

Keeping Livestock Out of Streams in Georgia

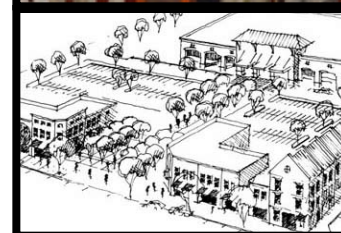
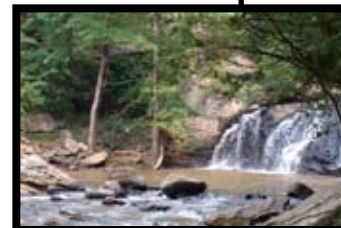
Jill Schonenberg
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I. The Problem

When livestock, especially cattle, have access to streams, they deposit their feces into streams or onto land, and those feces run off into the streams during storm events. This results in higher levels of fecal coliform bacteria in streams. Animals having access to streams is a common nonpoint source of fecal coliform bacteria.¹ The U.S. Environmental Protection Agency (EPA) estimates that over 80% of water quality problems in the United States are due to nonpoint source pollution.² Animal waste is a major source of nonpoint source pollution. In fact, a 1989 summary of state nonpoint source water quality assessments conducted under the Clean Water Act's (CWA) section 319 revealed that over one-third of all water impairments attributed to agricultural pollution were caused by animal waste.³

A. Why Should We Worry About Fecal Coliform Bacteria?

Fecal coliform are bacteria that live in the digestive tracts of warm-blooded animals.⁴ Fecal coliform bacteria are excreted in feces. Although fecal coliform

bacteria are harmless themselves, their presence indicates the existence of other disease-causing bacteria, such as those that cause typhoid, cholera, dysentery and hepatitis A.⁵ Fecal coliform bacteria are an indicator of fecal contamination in recreational and drinking waters.⁶ The EPA has instituted a CWA § 319 National Monitoring Program which includes testing for fecal coliform.⁷ Using fencing to control the access of livestock to rivers and streams can reduce the level of fecal coliform in those streams.⁸

B. Other Problems Caused by Livestock Access to Streams

When livestock congregate around streams, they cause damage by trampling stream banks and by causing soil compaction, increased sedimentation, loss of vegetation and input of urine and manure into the streams. When livestock stir up silt in riparian areas it can adversely affect the survival and spawning of young fish.⁹ Some problems caused by allowing livestock to access streams affect the landowner in addition to the riparian ecosystem. For example, when livestock have unlimited access to streams, the riparian areas are overgrazed, leaving other areas undergrazed. When this happens, the undergrazed grasses grow unpalatable to the livestock, whereas the overgrazed grasses continue to put out new growth, which is preferred by livestock. Therefore, livestock will stay in the overgrazed area longer, thus preventing recovery of the area.¹⁰ Furthermore, the overgrazed areas turn into mud holes in the winter, which provides little vegetation, and thus increases the potential for erosion.¹¹ In addition, all livestock waste goes directly into the water at high concentrations, thus no nutrients are filtered out by beneficial grasses. This results in the thriving of algae, which decreases the oxygen available for fish.¹² Also, since all of the manure is running off into the stream, there is less fertilizer benefit available to pastures, meaning

1 Environmental Protection Agency (EPA), *Total Maximum Daily Loads (TMDLs) for Fecal Coliform in Altamaha River Basin*, http://www.gaepd.org/Files_PDF/techguide/wpb/TMDL/Altamaha/EPA_Altamaha_River_Basin_Fecal_TMDL.pdf (last visited Nov. 3, 2005) [hereinafter *TMDLs for Altamaha*]; EPA, *Animal Waste Management Issues: A Federal Perspective*, <http://www.engr.uga.edu/service/extension/publications.linville.html> (last visited Nov. 3, 2005) [hereinafter *Animal Waste Management Issues*].

2 Clean Water Campaign, *Local Programs in Your Community*, http://www.cleanwatercampaign.com/community_programs/local_programs.html (last visited Nov. 3, 2005).

3 *TMDLs for Altamaha*, *supra* note 1; *Animal Waste Management Issues*, *supra* note 1.

4 EPA *Fecal Coliform*, <http://www.epa.gov/maia/html/fecal.html> (last visited Nov. 16, 2005).

5 *Id.*

6 *Id.*

7 *Id.*

8 *Id.*

9 King Conservation District, *Livestock & Stream Management*, http://www.kingcd.org/pub_gen_liv.htm (last visited Nov. 16, 2005).

10 *Id.*

11 *Id.*

12 *Id.*

that commercial fertilizers must be purchased and applied.¹³

Livestock often prefer riparian areas to other areas because there is usually more shade and better protection from wind and rain.¹⁴ This problem can be alleviated by fencing cattle away from streams, planting trees or building fixtures to provide shade in other pasture areas, or providing an off-stream water source.¹⁵

II. Benefits of Fencing Cattle Out of Streams

Fencing cattle out of streams has many benefits, including stabilizing streambanks, preventing erosion and controlling runoff. It also improves downstream water quality and wildlife habitat, and reduces the risk of injury to cattle from waterborne bacteria and hoof-rot. Fencing may also help encourage producers to implement more productive rotational grazing systems or to think about using best management practices (BMPs).¹⁶

BMPs are practices suitable for minimizing or reducing water quality impacts.¹⁷ There are a few management techniques for managing livestock grazing to reduce its impact on water quality. The EPA recommends managing grazing by excluding or controlling livestock access to sensitive areas, such as streambanks, riparian zones, and soils prone to erosion.¹⁸ EPA also lists several practices by which this objective can be achieved, including using exclusionary practices such as fencing and hedgerows; providing stream crossings in areas selected to minimize the impacts of crossings on water quality; installation of alternative drinking water sources; use of improved grazing methods, such as herding, to reduce physical disturbance to soil and vegetation and to minimize the direct loading of sediment and animal waste into sensitive areas; placement of salt and additional shade, including artificial shelters, at locations adequate to protect sensitive areas; and installation of hardened access points for drinking water consumption where alternatives are infeasible.¹⁹

13 *Id.*

14 *Id.*

15 *Id.*

16 Frank Moore, *Fencing Cattle Away From Creeks*, <http://www.ipm.iastate.edu/ipm/icm/2000/7-10-2000/cattlecreeks.html> (last visited Nov. 3, 2005).

17 EPA, *Agricultural Management Practices for Water Quality Protection*, <http://www.epa.gov/watertrain/agmodule/> (last visited Nov. 17, 2005).

18 EPA, *National Management Measures to Control Nonpoint Source Pollution from Agriculture: Ch.4E Grazing Management*, <http://www.epa.gov/owow/nps/agmm/chap4e.pdf> (last visited Nov. 17, 2005).

19 *Id.*

III. Federal Regulations Governing Nonpoint Source Pollution

Federal law, included in the CWA, directs states to submit reports to the EPA listing navigable waters within the state that without additional action can not attain or maintain applicable water quality standards. The report must identify and describe state and local programs for controlling nonpoint source pollution.²⁰ Under another section of the CWA, states must list waters within their boundaries for which technology-based effluent limitations are not stringent enough to protect water quality standards.²¹ These sections require the EPA to develop total maximum daily loads (TMDLs) for waters that do not meet applicable water quality standards.

A. Clean Water Act Section 319

Section 319 of the CWA was added in 1987 to establish a national program to address nonpoint sources of water pollution. Subsection 319(h) authorizes the EPA to award grants to states with approved Nonpoint Source Assessment Reports and Nonpoint Source Management Programs. The states must use the funds for implementing programs designed to reduce nonpoint source pollution. Under CWA § 319, the state's Nonpoint Source Management Program must describe the state program for nonpoint source management, which serves as a basis for how funds are spent.²²

CWA § 319 requires the governor of each state to submit a report to the EPA for approval. The report must indicate the navigable waters within the state that without additional action can not attain or maintain applicable water quality standards or the goals or requirements of the CWA.²³ The report must also identify those categories and subcategories of nonpoint sources which add significant pollution to each portion of the navigable waters; describe the processes for identifying BMPs and measures to control nonpoint sources; and identify and describe state and local programs for controlling pollution added from

nonpoint sources, including those programs which are receiving federal assistance under subsections (h) and (i) of CWA § 319.²⁴ The governors also must submit management programs for controlling pollution added from nonpoint sources, which identify BMPs, identify programs to achieve implementation of BMPs, contain a schedule for the plan, and contain certification from the state attorney general that the state laws provide adequate authority to implement such a management program.²⁵ Unfortunately, "319 has not made great strides in controlling pollution from nonpoint sources."²⁶ This is mainly due to the fact that CWA § 319 programs are voluntary and leave discretion mostly in the states' hands, and they lack enforcement measures.²⁷

Several other funding sources are available under CWA sections 106, 320, and 604(b) and the State Revolving Fund. In addition, other government agencies offer funding to implement BMPs designed to control nonpoint source pollution, as discussed below.²⁸

B. Clean Water Act Subsection 303(d)

Another provision of the CWA, subsection 303(d), requires each state to list those waters within its boundaries for which technology-based effluent limitations are not stringent enough to protect any water quality standard applicable to such waters.²⁹ Subsection 303(d)(1)(C), along with the EPA implementing regulation, 1 C.F.R. 130.7(c)(1), require the establishment of TMDLs for waters identified in accordance with 303(d)(2)(A).³⁰ A TMDL is a calculation of the maximum amount of a pollutant,

20 CWA, 33 U.S.C. § 1329(a)(1)(A)-(D) (2005).

21 CWA, 33 U.S.C. § 1313(d) (2005).

22 *Id.*

23 CWA, 33 U.S.C. § 1329(a)(1)(A) (2005).

24 CWA, 33 U.S.C. § 1329(a)(1)(B)-(D) (2005).

25 CWA, 33 U.S.C. § 1329(b) (2005).

26 Robert V. Percival et al., *Environmental Regulation: Law, Science, and Policy* 697 (Aspen Publishers 2003). Hereinafter Percival.

27 Ronald Wall, *The Clean Water Act: Thirty Years Later*, <http://www.acnatsci.org/education/kye/pp/kye12003.html> (last visited Nov. 3, 2005).

28 EPA, *Applying for and Administering CWA Section 319 Grants: A Guide for State Nonpoint Source Agencies*, <http://www.epa.gov/owow/nps/319/319stateguide-revised.pdf> (last visited Nov. 3, 2005) [hereinafter *Applying and Administering*].

29 *TMDLs for Altamaha*, *supra* note 1.

30 EPA, *Overview of Current Total Maximum Daily Load – TMDL – Program and Regulation*, <http://www.epa.gov/owow/tmdl/overviewfs.html> (last visited Nov. 10, 2005).

coming from both point and nonpoint sources, that a waterbody can receive and continue to meet water quality standards.³¹

Georgia is under the most aggressive TMDL program in the United States. The overwhelming majority of waters on Georgia's 303(d) list are the result of exceeding criteria for fecal coliform or metals due to urban runoff and nonpoint sources.³²

C. Federal Regulation of Point Sources: NPDES System and CAFOs

Finally, the CWA authorizes the National Pollutant Discharge Elimination System (NPDES) permit program to control water pollution by regulating point sources that discharge pollutants into the waters of the U.S.³³ Although NPDES regulations exclude agricultural stormwater runoff from the entities requiring permit coverage, some large agricultural facilities may be regulated under this program.³⁴ The CWA requires all Concentrated Animal Feeding Operations (CAFOs) to prevent runoff of wastes that can pollute nearby surface waters.³⁵ CAFOs are point sources as defined by CWA § 502(14).³⁶ In order to be a CAFO, a facility must first meet the Animal Feeding Operation (AFO) definition. AFOs are defined in 40 C.F.R. Part 122.23(b)(1) as "enterprises where animals are kept and raised in confined situations. AFOs concentrate animals, feed, manure and urine, dead animals, and

production operations on a small land area. Feed is brought to the animals rather than the animals only grazing or otherwise seeking feed in pastures, in fields, or on rangeland."³⁷ The first part of the definition states that "animals must be kept on the lot or facility for a minimum of 45 days in a 12-month period."³⁸ The second part of the definition is "intended to distinguish facilities that have feedlots (confinement areas) from facilities that have only pasture or grazing land."³⁹ Usually facilities that employ grazing and winter feeding on pastures do not fall within the AFO definition.⁴⁰

Although treating CAFOs as point sources and thus requiring them to obtain NPDES permits has reduced animal waste pollution to some extent, "less than 10,000 of the nation's 1.1 million farms were subjected to the NPDES permit program."⁴¹ Therefore, additional controls are necessary to ensure that animal wastes do not pollute the waters of the United States.

D. Water Quality Act of 1987

The Water Quality Act of 1987 amended the NPDES permit system to address nonpoint source pollution.⁴² It created the municipal separate storm sewer system

31 Gwinnett and Dekalb County, Georgia, Yellow River Watershed TMDL Implementation Plan Narrative (2002). See Appendix 1.

32 Georgia Department of Natural Resources, Pollution Prevention Assistance Division, *Stormwater Issues Meeting*, http://www.ganet.org/dnr/p2ad/dod/jan2001_meeting.html (last visited Nov. 15, 2005). To view Georgia's 305(b) and 303(d) documents visit <http://www.gaepd.org/Documents/305b.html> (last visited Nov. 15, 2005).

33 EPA, *National Pollutant Discharge Elimination System (NPDES): Overview*, <http://cfpub.epa.gov/npdes> (last visited Nov. 3, 2005).

34 EPA, *National Pollutant Discharge Elimination System (NPDES): Agriculture*, http://cfpub.epa.gov/npdes/home.cfm?program_id=41 (last visited Nov. 3, 2005).

35 EPA, *Dairy Waste a Concern Throughout Washington State*, <http://yosemite.epa.gov/r10/homepage.nsf/0/3a592f89b461fc63882564c600595c1e?Open> (last visited Nov. 3, 2005).

36 CWA 33 U.S.C. § 1362(14) (2005).

37 EPA, *Guidance Manual and Sample NPDES Permit for Concentrated Animal Feeding Operations*, http://www.epa.gov/npdes/pubs/dman_afo-2000.pdf (last visited Nov. 3, 2005).

38 *Id.*

39 *Id.*

40 *Id.* AFOs are CAFOs if they meet the statutory definition provided in 40 C.F.R. Part 122, Appendix B, or if they have been designated on a case-by-case basis by the NPDES permitting authority. (40 C.F.R. Part 122.23(c)). All AFOs with more than 1,000 animal units are CAFOs. (40 C.F.R. Part 122, Appendix B(a)). An animal unit varies according the type of animal. Each livestock type, except poultry, is assigned a multiplication factor to determine the total number of AUs at a given facility. AFOs with 301 to 1,000 AUs are defined as CAFOs only if, in addition to the number of animals confined, they also meet one of the specific criteria addressing the method of discharge. AFOs with 300 AUs or fewer are not defined as CAFOs and are considered CAFOs only if they are designated by the permitting authority. States may have more stringent regulatory definitions for CAFOs, in which case, permit writers should issue permits consistent with the state requirements. *Id.*

41 Percival, *supra* note 26

42 Clean Water Campaign, *Local Programs in Your Community*, http://www.cleanwatercampaign.com/community_programs/local_programs.html (last visited Nov. 3, 2005).

(MS4) stormwater discharge permit system, which establishes guidelines for municipalities to minimize pollutants in stormwater runoff to the “maximum extent practicable.”⁴³ All municipalities and counties with a population of more than 100,000 must obtain a permit.⁴⁴ Also, the Georgia Environmental Protection Division (EPD) has required compliance from each jurisdiction within the 5-county metropolitan Atlanta area.⁴⁵ As required by the MS4 NPDES stormwater discharge permit, local governments enact a comprehensive soil erosion and sedimentation control program, periodically screen and monitor water samples from local streams and the storm sewer system, and test for a number of parameters.⁴⁶ This program treats municipal storm sewers and runoff from construction and industrial sites as point source pollution, even though the actual source of the pollution is from nonpoint sources.⁴⁷ While urban stormwater is now regulated under the NPDES program, regulators at both federal and state levels have not exercised significant authority over pollution arising from nonpoint source agricultural activities. Since agricultural runoff is believed to be the source of 70% of the degraded miles of river surveyed in the U.S., this has led to resentment on the part of municipalities and industries who have had to adapt to increasingly strict regulations while accounting for less and less of the total amount of pollutants discharged.⁴⁸ Regulators have begun regulating nonpoint sources of pollution more effectively through the TMDL program. Also, together with the NPDES program, the TMDL program sets up the possibility of implementing an effluent trading program since the loading limits established by TMDLs facilitate the use of trading where the limits are strict enough to create an economic interest in trading by some pollution sources.⁴⁹ As discussed later in this paper,

this program provides an incentive for point sources to purchase pollution credits from farmers through nutrient trading programs.

E. Clean Water Action Plan and Effluent Trading

Lastly, in 1998, the U.S. Department of Agriculture (USDA) and the EPA announced a Clean Water Action Plan that sought to organize efforts to protect water quality around a watershed approach. The watershed approach plan proposed a collaborative effort between federal, state and local governments and the private sector to protect and restore watersheds. These groups prepare unified watershed assessments and restoration strategies that will be eligible for special federal funding. Some believe that while past efforts to control nonpoint source pollution through federal financial assistance have not had much success, the Clean Water Action Plan’s watershed approach will encourage emissions trading between nonpoint and point sources of water pollution. The EPA adopted a policy endorsing effluent trading, although it is still being implemented on a voluntary basis under existing law.⁵⁰

The following sections of this essay will discuss three different approaches that have been utilized to keep livestock away from stream areas: cost-share programs, ordinances, and nutrient trading programs.

43 *Id.*

44 *Id.*

45 *Id.*

46 *Id.*

47 Ronald Wall, *The Clean Water Act: Thirty Years Later*, <http://www.acnatsci.org/education/kye/pp/kye12003.html> (last visited Nov. 3, 2005).

48 *Id.*

49 Kristin Rowles, *A Feasibility Analysis of Applying Water Quality Trading in Georgia Watersheds* 22 (U.S. Env’tl. Prot. Agency, Ga. Soil and Water Conservation Comm’n, and U.S. Dep’t of Agric., Water Policy Working Paper No. 2005-020, 2005).

50 Percival, *supra* note 26.

IV. Cost-Share Programs Available to Farmers Who Wish to Implement BMPs

A. Federal Cost-Share Programs

The federal government offers a cost-share program, the Continuous Conservation Reserve Program (CRP), through the USDA.⁵¹ Producers can sign up for this program by visiting the Farm Service Agency and the Natural Resources Conservation Service (NRCS).⁵² The CRP offers incentive payments which could amount to 90% of the costs for installing fences. The CRP also pays for maintenance.⁵³ The CRP is not as competitive as the Environmental Quality Incentive Program (EQIP) (see below), mainly because farmers are less willing to sign up for this program because it requires them to sign a 10-year contract. The contract forbids them from grazing on the land in between the fence and the stream. However, the CRP does pay a small rental payment on this portion of the land. This means that if farmers are willing to fence livestock out of streams the CRP is more likely to share some of the costs with them.⁵⁴

The NRCS also administers the Conservation Security Program (CSP). The “CSP is a voluntary program that provides financial and technical assistance to promote conservation and improvement” of soil and water on private working lands, which include cropland, grassland, improved pasture, range land and “forested land that is an incidental part of an agriculture operation.”⁵⁵ The CSP program is available in designated watersheds in all fifty states. The number of funds allotted by Congress each year determines the number of watersheds selected.

51 Jennifer Cocanougher, *Incentives for Fencing Streams*, <http://www.ca.uky.edu/enri/pubs/enri131.pdf> (last visited Nov. 3, 2005).

52 *Id.*

53 *Id.*

54 Telephone Interview with Todd Powers, Natural Resource Conservation Service (Nov. 10, 2005). For more information visit <http://www.fsa.usda.gov/pas/publications/facts/html/crp03.htm>.

55 United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS), *Conservation Security Program*, <http://www.nrcs.usda.gov/programs/csp/> (last visited Nov. 3, 2005).

In order to be eligible for CSP, the majority of the agricultural operation must be within one of the designated watersheds. There are two designated watersheds in Georgia.⁵⁶

Another program administered by the NRCS is EQIP. EQIP provides technical and financial help with structural and management conservation practices on agricultural lands. The 2002 federal Farm Bill reauthorized EQIP. Under EQIP, incentive and cost-share payments will be used in order to encourage farmers to implement one or more conservation practices.⁵⁷ Fencing cattle away from streams would qualify as a BMP under this program.⁵⁸

Finally, the U.S. Fish and Wildlife Service established the Partners for Fish and Wildlife Program to offer financial and technical assistance to private landowners to voluntarily improve habitat on their property. The restoration projects funded through this program include planting native trees and shrubs, installing fencing, and installing off-stream livestock watering facilities.⁵⁹ According to Russell Tinning, Region III’s Georgia Soil and Water Conservation Commission (GSWCC) representative, the Partners for Wildlife program grant will pay up to 75% of installation costs.⁶⁰

B. Georgia Cost-Share Program

O.C.G.A. § 2-6-52 creates an Agricultural Water Conservation Incentive Program for Georgia.⁶¹ The program is implemented by the GSWCC. The program provides funding to assist practices such as

56 USDA NRCS, *Conservation Security Program Watersheds: FY-2006*, http://www.nrcs.usda.gov/programs/csp/2006_CSP_WS/index.html (last visited Nov. 30, 2005).

57 USDA NRCS, *EQIP Overview*, ftp://ftp-fc.sc.egov.usda.gov/GA/tst/2005_EQIP/EQIP_2005_overview.pdf (last visited Nov. 3, 2005) [hereinafter *EQIP Overview*].

58 E-mail from Bob Fulmer, Georgia Soil & Water Conservation Commission (GSWCC), to Jill Schonenberg, Author (Sept. 8, 2005) (on file with author). Hereinafter cited as Fulmer.

59 United States Fish & Wildlife Service, *Partners for Fish and Wildlife Program—Our Partners*, http://www.fws.gov/partners/What_we_do/overview.html (last visited Nov. 10, 2005).

60 Telephone Interview with Russell Tinning, Regional Representative, Region III, GSWCC (Nov. 10, 2005). Contact Russell Tinning at (770)-761-3020 for more information on how to apply.

61 O.C.G.A. § 2-6-52 (Supp. 2005). See Appendix II.

fencing along streams, alternative watering systems, and critical area plantings.⁶² The farmer's BMP plan will need to be evaluated before funding is awarded and after the project is completed to determine the impact on water quality.⁶³

The GSWCC has a complementing program to the federal EQIP through CWA § 319 water quality grants. The GSWCC's "projects are identified by watershed boundary and TMDL limits for stream use."⁶⁴ Conservation practices that address this resource concern, such as fencing cattle out of streams, are eligible for financial assistance. Farmers can apply for grants through the EPD, the agency responsible for distributing EPA funding.⁶⁵ In Georgia, the NRCS evaluates each EQIP application. Georgia uses a statewide Environmental Benefits Index (EBI) to evaluate applications. The EBI worksheet ranks applications within each statewide resource concern. Georgia's statewide resource concerns include "improved water quality through implementation of animal waste systems."⁶⁶

Generally, Georgia has set a 50% cost-share limit for all structural practices. However, there is a limited resource program for farmers with income below the poverty line, which allows these farmers to be eligible for 90% cost-share. EQIP funds are distributed based on funding units that generally follow the Georgia Soil and Water Conservation District boundaries.⁶⁷ EQIP is the most popular cost-share program among farmers. It provides cost-share funds for fencing and alternative water sources. It is more competitive than some of the other cost-share programs because farmers only have to sign a one-year contract.⁶⁸

GSWCC's Ag Lands Program seeks to conserve "Georgia's agricultural soil and water resources on private lands through the use of best management practices (BMP's) funded yearly by the Federal Farm

Bill and delivered through soil and water conservation districts."⁶⁹ The cost-share program is implemented through CWA § 319 grants administered through the Georgia EPD. The GSWCC looks at watersheds that have TMDLs associated with agriculture, and then makes applications for projects that will provide cost-share funds for helping producers install BMPs, including exclusionary fencing. The projects typically last 3 to 4 years, with the federal government paying 60% of the funds and the producer paying the remaining 40%.⁷⁰

62 *Id.* at § 2-6-52(g).

63 *Id.* at § 2-6-52(h).

64 Fulmer, *supra* note 58.

65 *Id.*

66 *EQIP Overview*, *supra* note 57.

67 *Id.*

68 Telephone Interview with Todd Powers, USDA NRCS (Nov. 10, 2005). Farmers in Gwinnett can contact Steve Leslie at (770)-963-9288 for more information on how to apply.

69 GSWCC, *Ag Lands Program*, http://gaswcc.georgia.gov/00/channel_title/0,2094,28110777_30158446,00.html (last visited Nov. 3, 2005).

70 E-mail from Bob Fulmer, GSWCC, to Jill Schonenberg, Author (Dec. 1, 2005) (on file with author). Contact Bob Fulmer at bfulmer@gaswcc.org for more information.

V. Other Options for Keeping Cattle Away from Streams

A. The Ordinance Approach and King County, WA

Although mandatory fencing ordinances would be effective in keeping cattle out of streams and thus beneficial for the environment and water quality, it is potentially problematic in that property rights advocates may see it as an attempt to push the last remaining farmers out of the area. Seth Wenger, of the University of Georgia Institute of Ecology, voiced concerns that farmers may view the ordinance as imposing high costs on them for which they will see no benefits.⁷¹ For example, farmers would bear the costs of installation and maintenance of fences that would primarily benefit the farmer's downstream neighbors. Furthermore, farmers often do not realize the impact of their cattle on streams and therefore may not feel that the ordinance is justified. The Soil Conservation Service, the agency charged with providing technical advice and support to farmers, believes that "only a voluntary approach will induce change in agricultural practices because farmers resist any program that smacks of regulation."⁷²

Despite these concerns, some municipalities have adopted ordinances which require fencing livestock away from streams. For example, Washington's King Conservation District adopted a Livestock Management Ordinance that requires that livestock be "excluded at least 25 feet away from stream or wetland if have Farm Management Plan or 50 feet away if don't have plan [sic]."⁷³ The King Conservation District uses a mixture of education, cost-sharing, and regulation to accomplish its water quality goals. Geoff Reed, a representative from the King Conservation District, advocates using demonstration sites of farms using BMPs, so that other farmers can see the results of using these practices.⁷⁴ Reed also notes that there was little resistance to the ordinance because most

farmers now realize that livestock wallowing in the water is a "real sloppy way to farm."⁷⁵ He comments that farmers who continue to allow their cattle to graze near streams often get complaints and visits from state and federal water quality inspectors "which is way worse than a county ordinance."⁷⁶

Washington has a more effective inspection program than Georgia, which gives farmers a stronger incentive to implement BMPs since they want to avoid being fined by federal or state inspectors. The CWA, as part of the NPDES program, requires all CAFOs to prevent runoff of wastes that can pollute nearby surface waters. The EPA conducts inspection programs to ensure that all dairies and other CAFOs are in compliance with the CWA. However, the EPA prefers that state agencies, rather than the EPA itself, conduct dairy inspections within their borders.⁷⁷ Therefore, Washington implemented a program to conduct dairy inspections within the state. In 1998, the Washington legislature passed the 1998 Dairy Nutrient Management Act, which established a technical assistance and inspection program for dairy farms. The program addresses the discharge of pollutants to ground and surface waters in Washington.⁷⁸ Under the Act, all licensed dairy producers must have a dairy nutrient management plan, which is submitted to the local conservation district for approval. Upon determining that a dairy animal feeding operation is a significant contributor of pollution to the surface or ground waters of the state, the Director of the Department of Ecology can designate it as a concentrated dairy feeding operation. Under the Act, the Department of Ecology must implement an inspection program to survey for evidence of violations and monitor the development of dairy nutrient management plans. If the farm is found to be a significant contributor of pollution, it will be subject to enforcement provisions of different statutes, including civil penalties.⁷⁹

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ EPA, *Dairy Waste a Concern Throughout Washington State*, <http://yosemite.epa.gov/r10/homepage.nsf/0/3a592f89b461fc63882564c600595c1e?Open> (last visited Nov. 3, 2005).

⁷⁸ Washington State Department of Ecology, *Implementation of the Dairy Nutrient Management Act (Chapter 90.64 RCW)*, <http://www.ecy.wa.gov/pubs/9838.pdf> (last visited Nov. 3, 2005).

⁷⁹ Wash. Rev. Code § 90.64 (1998) (formerly Dairy Waste Management).

⁷¹ E-mail from Seth Wenger, University of Georgia Institute of Ecology, to Jill Schonenberg, Author (Sept. 1, 2005) (on file with author).

⁷² Percival, *supra* note 26.

⁷³ King County, Wash., Livestock Management Ordinance, http://www.kingcd.org/pro_far_far_liv.htm (last visited Nov. 3, 2005). See Appendix III.

⁷⁴ E-mail from Geoff Reed, King Conservation District, to Jill Schonenberg, Author (Sept. 8, 2005) (on file with author).

The enforcement mechanism of civil penalties explains why Washington dairy producers are more likely to comply with the King County Livestock Management Ordinance, since if they are found to be significant contributors of pollution, they can be heavily fined.

B. Nutrient-Trading Programs and North Carolina's Effluent Trading Program

A final option that has been utilized to keep cattle away from streams is nutrient-trading programs. North Carolina has employed this approach. Publicly-owned treatment works discharging into North Carolina's Tar-Pamlico Basin have participated in nonpoint/point discharge trades through a program permitting them to pay into a state fund, which encourages farmers to implement BMPs on farmlands.⁸⁰ The treatment works pay for farmers to implement BMPs and, in return, the treatment works do not have to make expensive modifications to their facilities to reduce their nutrient loads since they are paying for the nonpoint sources to reduce their loads. As part of a Nutrient Sensitive Waters Implementation Strategy, "an association of the dischargers into the basin, the Tar-Pamlico Basin Association, agreed to fund a nutrient reduction trading program."⁸¹ The Nutrient Reduction Trading Program allows facilities the option to achieve all or part of the nutrient reduction goals through funding and implementing agricultural BMPs rather than paying for costly expansions and upgrades to their waste water treatment facilities.⁸² The program is proving to be an effective solution because it addresses nonpoint sources while "reducing the economic burden to municipal dischargers."⁸³ For example, the cost of "controlling one unit of nonpoint source loads with BMPs costs one-tenth as much as controlling the same load from a wastewater management plant."⁸⁴

80 Percival, *supra* note 26.

81 North Carolina Department of Environment & Natural Resources, *Tar-Pamlico Basin Nutrient Reduction Trading Program*, <http://www.enr.state.nc.us/DSWC/pages/tar-pamlico.html> (last visited Nov. 3, 2005).

82 *Id.*

83 EPA, *TMDL Case Study: Tar-Pamlico Basin, North Carolina*, <http://www.epa.gov/OWOW/tmdl/cs10/cs10.htm> (last visited Nov. 3, 2005).

84 *Id.*

VI. Conclusion/Recommendations

A thorough study of the various approaches to keeping cattle out of streams leads to the conclusion that the best method for Georgia to keep cattle away from streams is to give farmers an incentive to make use of the cost-share and nutrient management programs. In addition to the federal and state cost-share programs, local governments that have the resources available could implement their own cost-share programs. It seems that there are plenty of cost-share programs available, so that the only impediment to the cost-share approach is that farmers must voluntarily implement BMPs, which they often fail to do. The main drawback with nutrient trading programs is that they will not work where point sources are already meeting their effluent limits. If all sources in an area are meeting their effluent limitations, there is no requirement for them to reduce their nutrient loads, thus, they will have no incentive to pay for farmers to reduce their nutrient loads. Consequently, their success is site-dependent.

In order to encourage farmers to take advantage of cost-share and nutrient-trading programs, municipalities can set a timeline which would set a deadline by which farmers must implement BMPs. Prior to meeting the deadline, farmers could take advantage of cost-share programs and nutrient reduction trading programs to assist them in implementing BMPs. After the deadline, a mandatory fencing ordinance should be put in place to bring those farmers that are still allowing cattle access to streams into compliance.

This approach works a fair compromise between the farmers' interests in saving costs and citizens' interests in bettering water quality in Georgia. It lessens the costs for farmers who voluntarily implement BMPs, while forcing holdouts into compliance. The deadline gives farmers an incentive to seek out cost-share and nutrient-trading programs, so that they will not have to bear the costs of installing fencing on their own. This cooperative approach would probably face the least political resistance, and would effectively keep cattle out of streams.

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