Livestock and Poultry Environmental Stewardship (LPES) curriculum

CAFO Fact Sheet series

Fact Sheet #22: Land Application Setback and Buffer Requirements for NPDES Permitted Large CAFOs

Disclaimer
This fact sheet reflects the best professional judgment of the contributing authors and is based on information available as of the publication date. Also, your state may have additional, more stringent requirements than EPA's requirements. Contact your permitting authority for complete information on the regulations that apply to you.

By Christopher Henry, University of Nebraska-Lincoln

Introduction

Large Concentrated Animal Feeding Operation (CAFO) owners/-operators are required to implement setbacks, buffers, or an alternative conservation practice on all fields to which manure is applied. This fact sheet provides the description of the federal rules and some guidance on how the rule may be applied to land application sites. The setback and buffer requirements apply to large CAFOs only. Most states are authorized to implement the CAFO program and may have additional, more stringent requirements. Check with your state permitting authority to determine the requirements that apply to your operation.

The Rule

Large CAFO owners/operators may not apply manure, litter, or process water closer than 100 feet to any down gradient surface waters, open tile intake structures, sinkholes, agricultural wellheads, or other conduits to surface waters. CAFO owners/operator may substitute the 100-foot setback with a 35-foot-wide vegetative buffer where applications of manure, litter, or process water are prohibited. If CAFO owners/operators can demonstrate that a setback or buffer is not necessary because implementation of alternative conservation practices or field-specific conditions will provide pollutant reductions equivalent or better than the reductions that would be achieved by the 100-foot setback, then the setback requirement can be waived.

EPA defines a vegetated buffer as a narrow, permanent strip of dense perennial vegetation established parallel to the contours of and perpendicular to the dominant slope of the field for the purposes of slowing water runoff, enhancing water infiltration, and minimizing the risk of any potential nutrients or pollutants from leaving the field and reaching surface waters. Information about setbacks, buffers, or alternative conservation practices for each land application site must be included in

Continued on next page

the nutrient management plan (NMP) and may also be required in the permit application or notice of intent, depending on state-specific regulatory requirements.

Time Line for Compliance

The owner of a livestock or poultry operation defined as a CAFO has a "Duty to Apply" for a National Pollutant Discharge Elimination System (NPDES) permit. The deadline for an NPDES permit application is as follows:

Type of Operation	Permit Application Deadline
Existing animal operation historically defined as a CAFO by EPA rules:	
And operating with current NPDES permit.	180 days prior to expiration of current permit
But operating without an NPDES permit.	Immediately
Existing animal operation NOT historically defined as a CAFO by EPA rules:	
But now a CAFO.	Deadline set by permit authority but no later than April 13, 2006
Due to its original size but now a CAFO due to expansion.	As soon as possible, but no later than 90 days after expansion
Due to a past exemption under the original CAFO rule (e.g., species exemption) but now a CAFO following expansion.	April 12, 2006 or 90 days after expansion, whichever is later
Newly constructed CAFO:	
Large enough to be a CAFO	180 days before beginning operation

For additional information on time line for compliance, see *CAFO Fact Sheet #3: How Soon Must I Comply with NPDES CAFO Regulations?*

Producer Checklist (select one of the following):

____ I will not apply manure or effluent within 100 feet of surface waters, open tile intake structures, sinkholes, agricultural wellheads, and other conduits to surface waters for all fields that receive manure.

OR

____ I have permanent vegetated buffers a minimum of 35 feet around open tile intakes, sinkholes, agricultural wellheads, and other conduits to surface waters for all fields that receive manure. These vegetated buffers will not receive manure or effluent.

OR

____ The state regulatory agency has approved an alternative conservation practice, _____ _____, that allows me to apply manure or effluent within ___ feet of open tile intakes, sinkholes, agricultural wellheads, and other conduits to surface waters for all fields that receive manure.

Discussion

EPA believes that the nutrients entering surface waters will be substantially reduced with the use of setbacks, buffers, or alternative conservation practices. However, they require some additional management of land application sites. For each site, CAFO owners/operators must decide which of the three BMPs will be implemented. However, some sites may not require any setbacks or buffers.

Setbacks and buffers will reduce the amount of land available for manure application. Therefore, deciding which BMP to use may depend on the CAFO owner's/operator's willingness to remove land from production in order to simplify land application activities. Some CAFO owners/operators may choose to install vegetative buffers rather than observe 100-foot setbacks. The field application of setbacks from streams and

other surface water conduits may be made easier with the use of Global Positioning Systems data collection, parallel guidance, or tracking systems.

A 100-foot setback from any point, such as a well or tile intake, results in an area of 0.72 acres that is not available for manure application but is still available for crop production. A 35-foot vegetated buffer around a point, such as a well or tile intake, removes 0.09 acres of land available for manure application and also removes that area from crop production. For every 100 linear feet of distance, 0.23 acres is removed from land application, while only 0.08 acres is removed if a vegetative buffer is used.

Table 1. Area needed for setbacks and buffers

	Acres Removed from Manure Application	
	Every Point (well or tile intake)	Every 100-Ft Along Stream or Conduit to Surface Water
100-ft setback	0.72	0.23
35-ft buffer	0.09	0.08

Financial assistance may be available from the Natural Resource Conservation Service (NRCS) and some state nonpoint source programs for vegetative buffers. In fact, there has been increasing demand for the NRCS buffer program in recent years. Some state regulatory authorities may consider existing buffer and stream corridors a buffer. On a field-by-field basis, CAFO owners/operators should check what will be considered an already established buffer and what will not. Some states may also consider grassland or an alfalfa crop as equivalent to a permanent buffer. For fields that were planted to perennial vegetation, some may allow manure application to within 35 feet of conduits to surface water.

Every field used for manure application will need to be included in the NMP, which will show the acres available for manure application. Some states may interpret manure injection or immediate incorporation into the soil as an alternative conservation practice that provides pollutant reductions equivalent to the 100-foot setback or 35-foot buffer. If the operation can demonstrate on a field-by-field basis that manure appliation will not impact surface waters, such as when application occurs down gradient of surface water, the permitting authority can waive the setback or buffer requirement. As with all of the previous situations, what is acceptable is state specific, so check with your state regulatory authority for details.

Application

To comply with the setback requirement, CAFO owners/operators will need to identify, on a topographical or aerial map, the setback or buffered areas in each field that will be used for manure application. Setbacks are measured from the bank's edge for a stream or from the channel's edge for all other conduits. Farm Service Agency acreages will not reflect actual acres available for manure application unless they have been updated from a stream buffer planting.

Setbacks and buffers from tile intakes and agricultural wells need only take a full circle when the application is down gradient of the intake or well. For example, consider terraces and tile intakes. Tile intakes are located in the channel of a terrace, and the distance between the top of the terrace and the channel is usually the width of one equipment pass. Many times this is less than 25 feet. For a 100-foot setback, therefore, only 25 feet would need to be observed between the riser and the top of the terrace because the other side of the terrace does not drain to the riser. Another alternative may be to temporarily plug tile inlets or subsurface drain outlets during manure application. Wellheads and sinkholes that are up gradient of manure runoff would not require setbacks or buffers. Additional-

ly, wells located in the appliation area of a center pivot, must also have either a setback or buffer applied. This could substantially impact the amount of land available for manure application, depending on the location of the well.

Figure 1 shows the application of both 100-foot setbacks and 35-foot buffers, assuming that all grass waterways, stream corridors, and drainage ditches are considered conduits to surface waters by the state regulatory authority. Tile inlets and down gradient wells are explicitly mentioned in the rule; however, state regulatory authorities will determine conduits to surface waters. Thus, the figure reflects a conservative assumption of what is a conduit to waters of the state and may not apply in your state. CAFO operators need to clarify what land features their state regulatory authority considers conduits to surface water.

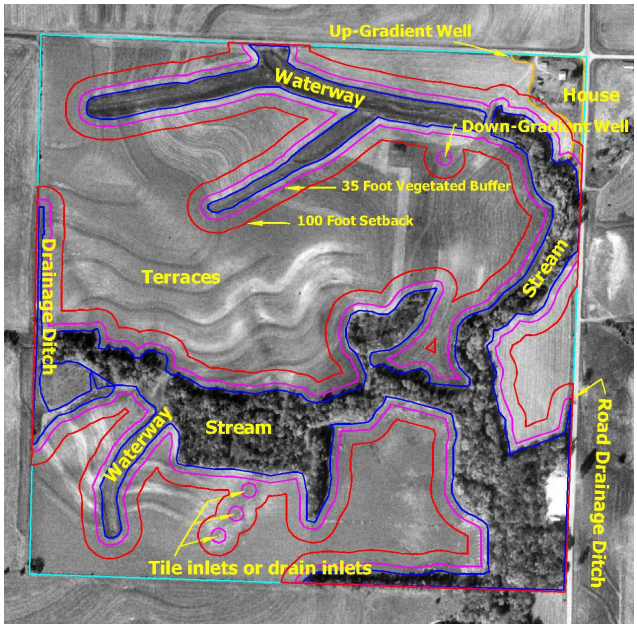

Figure 1. Land application site showing 100-ft setbacks and 35-ft buffers from surface water conduits

Figure 1 and Table 2 show the application of setbacks and buffers from grass waterways, streams, tile or drain inlets, and a well. At this land application site, there are 119 acres of tillable land. If setbacks are applied, only 71 acres can be used for manure application and crop production; the remaining acres would receive commercial fertilizer. However, if 35-foot buffers are permanently planted around the conduits to surface water, then 101 acres would be available annually for manure application and crop production. In this example, another 30 acres would be available for manure application if buffers were used.

Table 2. Summary of setback and buffer areas for Figure 1

	Tillable Acres Before	Tillable Acres After	Remaining Acres for Manure Application	Acres in Vegetative Buffer
100-ft setback	119	119	71	0
35-ft vegetative buffer	119	101	101	17

Some states may not consider grass waterways as a conduit to surface water. Established stream corridors that meet the definition of a vegetative buffer may be considered adequate and not require setbacks. Other conduits to surface water not shown in Figure 1 are road and drainage ditches, which would require setbacks or buffers.

Figure 2 shows a small ditch in a field. On a United States Geography Survey (USGS) topography map, it is considered an intermittent stream. Depending on the climate conditions and regulatory authority, this ditch may be considered a conduit to surface water. Check with your local regulatory agency about what is considered a conduit to waters of the United States. ●

Figure 2. Conduits to surface water may include intermittent streams as defined by USGS maps

Definition of Terms

Alternative conservation practice–Alternative method or field-specific condition that provides pollutant reductions equivalent or better than the reductions that would be achieved by the 100-foot setback.

Setback–Specified distance from surface waters or potential conduits to surface waters where manure, litter, and process wastewater many not be land applied. Examples of conduits to surface waters include but are not limited to open tile intake structures, sinkholes, and agricultural wellheads.

Vegetated buffer–Narrow, permanent strip of dense perennial vegetation established parallel to the contours of and perpendicular to the dominant slope of the field for the purposes of slowing water runoff, enhancing water infiltration, and minimizing the risk of any potential nutrients or pollutants from leaving the field and reaching surface waters.

Summary

Large CAFO owners/operators must choose to apply a 100-foot setback, a 35-foot vegetative buffer, or an alternative conservation practice standard for every field that receives manure. Deciding which BMP to use could have a dramatic impact on the land available for manure application. Each site should be evaluated on an individual basis in concert with the preparation and implementation of the NMP. Before making a decision about which BMP to implement, check with your state regulatory agency regarding any already approved alternative conservation practices and what are considered conduits to waters of the United States. Alternative conservation practices available for CAFOs will be state specific.

Author

Christopher Henry, an Extension Engineer at the University of Nebraska-Lincoln, can be reached at chenry1@unl.edu.

Reviewers

The author wishes to thank Gary Buttermore and Alan Rosenboom, Nebraska Department of Environmental Quality; and Claudia Elkins, Kansas Department of Health and Environment, for their review of this fact sheet.

For More Information

Environmental Regulations Related Resources

EPA CAFO Phone Line–202-564-0766

http://www.epa.gov/npdes/caforule/–To obtain copy of regulations

http://www.epa.gov/npdes/afo/statecontacts/–To obtain state environmental agency contacts

http://www.epa.gov/agriculture/animals.html/–To obtain compliance assistance information from EPA

http://cfpub.epa.gov/npdes/contacts.cfm?program_id=7&type=REGION/–To obtain EPA Region Animal Feeding Operation contacts

Land-Grant University Resources

The local contact for your land-grant university Cooperative Extension program is listed in the phone book under "Cooperative Extension" or "*(county name)* County Cooperative Extension."

http://www.reeusda.gov/1700/statepartners/usa.htm/–To obtain state Cooperative Extension contacts

http://www.lpes.org/–To view the Livestock and Poultry Environmental Stewardship (LPES) curriculum resources

USDA Farm Bill Resources

To obtain more information about the Farm Bill 2002, see the USDA-NRCS website at http://www.nrcs.usda.gov/programs/farmbill/2002/. You can also contact your local USDA Service Center, listed in the phone book under "U.S. Department of Agriculture," or your local conservation district.

The LPES educational materials were developed with support from the USDA-CSREES, the U.S. EPA's National Agriculture Compliance Assistance Center, and the University of Nebraska Cooperative Extension at Lincoln, under Cooperative Agreement Number 97-EXCA-3-0642.

MWPS (MidWest Plan Service), headquartered at Iowa State University, is the primary distributor of LPES curriculum materials. To order the materials online, access their website at <http://www.mwpshq.org> and visit the catalog section.

Discounts are offered on LPES materials purchased as package deals or in bulk.