; livestock; and streams and other waters. The statewide plan serves as a guide to individual landowners/land users as they develop water quality plans for their individual operations.

What about Cost Share?
Cost share dollars are available through federal, state, and local programs to help implement Ag Water Quality plans.

Do You Need a Water Quality Plan?
You need a current Ag Water Quality Plan if:
1. You own 10 acres or more that are actively involved in agriculture or forestry;
   Or
2. You plan to apply for on-farm assistance through federal, state, or local cost-share programs.

Complete your Ag Water Quality Plan at: www.ca.uky.edu/awqa
The Kentucky Agriculture Water Quality Act

What is the Agriculture Water Quality Act?
The Agriculture Water Quality Act was enacted by the Kentucky General Assembly and provides state and federal funding to reduce surface and groundwater pollution from agriculture and silviculture operations.

Who is affected?
The act affects all landowners of contiguous acres and who conduct agricultural operations on their land.

What must be implemented?
All landowners/land users who own land that is used for agriculture or silviculture operations must develop and implement a water quality plan based on guidance from the agriculture Water Quality Plan.

Do You Need a Water Quality Plan?
1. Do you own 10 contiguous acres?
   No: You do not need an agricultural water quality plan.
   Yes: Go to question 2.
2. Is your property being used for agricultural operations?
   No: You do not need an agricultural water quality plan.
   Yes: Go to question 3.
3. Do you have a conservation plan or a stewardship plan for your operation?
   No: You will need to develop a water quality plan.
   Yes: You will need to develop a water quality plan, so you will need to update your conservation plan, or forest stewardship plan so that water is protected from pollution on your property.

What is an Agriculture Water Quality Plan?
The Kentucky Agriculture Water Quality Plan consists of best management practices (BMPs) from six areas: silviculture (forestry); pesticides and fertilizers; farmstead; crops; livestock; and streams and other waters. The statewide plan serves as a guide to individual landowners/land users as they develop water quality plans for their individual operations.

How does the act define agriculture and silviculture operations?
According to the Kentucky Agriculture Water Quality Act, an “agriculture operation” is defined as any farm operation on a tract of land, including all income-producing improvements and farm dwellings, together with other farm buildings and structures incident to the operation and maintenance of the farm, situated on 10 contiguous acres or more of land used for agriculture or silviculture or devoted to meeting the requirements and qualifications for payments to agriculture programs under an agreement with the state or federal government.

Agriculture operations include, but are not limited to, production of livestock, livestock products, poultry, poultry products, milk, and milk products, or for the growing of crops such as but not limited to tobacco, corn, soybeans, small grains, fruits, and vegetables.

What is the process for developing and implementing an individual water quality plan?
First, landowners must assess their operations and determine if they need an agriculture water quality plan. Once the assessment is complete, the landowner must choose the appropriate BMPs for his/her operation.

Who is responsible for developing an Agriculture Water Quality Plan?
The landowner is responsible for preparing an agriculture water quality plan that best meets the needs of his/her particular farming operation. This plan belongs to the landowner and must be available in the event that water pollution occurs and is identified and traced to his/her agricultural operation. A self-certification form, can be filed with the local conservation district.

An interactive online tool is available at www.ca.uky.edu/awqa to help landowners decide which best management practices (BMPs) are needed for their farm.

For more information regarding the workbook or online computer version contact your local Conservation District office, county Extension office, or Amanda Gumbert at 859-257-6094 or amanda.gumbert@uky.edu.
Paved Feeding Areas in Kentucky Agriculture

Kentucky’s abundant forage makes it well suited for grazing livestock. Livestock producers can make additional profits by adding a few pounds before marketing calves; however, adding these pounds requires keeping calves during the winter months (October to February), when pasture forages are dormant and supplemental feed is required. The areas used to winter calves need to be conducive to feeding and need to avoid negatively impacting the environment, especially water quality.

Some livestock producers use a paved feeding area to limit mud, ease manure removal, and facilitate feeding and management. Typically, producers are interested in improved herd health, limiting expenses, and increasing profits, but environmental issues also need to be addressed to prevent degradation of natural resources and limit the possibility of nuisance complaints and notices of violation (NOV).

Best management practices (BMPs) are particular management methods that consider the nutrients in manure, reduce runoff and trap, filter, and control pollution. This publication is intended to provide an overview of the impacts associated with paved feeding areas and highlight the Kentucky Agriculture Water Quality Plan (KAWQ) and the BMPs it recommends for livestock producers.

Potential Environmental Problems:
When densely stocked animals are fed concentrated diets and the area on which the animals are standing is impervious (no runoff water infiltration), the manure and dirty water that is produced will pollute run-off. It needs to be managed. The following sections describe the environmental impacts of paved feeding areas.

Riparian Buffers

A Livestock Best Management Practice

In Kentucky, cattle and pasture areas are often watered by streams. Although this practice supplies water requirements for cattle, providing livestock free access to streams and riparian areas can lead to contaminated water supply and damaged ecosystems. A better solution is to implement riparian buffers with limited access points to streams or provide alternative water sources. This practice can protect water quality, increase herd production, and provide other livestock benefits.

The purpose of this publication is to explain the role of riparian areas and how they can benefit the livestock producer, the herd, and the environment.

What Is a Riparian Buffer?

A riparian buffer is the strip of land that borders a stream, river, or other body of water. The water body may be permanent or intermittent and may include areas associated with groundwater recharge. The riparian buffer can also be a riparian area or zone, a transitional area between aquatic ecosystems (the water body itself) and upland areas (such as pasture or woodlands). The riparian buffer may consist of trees, shrubs, grasses, or a combination of the three.

Buffer Widths

Accomplish functions stated above. Table 1 lists some commonly used buffer widths. Buffers with widths less than 15 feet are considered to be less effective at achieving water quality benefits.

Confinement Facilities

There are three general types of confinement facilities: totally enclosed, partially enclosed, and open. Each of these facilities is subject to different stormwater management standards. Totally enclosed facilities, animals are managed completely under roof. Totally enclosed facilities generally do not produce polluted runoff if designed correctly. Pollution could originate from these facilities if the manure generated from these areas is not collected and managed properly or if stormwater is allowed to come in contact with the manure or other wastes. The second type of confinement facility is partially enclosed facilities that include a feeding building that covers part of the area, but animals also have access to uncovered areas. The third type are open confinement facilities with unroofed areas where animals are held, fed, and handled. Partially enclosed and open facilities can be less effective than totally enclosed facilities at reducing pollution.

Environmental Compliance for Dairy Operations

Some farmers are reluctant to talk about the environment, but dairy farms are under increasing review by state and federal regulatory agencies. Producers need to be familiar with environmental issues and regulations, implementing best management practices (BMPs) can help farmers continue to protect the environment and increase productivity.

Common pollutants from farms include sediment, pathogens, and nutrients coming from mostly confined and excess manure. An Agricultural Water Quality Plan (AWQP) can resolve many of these pollution issues. This plan is required by Kentucky if a livestock owner has more than 100 head of cattle or is using riparian areas that are being used for agriculture or non-agricultural operations. These plans are designed to help producers identify potential sources of pollution on their operations and implement BMPs that protect natural resources and improve efficiency.

This publication provides dairy producers with the tools they need to accurately assess environmental challenges on their farm and provides strategies to obtain compliance and preserve environmental quality for future generations.

Best Management Practices

Open concrete lots, roofs, and other impervious areas generate significant volumes of water that must be properly managed. For example, a roof measuring 75 by 150 feet produces approximately 160,000 gallons of clean water runoff per year. To prevent the contamination of clean water runoff, a roof must be designed correctly. Pollution could originate from these facilities if the manure generated from these areas is not collected and managed properly or if stormwater is allowed to come in contact with the manure or other wastes. The second type of confinement facility is partially enclosed facilities that include a feeding building that covers part of the area, but animals also have access to uncovered areas. The third type are open confinement facilities with unroofed areas where animals are held, fed, and handled. Partially enclosed and open facilities can be less effective than totally enclosed facilities at reducing pollution.

Runoff from dry lots and other confinement areas can cause erosion and generate pollution that can move offline into surface waters. Fix any high traffic or congregation areas on manure piles. Avoid placing structures near in floodplains or on slopes greater than six percent. In addition, planting filter strips using wire and cool season vegetation around these areas can prevent soil erosion (Figure 1). Install these filter strips along the downslope to filter water from areas.
What’s Next?
KyNMP Training – Hittin’ The Road

- Conservation District Staff, other service providers
  - August 14-15 - Princeton
  - August 19-20 - Mayfield
  - October 1-2 - TBD
  - October 14-15 - TBD
  - October 22-23 - TBD
Questions?

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There’s no question: surface and groundwater is polluted

- How do we clean it up?
  - Federal Regulations (Stick)
    - Clean Water Act
    - Safe Drinking Water Act
    - Federal Insecticide, Fungicide and Rodenticide Act
  - More on the horizon?
how do we clean it up?

- USDA Economic Programs (Carrot)
  - EQIP
    - MRBI
  - WQP
  - Conservation Compliance/HEL
  - CRP
  - Wetlands Reserve Program
how do we clean it up?

- State Regulation (Stick)
  - KPDES
  - KNDOP
  - Ag Water Quality Act (Insurance)
- Voluntary Compliance
  - Ag Water Quality Act
  - Conservation programs
  - Education (Changing Hearts and Minds)
  - Cheapest but has limited effects
Extension Education Efforts

- Historical approaches
- Field days
- Technology
- Challenges
- Carrots/sticks
P Index Estimates Average Annual P Delivery

- County
- Soil Type
- Soil Test P and Organic Matter
- Field Slope
- Field Slope Length
- Contour and filter practices
- Tillage
- Rotation crops and yields
- Manure Applications
- P Fertilizer Applications
- Downfield Slope to Surface Water
- Distance to Surface Water

New Phosphorus Index

Kentucky Nitrogen and Phosphorus Index
Proposed release date: January, 2013