The Eight Million Little Pigs –A Cautionary Tale: Statutory and Regulatory Responses to Concentrated Hog Farming

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THE EIGHT MILLION LITTLE PIGS—A CAUTIONARY TALE: STATUTORY AND REGULATORY RESPONSES TO CONCENTRATED HOG FARMING

The area outside the city limits is for growing hogs.
Sonny Faison
President, Carroll's Foods, Inc.[1]

INTRODUCTION

On June 21, 1995, the eight-acre manure lagoon at Oceanview Farms in Onslow County burst through its dam.[2] What followed was seen on news reports around the world,[3] as 25 million gallons of excrement surged over a road, through a neighboring tobacco field and into the New River.[4] The odoriferous tide was two feet deep and flowed for over two hours, ending up in the river, where it killed "virtually all aquatic life in the 17-mile stretch between Richlands and Jacksonville."[5] When it was over, the New River had been the victim of a spill more than twice the size of the oil spill that followed the wreck of the Exxon Valdez.[6]

In the summer of 1995, North Carolina experienced a devastating series of massive spills of hog waste.[7] Environmentally sensitive estuarine rivers suffered record fish kills, many brought on by a new parasite that flourishes in waters rich in the phosphorous and nitrogen contained in hog farm wastes.[8]

The spills of the summer of 1995 occurred because heavy rains, an exploding livestock population and antiquated regulations combined to produce an environmental disaster of Biblical proportions. Unfortunately, as evidenced by a 1.8 million gallon spill on July 15, 1996,[9] the pattern of

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1. David Bailey, *Hog Heaven: Vertical Integration Has Turned a Down-to-Earth Business into a Paradise of Profits for North Carolina Pork Producers*, BUS.: N.C., Apr. 1994, at 30, 33.

2. Michael Satchell, *Hog Heaven—and Hell*, U.S. NEWS & WORLD REP., Jan. 22, 1996, at 55.

3. *Making a Stink Worldwide*, NEWS & OBSERVER (Raleigh, N.C.), Sept. 6, 1995, at A3. According to *The News and Observer*, the *London Guardian* wrote: "When the Americans pollute, they do it in style." *Id.*

4. Satchell, *supra* note 2, at 55.

5. *Id.*

6. *Id.* at 57.

7. Lynn Bonner, *Critics Say State Must Do More to Protect Rivers*, NEWS & OBSERVER (Raleigh, N.C.), Aug. 17, 1995, at A3.

8. Stuart Leavenworth, *Half-million Fish Die in Neuse River*, NEWS & OBSERVER (Raleigh, N.C.), Sept. 22, 1995, at A1.

9. *Bertha Being Blamed for Hog-Waste Spill*, GREENSBORO NEWS & REC., July 16,

1995 appears to be continuing into 1996. The bright side of the smelly summer, if there can be one, is that the spills and the decline in the health of the coastal rivers produced an urgent need for reform in the state's regulation of its growing agribusiness economy—a need that has at least been partly answered by the state government.[10]

In the past decade, North Carolina's hog farming industry has become the most robust among the nation's leading hog-producing states.[11] By March of 1996, the number of hogs present at any one time in North Carolina had risen to 8.5 million, an eighteen percent increase over 1994's inventory.[12] With this growth have come jobs and an influx of capital and tax revenues[13] into what has traditionally been one of the state's most impoverished regions.[14]

From the benefits of this phenomenal growth of a major industry must be subtracted its environmental and social costs. The sheer size of the waste problem presented by the hog increase is staggering: hog waste is over twice as rich in nutrients as human waste, and each one of those 8.3 million hogs produces four times the volume of solid waste produced by a human.[15] By those numbers, eastern North Carolina produces a daily sewage volume roughly equal to that of the entire human population of California.[16]

1996, at B1. Rainfall amounts of eight to ten inches reportedly caused an overly full lagoon to burst through its dam and flood into the Swift Creek, a tributary of the Neuse River. *Id.*

10. For a discussion of North Carolina's efforts, see *infra* notes 197-225 and accompanying text.

11. According to the USDA, only Iowa had more hogs in 1995 than North Carolina, and no state in the top ten other than North Carolina (Iowa, North Carolina, Minnesota, Illinois, Indiana, Nebraska, Missouri, Ohio, South Dakota and Kansas) had more than a four percent increase over the number of hogs from 1994. NATIONAL AGRIC. STATISTICS SERV., U.S. DEP'T OF AGRIC., HOGS AND PIGS, *available on* Internet, at gopher://usda.mannlib.cornell.edu:70/00/reports/nassr/livestock/php-bb/1995/hogs_and_pigs_12.28.95 (Dec. 28, 1995) [hereinafter NASS—HOGS AND PIGS, 1995].

12. NORTH CAROLINA DEP'T OF AGRIC., PRESS RELEASE, MARCH 1, 1996, HOG INVENTORY UP, *available on* Internet, at http://www.agr.state.nc.us/stats/press/prshgi03.html (Mar. 1, 1996).

13. Joby Warrick & Pat Stith, *The Smell of Money*, NEWS & OBSERVER (Raleigh, N.C.), Feb. 24, 1995, at A1 [hereinafter Warrick & Stith, *The Smell of Money*]. The entire *News and Observer* series on hog farming is available on the Internet, at http://www.nando.net/sproject/hogs.

"[O]ne economist estimates that state farmers could be making $1.5 billion from hog sales" by the year 2000. Bailey, *supra* note 1, at 41.

14. The vast majority of North Carolina hogs are produced in the coastal region. 1994 statistics showed that 6.6 million of the 7 million hogs then in North Carolina were produced in the eastern third of the state, with nearly 3 million in Sampson and Duplin Counties alone. AGRICULTURAL STATISTICS DIV., N.C. DEP'T OF AGRIC., COUNTY ESTIMATES: ALL HOGS, *available on* Internet, at http://www.agr.state.nc.us/stats/cnty_est/ctyhogyr.html (July 30, 1996) [hereinafter N.C.D.A.—COUNTY ESTIMATES].

15. Steve Tedder, Remarks Before the Blue Ribbon Study Commission on Agricultural Wastes—Public Hearing on Water Quality Issues 1 (Nov. 30, 1995) (notes of meeting taken by Michelle Nowlin, attorney, Southern Environmental Law Center; on file with author) [hereinafter Nowlin Notes].

16. The population of California in 1994 was over 31 million. THE WORLD ALMANAC

Part I of this comment will discuss the state of the hog industry in North Carolina in 1996. Specific attention will be paid to the pattern of development in the industry and the resulting boom which distinguishes North Carolina from other leading hog-producing states.

Part II will examine the effects of this growth on the economy and ecology of North Carolina, with a particular focus on the industry's effect upon water quality. At least for the short-term, the industry appears to be an economic boon for the counties "down east." In the final analysis, the long-term effect of this growth may not be measured in dollars and jobs, but in the effect upon the fragile aquatic ecosystems and aquifers of coastal North Carolina.

In Part III, the comment examines the applicable state and federal statutory and regulatory schemes which control hog farming and agricultural water pollution. In this regard, the key materials analyzed will be the federal Clean Water Act (CWA)[17] and the new legislation passed as Senate Bill 1217 by the North Carolina General Assembly on June 21, 1996.[18] In addition, the now outdated provisions of title 15A, rules 2H.100 to 2H.1206 of the *North Carolina Administrative Code*,[19] the North Carolina Right to Farm Act,[20] the Swine Farm Siting Act of 1995,[21] and the animal waste application provisions of the *North Carolina General Statutes*[22] will be analyzed. The emphasis of this part, and of this entire comment, will be to show the disastrous results of imperfect regulation and the impetus that those results have given to regulatory reform.[23]

AND BOOK OF FACTS 388 (Robert Famighetti et al. eds., 1996).

17. Federal Water Pollution Control Act, 33 U.S.C. §§ 1151-1176, 1251-1387 (1994).

18. An Act to Implement Recommendations of the Blue Ribbon Study Commission on Agricultural Waste, 1996 N.C. Sess. Laws ch. 626.

19. N.C. ADMIN. CODE tit. 15A, rr. 2H.100-.1206 (Jan. 1996). These provisions comprise the bulk of the provisions assumed by North Carolina under the Clean Water Act and promulgated pursuant to N.C. GEN. STAT. §§ 143-215 to -215.74E (1993 & Supp. 1995).

20. N.C. GEN. STAT. §§ 106-700 to -701 (1995).

21. N.C. GEN. STAT. §§ 106-800 to -803 (1995).

22. N.C. GEN. STAT. §§ 143-215.74C to -215.74E (Supp. 1995).

23. North Carolina is in the midst of a major reshuffling in its regulation of nonpoint water pollution. To that effect, the state has established watershed maintenance plans for several coastal rivers. *See, e.g.*, Stuart Leavenworth, *State Drafts Tough Neuse Cleanup Plan*, NEWS & OBSERVER (Raleigh, N.C.), Feb. 8, 1996, at A1. At present, those programs are either voluntary or in development. *See, e.g., id.* The Division of Environmental Management issued on February 8 a draft plan for the mandatory protection of the Neuse River. *Id.* This author is aware and is encouraged that the plan has the potential of drastically changing the scope and operation of laws regarding hog production. The trend toward basinwide management is encouraging, and was recommended by the Blue Ribbon Commission. BLUE RIBBON STUDY COMMISSION ON AGRICULTURAL WASTE, REPORT TO THE 1995 GENERAL ASSEMBLY OF NORTH CAROLINA, 1996 REGULAR SESSION 14 (1996) [hereinafter BLUE RIBBON REPORT].

I. THE NEW KING OF TOBACCO ROAD: HOG FARMING

A true understanding of the vitality of North Carolina's hog industry today is probably best reached through the realization that tobacco is no longer king of North Carolina agribusiness.[24] In 1995, hog production rose to become the state's top farming industry, displacing the crop that gave Tobacco Road its name.[25] Since 1991, cash receipts from hog farming have skyrocketed, rising from $665 million in 1991 to over $1 billion in 1995.[26] In the same time period, tobacco receipts have dropped from $1.05 billion to $942 million.[27] The state is clearly in the midst of an agricultural revolution.

This explosion in the North Carolina hog industry is driven by vertical integration, the business strategy of unifying corporate structure from feed supplier, to production facility, through processing, and finally to wholesale.[28] In an integrated system, a farmer contracts to breed, feed and house hogs for one of the large corporations in the industry.[29] The farmer then obtains a loan to buy the sophisticated confinement barns and other equipment he needs, usually through a mortgage on his house and other property.[30] The corporation then "provides the hogs, feed, medication and the expertise to help the farmer manage the units."[31]

This system has let the North Carolina hog producers cut costs, achieve higher product uniformity, greatly increase production, and beat midwestern producers to the eastern marketplace.[32] One of the first companies to make the transition to full vertical integration was North Carolina's Carroll's Foods, whose estimated annual revenues increased from $76 million in 1985 to $320 million in 1993.[33]

The pattern of growth in North Carolina's hog industry is distinc-

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24. Joby Warrick & Pat Stith, *Corporate Takeovers*, NEWS & OBSERVER (Raleigh, N.C.), Feb. 21, 1995, at A1 [hereinafter Warrick & Stith, *Corporate Takeovers*].

25. *Id.*

26. AGRICULTURAL STATISTICS DIV., N.C. DEP'T OF AGRIC., CASH RECEIPTS: FROM FARMING BY COMMODITY, NORTH CAROLINA, 1991-1994, *available on* Internet, at http://www.agr.state.nc.us/stats/cashrept/cshcomyr.html (May 20, 1996) [hereinafter N.C.D.A.—CASH RECEIPTS]; Warrick & Stith, *Corporate Takeovers*, *supra* note 24, at A1.

27. N.C.D.A.—CASH RECEIPTS, *supra* note 26.

28. John T. Holleman, *In Arkansas Which Comes First, the Chicken or the Environment?*, 6 TUL. ENVTL. L.J. 21, 25 (1992). The poultry industry was the first of the large agribusinesses to integrate, and served in North Carolina as a sort of testing ground for the technique before it was used in the pork industry. U.S. GEN. ACCOUNTING OFFICE, ANIMAL AGRICULTURE—INFORMATION ON WASTE MANAGEMENT AND WATER QUALITY ISSUES 45 (1995) [hereinafter GAO—ANIMAL AGRICULTURE].

29. In North Carolina, the "big three" include Murphy Family Farms (the nation's largest swine producer), Carroll's Foods, and Prestage Farms. Warrick & Stith, *Corporate Takeovers*, *supra* note 24, at A1. Other industrial scale producers include Brown's of Carolina and Smithfield Foods. *Id.* at A6.

30. Bailey, *supra* note 1, at 41; Warrick & Stith, *Corporate Takeovers*, *supra* note 24, at A6.

31. Bailey, *supra* note 1, at 41.

32. *Id.*

33. *Id.* at 32.

tive.[34] Traditional, small, farm-based, midwestern producers have a cost advantage over their southern counterparts because they are closer to the supply of corn that feeds their pigs.[35] The North Carolina producers answered this disadvantage by following Sam Walton's advice—volume, volume, volume—and developing total integration.[36] The resulting large farms produce thousands of hogs per year and require processing facilities capable of butchering thousands of hogs per day.[37] Thus, the pattern of development of the industry is predictable: where any of the processing facilities are built, they are quickly followed by the development of large-scale farming operations nearby.[38] Since the opening of the Carolina Foods Processing plant in Duplin County in the early part of this decade, the county's hog population has nearly doubled, growing by 330,000 from 1994 to 1995 alone.[39]

The prospects for further development of this type are limited by only two factors: the willingness of local populations and officials and the state government to permit it, and the economic realities of agribusiness.[40] Residents of hog boomtowns like Tar Heel are divided on the issue. Some claim the benefits promised them before the industry came to Duplin County are not apparent; others sing the praises of the industry's spin-off effects.[41] Significantly, in February of 1995, the Town Council of Faison, which sits in the middle of Duplin County, rejected plans by IBP, Inc., a Nebraska processing company, to build another processing plant in the town after angry residents packed a town meeting to oppose it.[42]

Economically, the industry has faced a tough year in 1996. The boom in the nation's livestock count, along with increased exports of grains to Asia, has led to a dwindling domestic supply of feed.[43] This pressure has raised the prices of wheat and corn to near-record levels and exacerbated

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34. *Id.*

35. *Id.*

36. *Id.*

37. *Id.* at 41. Carolina Food Processors, a pork processing facility in Tar Heel, North Carolina, can process 16,000 hogs per day. *Id.* A similar sized facility, Lundy's, is located in Clinton, North Carolina. Warrick & Stith, *Corporate Takeovers*, *supra* note 24, at A6.

Carolina Food Processors' latest request for an NPDES permit to increase its wastewater discharge was denied on November 22, 1995, postponing plans to expand the facility. Letter from A. Preston Howard, Jr., Division of Environmental Management, to Lawrence D. Lively, Assistant Vice President, Environmental Affairs, Carolina Food Processors, Inc. 1 (Nov. 22, 1995) (announcing withdrawal of the "Public Notice of Intent to Issue a State NPDES Permit") (on file with author).

38. Bob Williams, *Hog Plant Foes, Supporters Jam Edgecombe Hearing*, NEWS & OBSERVER (Raleigh, N.C.), Jan. 3, 1996, at A3.

39. N.C.D.A.—COUNTY ESTIMATES, *supra* note 14.

40. Bailey, *supra* note 1, at 32, 41.

41. Warrick & Stith, *The Smell of Money*, *supra* note 13, at A1.

42. *Id.* However, city officials in Edgecombe, N.C. approved IBP's zoning request which would allow the processor to build the plant in that town. Williams, *supra* note 38, at A3. The vote came after a similarly angry meeting. *Id.*

43. Scott Kilman, *Raging Demand May Keep Prices of Corn, Wheat Futures on the Rise*, WALL ST. J. EUR., Jan. 30, 1996, at 23.

North Carolina producers' natural disadvantage in feed prices.[44] At the same time, increased production has led to fears of a "glut of meat" on the market place, which is expected to lower wholesale prices of hogs and pork bellies.[45] These factors could lead to a slow-down in expansion of the industry, although the more likely effect is a continuing trend of concentration and integration as producers continue to eliminate as many costs and inefficiencies as possible.[46]

In any event, what is certain is that the hog industry is in North Carolina to stay. As stated by Senator Lauch Faircloth, "North Carolinians are just beginning to realize how important the hog industry has become to the state's economy."[47] It is thus important to understand what kind of effects this industry is having and will have upon North Carolina.

II. The Good, the Bad, and the Ugly: Effects upon North Carolina's Economy and Environment

At times the debate on protecting the environment boils down to a misleading standoff—to grow economically, we must sacrifice the environment—to save the environment, we must be willing to sacrifice jobs. Whether or not that shibboleth is in fact true is a matter to be strongly debated in the halls of Congress, state legislatures, and municipalities. Those who are considering it could have asked for no better case study than the experience of the hog industry down east.

A. The Economic Effects of the Industry

The swoon over swine has provided jobs in a farm economy that has been hurt by the decline in tobacco. In 1994, the hog industry was estimated as providing employment for around 25,000 workers in North Carolina, including 5,400 in hog production, 5,900 in slaughtering and processing, and an additional 14,700 full-time jobs in support businesses "including construction, transportation and retail and wholesale sales."[48] More important, the industry has enabled several of the state's poorest eastern counties to improve their lot. For example, Duplin County, which was once mired in the bottom quartile of the state's 100 counties in per capita income, rose to thirty-third in 1993.[49] Not coincidentally, Duplin

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44. *Id.*

45. Bloomberg, *Too Many Hogs Spoil the Price*, Fin. Post (Toronto), Dec. 30, 1995, at 55.

46. Richard Orr, *"Franchise Farming" Takes Hold in U.S. Agricultural Restructuring*, Chi. Trib., Jan. 29, 1996, § 1, at 3; Warrick & Stith, *Corporate Takeovers*, *supra* note 24, at A1. For a discussion of how this concentration affects the small farmer, see *infra* part II.A.

47. Warrick & Stith, *The Smell of Money*, *supra* note 13, at A8. Senator Faircloth is himself a hog producer. *Id.*

48. *Id.*

49. Bureau of Economic Analysis, U.S. Dep't of Commerce, Per Capita Income: Ranking of North Carolina Counties, 1993, *available* on Internet, at http://hal.dcr.state.nc.us/sdc/pci.htm (May 1995). Duplin reported a per capita annual income of

County has the nation's largest hog population: 1.47 million in 1994.[50]

A look beneath the surface of the industry raises some troubling questions, however. The figures showing the astronomical gains in revenue for the large corporations are undoubtedly accurate, and the industry is indeed the state's largest agricultural business.[51] While those figures have been rising, however, the number of North Carolina hog farmers continues to plummet.[52] Since 1991, the number of farms with hogs has dropped by 2,200.[53] In addition, while hog farming tops both tobacco and broiler chicken production in terms of revenue, it trails both in the numbers of actual farm jobs and spin-off jobs produced.[54]

Concentration in the industry makes hog production less labor intensive and more centralized. It is therefore less hospitable to the traditional independent grower, who is unable to weather the economic pressures caused by high feed prices and low wholesale value.[55] The resulting loss of small family-based operations is perhaps economically inevitable,[56] but it must be weighed when considering the costs and benefits of the growth of the hog industry.

One other economic effect of the industry stems directly from its environmental impact. As will be discussed in the following section, runoff and seepage from animal agricultural facilities play a large role in the over-nutrification of coastal rivers and sounds.[57] Such pollution leads to fish kills and an overall decline in game fish population.[58]

Such effects do not take place without impact upon the coastal economy. A drastic decline in the numbers of striped bass on the East Coast in the late 1970s and early 1980s cost "coastal counties from North Carolina to Maine a potential $220 million annually and 7,000 jobs."[59] In

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$17,118. *Id.*

50. N.C.D.A.—COUNTY ESTIMATES, *supra* note 14.

51. Bailey, *supra* note 1, at 30.

52. AGRICULTURAL STATISTICS DIV., N.C. DEP'T OF AGRIC., LIVESTOCK: NUMBER OF OPERATIONS WITH LIVESTOCK, *available on* Internet, at http://www.agr.state.nc.us/stats/livestoc/anilfmyr.html (June 6, 1996).

53. *Id.*; NASS—HOGS AND PIGS, 1995, *supra* note 11.

54. Warrick & Stith, *The Smell of Money*, *supra* note 13, at A8.

> The most recent numbers available from N.C. State and producers' associations showed poultry with 25,270 farm and processing jobs and a total of 52,000 workers including support businesses. Tobacco employed 34,000 people on farms and in warehouses and cigarette plants, and a total of 99,000 people including direct support businesses such as fertilizer and implement sales.

Id.

For a discussion of comparable figures for the hog industry, see *supra* note 48 and accompanying text.

55. Orr, *supra* note 46, § 1, at 3. Joby Warrick & Pat Stith, *Midwest Farmers Fear N.C.-Style Expansion*, NEWS & OBSERVER (Raleigh, N.C.), Feb. 21, 1995, at A7.

56. Orr, *supra* note 46, § 1, at 3.

57. For a discussion of the over-nutrification of coastal rivers and sounds, see *infra* part II.B.1.

58. For a discussion of the effect of pollution on aquatic life, see *infra* part II.B.

59. Robert H. Boyle, *A Rain of Death on the Striper?*, SPORTS ILLUSTRATED, Apr. 23, 1984, at 40, 40.

coastal North Carolina, the commercial shellfish, fishing, and shrimping industries pumped over $112 million in fish revenues alone into the North Carolina economy.[60] When combined with spin-off effects and the tourism associated with recreational fishing, the fishing industry produces $1 billion annually for North Carolina.[61] This productivity, however, is threatened by environmental degradation. Declines in fishing stock associated with hatchery pollution and habitat loss have prompted calls for a moratorium on new commercial licenses and restrictions on the selling of fish, steps never before contemplated by the state.[62]

What is for now unknown is the effect that the news coverage of the hog industry's more unsavory environmental impacts will have upon North Carolina's $1.1 billion coastal tourism industry.[63] On an anecdotal level, Governor Jim Hunt was reported to have stepped up state efforts to deal with the pollution levels in the Neuse River after receiving numerous letters from out-of-state residents expressing concern over the river's condition.[64] Many of those who wrote reported that they had canceled plans to move to or visit North Carolina because of the issue.[65]

The hog industry does indeed have a positive economic impact upon the state's economy. It contributes, among other things, jobs, tax money, grants to universities and colleges, and expertise in agricultural genetic research.[66] However, it is clear that not every economic impact of the industry is a positive one. As discussed below, the negative economic impact due to the environmental consequences of hog farming, no matter how diligently the industry attempts to avoid them, outweighs the positive economic benefits.

B. Environmental Impact

The potential environmental impact of the expansion in the hog industry could be incalculable. Beyond the massive spills of the summer of 1995 and the very real danger such occurrences present to the health of the people and environment of coastal North Carolina, there lies the problem of long-term seepage of wastes into the ground and surface waters of the coastal plain.[67] The resulting impact upon the rivers, aquifers

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60. NORTH CAROLINA DIV. OF MARINE FISHERIES, DEP'T OF HEALTH, ENV'T & HUMAN RESOURCES, PRELIMINARY REPORT: N.C. COMMERCIAL LANDINGS, *available on* Internet, at http://www.sips.state.nc.us/EHNR/DMF/statistics/com95.htm (1995).

61. COAST ALLIANCE, STATE OF THE COASTS: A STATE-BY-STATE ANALYSIS OF THE VITAL LINK BETWEEN HEALTHY COASTS AND A HEALTHY ECONOMY, *available on* Internet, at http://www.eastnc.coastalnet.com/nccf/cstallian.htm (June 1995) [hereinafter, COAST ALLIANCE].

62. NORTH CAROLINA DIV. OF MARINE FISHERIES, DEP'T OF HEALTH, ENV'T & HUMAN RESOURCES, PRESS RELEASE (Aug. 22, 1995). For further discussion of the decline of North Carolina's marine fisheries, see *infra* notes 68-70 and accompanying text.

63. COAST ALLIANCE, *supra* note 61.

64. *Officials Say Hunt Had Key Role in Strengthening Pollution Proposals*, WINSTON-SALEM J., Feb. 11, 1995, at B3.

65. *Id.*

66. Bailey, *supra* note 1, at 41-42.

67. Holleman, *supra* note 28, at 28. "High levels of nitrate in groundwater used for

and sounds of the region presents the largest challenge to those who would argue that the hog industry is beneficial.

It is most important to keep in mind that the waters of eastern North Carolina feed the second largest estuary system in the United States;[68] the Albemarle-Pamlico Sounds nurture the fish which provide stock to fisheries from Florida to Maine.[69] The result of fouling these jewels will be more than just "No Swimming" signs and closed oyster beds; we risk the destruction of one of the world's great food sources.

A 1995 report by the environmental organization Coast Alliance stressed the alarming decline in North Carolina's fisheries due to environmental stresses, including agricultural pollution:

> Eighteen of the state's 26 commercially important fish species are showing severe signs of overfishing or environmental stress. The N.C. Division of Marine Fisheries classifies 14 stocks of fish as either depressed or stressed.
>
> Some species that have been particularly hard hit: Atlantic croaker—from a peak catch of 21 million pounds in 1980 to 3.3 million pounds in 1993; gray trout—16.9 million pounds in the 1980s to 4.3 million in 1993; river herring—23.7 million pounds in 1987 to 916,000 in 1993; and summer flounder—12.5 million in 1984 to 3 million in 1993.[70]

Fish are not the only things endangered by increased levels of water pollution in coastal waters. Studies have shown that "small amounts of nitrate loading over a period of several weeks . . . can be toxic to one of our most valuable seagrass species, . . . eelgrass," which is a vital habitat for young fish and a particularly good filter of sediment.[71] Humans, too, are not immune from the effects of livestock waste pollution. In October, the State Health Director of North Carolina issued a formal health warning urging residents and tourists to avoid contact with the waters of the Neuse River because of the presence of a flesh-eating algae.[72] Cattle farm

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water supply can cause methemoglobinemia, a blood disorder in infants, also known as 'blue baby disease.'" *Id.*

68. COAST ALLIANCE, *supra* note 61.

69. *Id.*

70. *Id.* For further discussion of the effects of nutrient pollution on aquatic resources, see *infra* part II.B.1.

71. JoAnn M. Burkholder, *A Fish Kill's Message: Get Serious About Reducing Nutrients in Our Estuaries*, WATERWISE, Fall 1995, at 1, 3.

72. NORTH CAROLINA DEP'T OF ENV'T, HEALTH & NATURAL RESOURCES, STATE HEALTH DIRECTOR ISSUES NEUSE RIVER HEALTH WARNING 1 (Oct. 6, 1995) (on file with author).

> Persons whose work requires water contact should postpone such work in the vicinity of an ongoing fish kill. If water contact cannot be postponed, protective gear should be used . . . . Items that have been immersed in the waters . . . should be handled with suitable protective gear . . . . Pets should not be allowed to swim in the vicinity . . . .

Id.

The kill was the result of the presence of an organism called *Pfiesteria piscimorte*, which has caused skin blistering and neurological illness among lab technicians who studied it. Deborah Franklin, *The Poisoning at Pamlico Sound*, HEALTH, Sept. 1995, at 108, 108. For further discussion of *Pfiesteria*, see *infra* notes 94-101 and accompanying text.

and slaughterhouse run-off was suspected to be the source of the 1993 contamination of Milwaukee, Wisconsin's water supply, which killed several people and sickened between 183,000 and 281,000 people.[73]

While hog farming is by no means the sole contributor to these statistics,[74] the link between livestock production and water quality deterioration is well-documented. The National Water Quality Assessment (NAWQA) of 1992 "cited confined poultry and hog production in the Southeast as a reason for relatively high inputs of nitrogen and phosphorous from manure in this region."[75] The study also indicated that "increases in in-stream loadings of nitrogen and phosphorous are, in part, strongly correlated with increases in the concentration of the livestock population in a watershed."[76]

To some, agricultural pollution may appear a paradox, since farmers, who live and depend upon the land, are generally considered to be careful stewards of the environment. However, "[r]ecent federal, state, and local studies . . . have identified agriculture as the United States' greatest source of nonpoint pollution . . . contribut[ing] more than half the pollutants entering the nation's rivers and lakes."[77] The EPA has noted that "[while] most farmers are good natural conservationists, it is apparent from the growing body of information that water quality problems exist which are attributable to animal waste management."[78]

These problems are magnified in intensive operations. As the scale of the livestock operation grows, the traditional ways of managing waste are unable to keep up with the volume of waste produced, and the potential

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73. Lawrence K. Altman, M.D., *The Doctor's World: Outbreak of Disease in Milwaukee Undercuts Confidence in Water*, N.Y. TIMES, Apr. 20, 1993, at C3; J. Madeleine Nash, *The Waterworks Flu*, TIME, Apr. 19, 1993, at 41.

74. COAST ALLIANCE, *supra* note 61. The report also lists "normal drainage from paved surfaces such as parking lots, roads and sidewalks; runoff from pastures; failing septic tanks; and bilge from marinas." *Id.*

Overfishing also plays a role in the decline. JoAnn Burkholder, Presentation to the N.C. Coastal Futures Committee, *"State of the State:" A Glimpse of Coastal Water Quality Concerns with Suggestions for Improved Management Approaches* 2 (1995) (transcript on file with author). Professor Burkholder characterizes urban runoff as the largest polluter of waters along the southern N.C. coast with agricultural runoff as the second largest source. *Id.* at 4.

75. GAO—ANIMAL AGRICULTURE, *supra* note 28, at 13.

76. *Id.*; *see also* Larry C. Frarey & Staci J. Pratt, *Environmental Regulation of Livestock Production Operations*, NAT. RESOURCES & ENV'T, Winter 1995, at 8 (describing the national scope of the livestock waste problem).

77. U.S. GEN. ACCOUNTING OFFICE, REPORT TO THE COMM. ON AGRIC., NUTRITION, & FORESTRY, U.S. SENATE: AGRICULTURE AND THE ENVIRONMENT, INFORMATION ON AND CHARACTERISTICS OF SELECTED WATERSHED PROJECTS 1 (1995) [hereinafter GAO—AGRICULTURE AND THE ENVIRONMENT]. For the definitions of point source and nonpoint source pollution, see *infra* notes 124-25.

78. Notice, General NPDES Permits for Discharges from Confined Animal Feeding Operations, EPA, 58 Fed. Reg. 7610, 7612 (1993) (establishing a general permit process covering animal feeding operations in EPA Region 6, which includes Louisiana, New Mexico, Oklahoma, and Texas).

for agricultural pollution grows accordingly.[79] This problem is compounded by the "decoupling" of animal production from the production facilities for animal feed.[80] The "decoupling breaks the traditional agricultural cycle of animal waste being returned as nutrients to a crop system, which in turn provides animals with food."[81]

The water quality problems associated with agricultural pollution stem primarily from direct discharges into surface waters, seepage or runoff of nutrients and chemicals into surface and groundwater,[82] and the evaporation of large amounts of ammonia gas into the atmosphere, which returns to the sounds as nitrogen-rich rain.[83] All three types of pollution destroy water quality in essentially the same way: they overload the receiving waterbody with nutrients.[84]

1. Fed to death: how nutrient overloading kills

> [B]ehold, I will smite with the rod that is in mine hand upon the waters which are in the river, and they shall be turned to blood.
> And the fish that is in the river shall die, and the river shall stink; and the Egyptians shall loathe to drink of the water of the river.[85]

The biblical description of the plague of blood could have been written about the rivers of eastern North Carolina in the 1990s. The lazy, brackish water of coastal plain rivers and sounds, trapped behind the islands of the Outer Banks, creates an ideal laboratory for the conditions which cause fish kills.[86] In the summer of 1995, over 20 million fish died in fish kills in North Carolina's sounds and coastal rivers.[87] In 1991, a single massive kill caused an estimated one billion dead Atlantic menhaden to wash up on the beach at the Minnesott Beach/Cherry Point area of the Neuse River.[88]

Too high a level of nutrients in the water causes a condition called accelerated eutrophication.[89] In this condition, the natural processes by

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79. Martha L. Noble & J.W. Looney, *The Emerging Legal Framework for Animal Waste Management in Arkansas*, 47 ARK. L. REV. 159, 162 (1994).

80. *Id.*

81. *Id.* In North Carolina, application of waste as fertilizer is supposed to occur according to the Natural Resources Conservation Service Guidelines, which set application limits according to the species of cover crop used to absorb the nutrients. N.C. ADMIN. CODE tit. 15A, r. 2H.0217(H)(i) (Oct. 1994); *see also id.* r. 2H.0217(H)(iv) (requiring that animal waste management plans submitted for approval to the DEM contain plans to apply waste to fields at no "greater than agronomic rates").

82. Satchell, *supra* note 2, at 55.

83. Stuart Leavenworth, *Study Suggests Spills Not Only Way Hog Farms Pollute*, NEWS & OBSERVER (Raleigh, N.C.), Aug. 12, 1995, at A12.

84. *See generally* Burkholder, *supra* note 74.

85. *Exodus* 7:17-18 (King James).

86. Stephen W. Dill, *Researchers Blame Outer Banks for N.C. Fish Kills*, HERALD-SUN (Durham, N.C.), Oct. 14, 1995, at A10.

87. *Id.*

88. Burkholder, *supra* note 74, at 8.

89. *Id.* at 4; Noble & Looney, *supra* note 79, at 165-66.

which water becomes layered, with decaying plant and animal matter sinking to the bottom, are accelerated.[90] Instead of the slower process, which allows winds and currents to stir the water and replenish the oxygen supply, higher levels of nutrients cause the oxygen depletion to outstrip the capacity of the water to renew itself.[91] The nutrients encourage the growth of massive algae blooms which eventually die and sink.[92] The increased amounts of decaying plant matter cause further oxygen depletion until fish and other animals are literally suffocated, sometimes leaping onto shore in a vain attempt to find oxygen.[93]

Even more frightening than the fish kills due to oxygen deprivation are those that arise from more sinister sources and which more closely conjure up the image of Moses striking his staff upon the Nile. The Neuse River health warning came after a series of fish kills linked to the mysterious organism *Pfiesteria piscimorte*, a toxic dinoflagellate that thrives in overly rich estuary water.[94] An algal bloom of *Pfiesteria* stains the water "like dark coffee or brown shoe polish" and gives it "a sweetish smell with a kind of rotten texture."[95] The organism kills fish by first injecting them with a neurotoxin, which slows their movement, then devouring their flesh, one strip at a time.[96] It leaves gaping blisters on the flanks and fins of fish, and burrows right through the shells of shrimp and crabs.[97] The fish finally die of "suffocation from muscle paralysis."[98]

What is especially frightening about *Pfiesteria* is that it has affected humans, causing stinging and burning sensations, blisters, and even temporary declines in neurological functions.[99] Significantly, Professor JoAnn Burkholder, who discovered and identified *Pfiesteria*, reported that it thrives only in North Carolina waters with overly high phosphorous counts.[100] Livestock waste, especially from hogs, is extremely high in phosphate content.[101]

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90. Burkholder, *supra* note 74, at 4; Noble & Looney, *supra* note 79, at 166.
91. Burkholder, *supra* note 74, at 4; Noble & Looney, *supra* note 79, at 166.
92. Burkholder, *supra* note 74, at 4; Noble & Looney, *supra* note 79, at 166.
93. Burkholder, *supra* note 74, at 3.
94. *Id.* at 7.
95. Franklin, *supra* note 72, at 110.
96. Burkholder, *supra* note 74, at 3.
97. *Id.*
98. *Id.* at 7.
99. Franklin, *supra* note 72, at 110; Betty Mitchell Gray, *Warning: Hazardous Algae in Neuse River*, VIRGINIAN-PILOT & LEDGER-STAR (Norfolk, Va.), Oct. 7, 1995, at B1.
100. Burkholder, *supra* note 74, at 7-8.
101. Nowlin Notes, *supra* note 15, at 1. Moreover, the type of phosphate released by animal manure settles into the bottom of a waterway, becoming "available to algae when the bottom sediment of a stream becomes anaerobic." OFFICE OF WATER, EPA, GUIDANCE SPECIFYING MANAGEMENT MEASURES FOR SOURCES OF NONPOINT POLLUTION IN COASTAL WATERS ch. 2, pt. I.F.1.b, *available on* Internet, at http://www.epa.gov/OWOW/MMGI/index.html (1993 & Update July 5, 1995) [hereinafter EPA—NONPOINT MANAGEMENT]. The accelerated eutrophication occurring in North Carolina waters is therefore not only a result of livestock pollution; it also worsens itself by creating the anaerobic conditions necessary for phosphate release and thus more algae growth. *Id.* ch. 2, pt. I.F.1. The result is a self-feeding cycle of eutrophication that wreaks havoc on the waterways. *Id.*

2. One-time disasters: the problem of catastrophic spills

The catastrophic effects of a large spill of livestock waste are self-evident. Besides the obvious aesthetically unpleasant effects upon whatever body of water such spills happen to hit, they result in a massive killing of plant and animal life.[102] In the weeks following the Oceanview spill, scientists found only "sludge worms, fly larvae and other pollution-tolerant species alive on the river bottom."[103] If allowed to continue over a long period of time, such direct discharges, even small ones, can poison life in a very large surrounding area.[104]

Besides the costs of cleanup,[105] such spills and their attendant effects can have severe impacts upon nearby towns. Jacksonville, close to the Oceanview spill, lost almost all of its Fourth of July weekend business.[106] Tourists were frightened to other areas by news reports of the smell of feces and dead fish.[107] However, things could have been worse; catastrophic spills such as that at Oceanview could have a much greater impact on a coastal economy if the waste reaches recreational beaches, marinas or commercial shell fisheries.[108] Oceanview, despite its scale, did none of that.

While the Oceanview spill was rare in its magnitude, discharges of pure liquid agricultural waste into North Carolina surface waters are not uncommon. The summer of 1995 saw seven major spills of more than one million gallons, of which six were hog-related.[109] In 1995, a North Carolina Department of Environmental Management inspection sweep found that 49 hog facilities "were discharging animal waste, either through accidental spills or man-made devices."[110] Other accounts of the inspections

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102. Stuart Leavenworth & Joby Warrick, *Jacksonville Joints Aren't Jumping After Spill*, NEWS & OBSERVER (Raleigh, N.C.), July 2, 1995, at A1.

103. *Id.* Although the river is not "technically dead," and oxygen levels have recovered "steadily" in the stretches of the New River most impacted by the June 21 spill, decades may pass before the fish population recovers. *Id.* at A6.

104. Joby Warrick & Jerry Allegood, *Spill Evidence Found at Edgecombe Farm of Top Pork Official*, NEWS & OBSERVER (Raleigh, N.C.), Aug. 5, 1995, at A1 (describing one long-term illegal direct discharge into a swamp). "The pollution apparently killed trees up to 18 inches thick, [one state official] said, and stands of dead trees continued along the creek." *Id.* at A4.

105. Joby Warrick & Stuart Leavenworth, *Lucky Leak: Waste Accident Could Have Been Much Worse, Officials Say*, NEWS & OBSERVER (Raleigh, N.C.), July 2, 1995, at A6. "It was the worst agricultural spill ever recorded by state environmental officials, and its cost—in cleanup, fines, lost income and restocking of fish—is expected to climb into the tens of thousands of dollars." *Id.*

106. Leavenworth & Warrick, *supra* note 102, at A1. It is perhaps a foregone conclusion that the nickname of the nearby town of Richlands will no longer carry quite the same meaning. The town was known as the "Town of Perfect Water." *Id.* at A6.

107. *Id.* at A1.

108. Warrick & Leavenworth, *supra* note 105, at A6.

109. *Pork Producers Urge Biannual Inspections*, NEWS & OBSERVER (Raleigh, N.C.), Aug. 15, 1995, at A3; Joby Warrick, *Lagoon Leaks Hog Waste in Brunswick*, NEWS & OBSERVER (Raleigh, N.C.), Aug. 9, 1995, at A3 [hereinafter Warrick, *Brunswick Spill*].

110. Joby Warrick, *Biggest Pig Firms Fare Well in Report*, NEWS & OBSERVER (Raleigh, N.C.), Sept. 27, 1995, at A3 [hereinafter Warrick, *Biggest Pig Firms*]. However, earlier

listed 200 to 300 operations which were so badly out of compliance that they "should be shut down."[111]

To be fair, this first-ever sweep did conclude that none of the deliberate discharges of waste were from farms affiliated with the large hog corporations, whose facilities tend to be newer and better built than the smaller, older independent operations.[112] However, it is instructive to note that Oceanview Farms, an affiliate of Purina, Inc., had only been constructed in 1994, and was "one of the first [farms] to be sanctioned under new regulations designed to protect the state's waters from livestock waste."[113] It is to those regulations, and other state and federal programs addressing the hog production industry, that this comment now turns.

III. Current Statutory and Regulatory Schemes for Waste Management

Until June of 1996, waste disposal in the North Carolina hog industry was policed mainly through the state's attempts to comply with the Federal Clean Water Act (CWA).[114] The CWA is chief among the federal attempts to regulate the effects of water pollution in general, and "is potentially the most important piece of legislation to impact livestock producers."[115]

Other less sweeping governmental controls also governed the industry, including North Carolina's Swine Farm Siting Act of 1995 (the "Siting Act")[116] and the recently issued regulations governing land application of livestock wastes as a method of treatment and disposal.[117] The hog industry also benefited from provisions such as North Carolina's Right to Farm Act,[118] which protects certain agricultural operations from

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reports compiled before the sweep was completed "found 60 farmers who were deliberately dumping animal waste into streams through pipes or ditches" and "50 other farms were discharging sewage inadvertently through leaks or overflows from waste lagoons." Joby Warrick, *State Finds 60 Farms Dump Waste*, News & Observer (Raleigh, N.C.), Sept. 15, 1995, at A1. In addition, earlier reports listed 252 of 1,778 hog farms as having dangerously full lagoons. *Id.* at A8. The discrepancy in the reports was attributed to "errors in data entry" and insufficient evidence of discharge. Warrick, *Biggest Pig Firms*, *supra*, at A3.

111. Nowlin Notes, *supra* note 15, at 6 (describing the comments of Dr. Kenneth Rudo, DEM scientist).

112. Warrick, *Biggest Pig Firms*, *supra* note 110, at A3.

113. Joby Warrick, *Hog Waste Spill Fouls Land, River in Onslow*, News & Observer (Raleigh, N.C.), June 23, 1995, at A1 [hereinafter Warrick, *Onslow Spill*]. Additionally, one other catastrophic spill in the summer of 1995 flowed from a leak in the lagoon at a Brown's of Carolina farm in Brunswick County—three months after the 6,400 head farm was constructed. Warrick, *Brunswick Spill*, *supra* note 109, at A3.

114. Federal Water Pollution Control Act, 33 U.S.C. §§ 1151 to 1176, 1251 to 1387 (1994).

115. John D. Copeland, Nat'l Ctr. for Agric. Law Research & Info., Environmental Laws Impacting North Carolina Livestock Producers 2 (1994).

116. N.C. Gen. Stat. §§ 106-800 to -803 (1995).

117. N.C. Admin. Code tit. 15A, r. 2H.0217 (Oct. 1994).

118. An Act to Protect Agricultural Operations from Nuisance Suits Under Certain

nuisance suits and from the application of local zoning ordinances.

On June 21, 1996, the picture changed drastically with the adoption of Senate Bill 1217.[119] The measure, which is an attempt by the General Assembly to rectify the problems which led to the spills of 1995, was prompted by public outcry and by the report of the Blue Ribbon Study Commission on Agricultural Waste[120] which made public its recommendations on May 16, 1995.[121] The following section discusses how the new legislation addresses the flaws in the old system.

A. The Clean Water Act and North Carolina's Bad Leak

The CWA is "the main federal mechanism"[122] for achieving the goal of Congress, as stated in 1977, "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[123] The CWA recognizes that water pollution comes from two possible groups of sources: point sources,[124] e.g., pipes, ditches, or gutters; and nonpoint sources,[125] e.g., run-off and other hard to trace sources of pollution. The CWA treats these two classes of pollutants very differently, as discussed below.

In order to meet the goal of eliminating point source pollution of U.S. waters, the CWA prohibits all direct discharges of pollutants into surface waters without a permit received in accordance with the National Pollution Discharge Elimination System (NPDES).[126] Under NPDES, no dis-

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Circumstances, N.C. GEN. STAT. §§ 106-700 to -701 (1995).

119. 1996 N.C. Sess. Laws ch. 626.

120. Established by 1995 N.C. Sess. Laws ch. 542, § 3.2.

121. BLUE RIBBON REPORT, *supra* note 23.

122. Julie Irvine, Survey, *The Clean Water Act and Agricultural Water Pollution*, 31 S.D. L. REV. 462, 462 (1986).

123. 33 U.S.C. § 1251(a) (1994).

124. The CWA defines "point source" as "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged." 33 U.S.C. § 1362(14) (1994).

North Carolina's definition is nearly identical to that in the CWA, with only minor differences: the word "specifically" is inserted before "not limited to" and the North Carolina definition does not encompass vessels or other floating craft. N.C. ADMIN. CODE tit. 15A, r. 2H.0103(20) (Oct. 1994).

125. The Clean Water Act does not define "nonpoint source," but one author has defined it as "any source of water pollution or pollutants not associated with a discrete conveyance." It includes, but is not limited to, urban runoff, runoff from fields, forest lands, construction activities, mining activities, septic tank systems, and landfills.

Robert D. Fentress, Comment, *Nonpoint Source Pollution, Groundwater, and the 1987 Water Quality Act: Section 208 Revisited?*, 19 ENVTL. L. 807, 811-12 (1989) (citations omitted).

North Carolina defines nonpoint source pollution as "pollution which enters waters mainly as a result of precipitation and subsequent runoff from lands which have been disturbed by man's activities and includes all sources of water pollution which are not required to have a permit." N.C. ADMIN. CODE tit. 15A, r. 2B.0202(36) (Oct. 1994).

126. 33 U.S.C. § 1342 (1994).

charge is allowed unless the discharger first acquires a permit and meets the various statutory requirements of the CWA and regulations issued by the Environmental Protection Agency (EPA).[127]

In enacting the CWA, Congress sought to enable the states to meet the goals of the act through their own permitting programs.[128] Consequently, the CWA allows the "Governor of each State desiring to administer its own permit program for discharges into navigable waters within its jurisdiction" to do so, provided the state's system is approved by the Administrator of the EPA.[129] By presenting a program to the EPA Administrator which meets the guidelines of the CWA, a state can exercise the "authority to issue permits that ensure compliance with all applicable requirements of the CWA, as well as authority to abate permit violations, including the ability to seek civil and criminal penalties."[130] North Carolina is one of 40 states that have chosen to administer their own NPDES program.[131]

On the whole, the CWA has been a qualified success in reducing or eliminating surface water pollution from point sources.[132] According to a recent EPA report, some two-thirds of America's surface waters are now "fishable and swimmable."[133] The success in reducing point source pollution is due mainly to the ease with which such sources are identified and controlled through technology, keeping permitted discharges below certain standards set by the EPA or the appropriate state administrator.[134] North Carolina's record is consistent with this progress, and the state has, according to one watchdog group, "done a good job of eliminating point sources."[135]

However, neither the CWA nor the programs administered by the State of North Carolina have been able to deal sufficiently with nonpoint sources of pollution.[136] One commentator has pointed out that "[w]hile

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127. *Id.* § 1342(a). "[T]he Administrator may . . . issue a permit for the discharge of any pollutant, or combination of pollutants, . . . upon condition that such discharge will meet . . . all applicable requirements . . . ." *Id.*

128. *Id.* § 1251(b). "It is the policy of the Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, to plan the development and use (including restoration, preservation, and enhancement) of land and water resources . . . ." *Id.*

129. *Id.* § 1342(b).

130. Lawrence R. Liebesman & Elliott P. Laws, *The Water Quality Act of 1987: A Major Step in Assuring the Quality of the Nation's Waters*, 17 ENVTL. L. REP. 10,311, 10,322 (1987).

131. N.C. GEN. STAT. § 143-215.1 (1993); James Rosen, *EPA Says Offer On*, NEWS & OBSERVER (Raleigh, N.C.), Sept. 9, 1995, at A1. The program is implemented by N.C. ADMIN. CODE tit. 15A, r. 2H.0101-.1206 (Oct. 1994). For a discussion of North Carolina's NPDES program and its application to hog waste disposal, see *infra* part III.A.4.

132. *See, e.g.*, Brian Weeks, *Trends in Regulation of Stormwater and Nonpoint Source Pollution*, 25 Envtl. L. Rep. (Envtl. L. Inst.) 10,300 (1995).

133. *Id.* (citing OFFICE OF WATER, EPA, NATIONAL WATER QUALITY INVENTORY, 1992 REPORT TO CONGRESS 1-2 (1994)).

134. Weeks, *supra* note 132, at 10,301; Fentress, *supra* note 125, at 813.

135. COAST ALLIANCE, *supra* note 61.

136. Fentress, *supra* note 125, at 818-19 (describing the failure of the Clean Water Act

EPA strictly enforces effluent limitations and discharge permits for point sources . . . Congress gave EPA virtually no power" to enforce provisions affecting nonpoint pollution.[137] Attention to nonpoint pollution is sorely needed, as it is now estimated that nonpoint pollution makes up "seventy-six percent of lake pollution, sixty-five percent of stream pollution, and forty-five percent of estuary pollution."[138]

Because of the difference in regulation and enforcement of point and nonpoint sources, it is very important to know into which category a hog production facility falls. The CWA, for the purposes of the NPDES permitting process, explicitly included "concentrated animal feeding operations" (CAFO) in its definition of point sources subject to permitting.[139] Thus, application of the North Carolina rules would seem to be a simple matter of treating a hog farm like any other point source. Reality is never quite so easy, and it is through this gap between point source regulation and nonpoint regulation that most of North Carolina's hog waste problem has flown.

1. Regulating hog waste as a point source

Since the definition of point source includes the term "concentrated animal feeding operation", it would seem that hog farmers must meet federal permitting standards. Closer examination of the terminology reveals why that is not always the case. Prior to Senate Bill 1217, North Carolina regulations defined an animal feeding operation as a facility where:

> (i) Animals (other than aquatic animals) have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and
>
> (ii) Crops, vegetation forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.[140]

But not every hog feeding operation needed permitting. Under the definition of point source, the regulations only required those facilities that were "concentrated" to be permitted.[141] According to the federal standards, a hog facility may be classified as a CAFO in one of two ways: 1) if the facility confines more than "2,500 swine each weighing over 25 kilograms"; or 2) if the facility confines more than "750 swine each weighing over 25 kilograms," and "pollutants are discharged directly into navi-

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to deal with nonpoint pollution as forcefully as it did point sources).

137. *Id.* at 818.

138. *Id.* at 813 (citing OFFICE OF WATER, EPA, NATIONAL WATER QUALITY INVENTORY, 1986 REPORT TO CONGRESS 63 (1987)).

139. 33 U.S.C. § 1362(14) (1994). For the entire definition of point source, see *supra* note 124.

140. 40 C.F.R. § 122.23(b)(1) (1995) (incorporated into North Carolina regulations at N.C. ADMIN. CODE tit. 15A, r. 2H.0122 (Oct. 1994)).

141. 33 U.S.C. § 1362(14) (1994).

gable waters through a manmade ditch, flushing system or similar . . . device."[142]

The definition provides a substantial exception. Even if an operation meets one of the above criteria, it does not need to be permitted if it can show that it discharges "only in the event of a 25 year, 24-hour storm event."[143] Thus, a hog operation which fell within the numerical guidelines of the federal standards, but was built to withstand everything but the 25-year, 24-hour storm, was not a CAFO and needed no NPDES permit.[144]

2. Authority wasted: an analysis of North Carolina's NPDES program

By adhering strictly to the definition of a CAFO in the *Code of Federal Regulations*, North Carolina avoided the chance to provide more than de minimis protection of its rivers and estuaries.[145] The choice of staying with the federal guidelines was not one made by the DEM or the

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142. 40 C.F.R. pt. 122, app. B (1995) (incorporated by reference into N.C. ADMIN. CODE tit. 15A, r. 2H.0122 (Oct. 1994)).

The Director of the Division of Environmental Management of North Carolina's Department of Environment, Health and Natural Resources (the "Director") may also designate any animal feeding operation as a CAFO on a case-by-case basis, "upon determining that it is a significant contributor of pollution to the waters of the United States." *Id.* § 122.23(c)(1).

143. *Id.* pt. 122, app. B. A 25-year, 24-hour storm event is a one-day rainfall total with a probable recurrence interval of 25 years. *Id.* § 412.11(e). In Kinston, N.C., which sits in the middle of hog country, such a rainfall would be 7.5 inches in a 24-hour period. NATIONAL OCEANIC & ATMOSPHERIC ADMIN., NAT'L WEATHER SERV., TECHNICAL PAGER 40 (1996).

144. Both the EPA and the Fifth Circuit Court of Appeals have made it clear that when the regulations say "only" they mean "only." Discharge during any storm short of a 25-year, 24-hour event would be in violation of the CWA. This includes a discharge during a series of chronic, but not 25-year storm events. For instance:

> An unpermitted facility that could be classified as a CAFO has waste handling facilities to contain the process generated wastewater plus the runoff from a 25-year, 24-hour rain fall event plus three inches of runoff from accumulation of winter precipitation. It rains heavily for three weeks, but the rainfall in any 24-hour period never exceeds the 25-year, 24-hour storm event. The facility's waste handling facilities reaches [sic] capacity and overflows, [sic] discharging to waters of the United States. The facility has violated the CWA.

Notice, Proposed General NPDES Permit for Concentrated Animal Feeding Operations (CAFO), EPA, 60 Fed. Reg. 44,489, 44,491 (1995) (establishing a general permit process covering animal feeding operations in Idaho) [hereinafter EPA Notice].

This guideline closely follows the decision of the Fifth Circuit Court of Appeals in Carr v. Alta Verde Indus., Inc., 931 F.2d 1055 (1991) (holding that a dairy cattle operation was a point source for NPDES purposes because it had in the past and might in the future discharge pollutants as a result of rainfall not amounting to a 25-year, 24-hour event, despite being constructed within EPA guidelines).

145. It is not rare for a state to issue cutoff points for CAFO status lower than those established in the federal regulations. Lower cutoff points include more operations in the permitting process. Iowa, Indiana, Nebraska and North Dakota, all large hog-producing states, have elected to establish such stricter guidelines. COPELAND, *supra* note 115, at 5 n.13.

Environmental Management Commission (EMC); it was a deliberate political decision of the state legislature.[146]

The North Carolina General Statutes provided that "[e]xcept as required by federal law or regulations, the [EMC] may not adopt effluent standards or limitations applicable to animal and poultry feeding operations."[147] This restriction was in complete opposition to other sections which empowered the EMC to "develop, adopt, modify and revoke effluent standards or limitations and waste treatment management practices as it determines necessary"[148] and to "provide limitations upon the effluents discharged from pretreatment facilities and from outlets and point sources to the waters of the State."[149] Animal agriculture was thus treated differently from all other industries in North Carolina.[150]

This situation was indeed unfortunate, since the geology of the North Carolina coast makes these rivers especially sensitive to the nutrient pollution emitted by livestock facilities.[151] The volatility of the water quality problems and the rapid pace of agricultural development make flexibility a virtue in water quality regulation. Such flexibility, before Oceanview Farms, was not to be found in the North Carolina Legislature.[152]

However, Senate Bill 1217 appears to have made some progress in addressing this issue. The Bill amends North Carolina General Statutes (G.S.) section 143-215.1(a) by adding a subsection (12), requiring a permit and compliance with all conditions before any person can "[c]onstruct or operate an animal waste management system."[153] Thus, despite the fact that the bill retained G.S. 143-215(e), it did extend the regulatory reach of the DEM by requiring all farms above a certain size to be permitted.

The clearest change brought about by Senate Bill 1217 is the new definition of an "animal operation."[154] The new section defines "any agricultural farming activity involving 250 or more swine," as an animal operation, subject to the permitting requirements discussed below.[155] With that definition, the General Assembly left behind the federal definition of CAFOs and completely altered its NPDES compliance program. The momentous import of this change is discussed below.[156]

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146. *See generally* Pat Stith & Joby Warrick, *Big Pork Helps Its Friends*, NEWS & OBSERVER (Raleigh, N.C.), Feb. 26, 1995, at A9 (discussing the fact that since 1990, the Murphy family has given over $150,000 to candidates for state offices; the North Carolina Pork Producers association has given over $90,000).

147. N.C. GEN. STAT. § 143-215(e) (Supp. 1995).

148. *Id.* § 143-215(a).

149. *Id.* § 143-215(b).

150. *See* Nowlin Notes, *supra* note 15, at 7 (discussing the preferences given to the agriculture industry).

151. For a discussion of the effect of waste pollution on North Carolina's coastal area, see *supra* part II.B.

152. For a discussion of the Oceanview Farms disaster, see *supra* notes 2-6, 113 and accompanying text.

153. 1996 N.C. Sess. Laws ch. 626, pt. 1, § 2.

154. *Id.* (to be codified at N.C. GEN. STAT. §§ 143-215.10A to -215.10G).

155. *Id.*

156. For a discussion of Senate Bill 1217's likely impact, see *infra* part III.B.

3. *The old procedure for permitting of CAFOs*

North Carolina, in compliance with the CWA, forbids discharge into the waters of the state without a permit.[157] Application for a permit requires a discharger to "file, in triplicate, an engineering proposal" setting out the reasons for its discharge and the treatment applied to the discharge prior to release.[158] Upon consideration of the application, the EMC may deny, allow or modify the permit to ensure that water quality is adequately protected.[159] From the description of the application in the regulations, it is clear that permitting is an expensive, tedious process for a business to go through.[160] By the *Code of Federal Regulations* definitions of point source discharge and CAFO, most livestock operations were spared that expense.[161]

To enforce the federal requirements applying to CAFOs, the EMC

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157. N.C. GEN. STAT. § 143-215.1 (1993).

158. N.C. ADMIN. CODE tit. 15A, r. 2H.0105(a) (Oct. 1994). The requirements for the permit application are as follows:

> (1) a description of the origin, type and flow of waste which is proposed to be discharged. Justification and a demonstration of need shall be provided for expected flow volumes. Flow shall be determined in accordance with 15A NCAC 2H.0219(1);
>
> (2) a summary of waste treatment and disposal options that were considered and why the proposed system and point of discharge were selected; the summary should have sufficient detail to assure that the most environmentally sound alternative was selected from the reasonably cost effective options;
>
> (3) a narrative description of the proposed treatment works including type and arrangement of major components, in sufficient detail to assure that the proposed facility has the capability to comply with the permit limits;
>
> (4) a general location map, showing orientation of the facility with reference to at least two geographic references (numbered roads, named streams/rivers, etc.);
>
> (5) a scale location plan of the site showing location of the proposed treatment works and the proposed point of discharge;
>
> (6) special studies or modeling may be required in cases where the impacts of the discharge cannot be readily determined by the [DEM];
>
> (7) a statement to demonstrate financial qualification and substantial previous compliance with federal and state laws, regulations, and rules for the protection of the environment as required by G.S. 143-215.1(b)(4)(b).

Id. r. 2H.0105(c).

159. *Id.* r. 2H.0112. The regulations outline procedures for public notice of permitting, public hearings, etc. *Id.* rr. 2H.0109-.0111.

160. *Id.* r. 2H.0105(c).

161. In addition, North Carolina's statutes exempt farmers who apply for permits from paying the fees charged to all other industries. N.C. GEN. STAT. § 143-215.3(a)(1a) (1993). This exemption is indeed interesting given the fact that under EMC procedures, CAFO farmers need not even apply until they are first deemed to be violating the CWA. For a discussion of the EMC's procedures regarding site inspections and permit applications, see *infra* notes 162-67 and accompanying text.

However, Senate Bill 1217 again changes the picture in regard to application fees, as section 1 of the bill requires the DEM to charge annual permit fees from $50.00 to $200.00 depending on the size and design of the waste management system. 1996 N.C. Sess. Laws ch. 626, pt. 1, § 1 (to be codified at N.C. GEN. STAT. § 143-215.10G).

promulgated guidelines for its staff.[162] According to the guidelines, if the staff had "reason to believe" that any animal feeding operation "should or could be regulated under [NPDES], the staff shall conduct an on-site inspection" of the operation to determine if permitting procedures are warranted.[163]

In making this on-site inspection, the staff member evaluated the operation to determine first if the facility meets the numerical standards of the federal definition of a CAFO,[164] and second, if it discharges to surface waters in any way short of the 25-year, 24-hour storm event.[165] Even if the operation meets the federal numerical standards, the Director of the DEM could require permitting if he determined that a discharge is occurring and special factors are present.[166]

It might be assumed that once an unpermitted discharge is discovered, some disciplinary action would have been taken against the discharger. Here too, however, the kid glove treatment of the industry continued. If an EMC site investigation determines that an unpermitted discharge is taking place, the EMC was given power to "give written notice to the owner or operator . . . that he must submit an application for a permit."[167] In other words, the operator of a CAFO was allowed a free second chance to apply for the permit for which every other discharging business in North Carolina had to pay before they even begin discharging.

4. How a CAFO was "deemed permitted": the 2H.0217 provisions

According to the *Code of Federal Regulation* standards, an animal feeding operation was not considered a CAFO if it did not discharge absent the 25-year storm. EPA has interpreted this to mean that "non-CAFOs are considered nonpoint sources and are not subject to the NPDES program."[168] The difficulty with this definition is that it makes very little ecological sense for the DEM to wait until a discharge is found before taking action to determine if an operation should have been permitted.

Prior to Senate Bill 1217, the *North Carolina Administrative Code* attempted to address this problem by the creation of a "deemed permitted" classification of "nondischarge facilities."[169] According to the regulations, a nondischarge facility included any "animal waste management

162. N.C. ADMIN. CODE tit. 15A, r. 2H.0123(a) (Oct. 1994).

163. *Id.*

164. For a description of this standard, see *supra* text accompanying note 142.

165. N.C. ADMIN. CODE tit. 15A, r. 2H.0123(a)(1)-(a)(2)(a) (Oct. 1994).

166. *Id.* r. 2H.0123(a)(3). These special factors include the amount of discharge, proximity to perennial streams, and "other factors relative to the significance of the pollution problem." *Id.*

167. *Id.* r. 2H.0123(c).

168. EPA Notice, *supra* note 144, at 44,490.

169. N.C. ADMIN. CODE tit. 15A, r. 2H.0217 (Oct. 1994). These small operations are deemed permitted without filing an approved waste management plan with the EMC, but they are "encouraged to meet the same minimum standards and specifications" of such a plan. *Id.*

system for which waste does not reach the surface waters by runoff, drift, direct application or direct discharge during operation or land application," as long as the animal waste management system met certain criteria.[170] With these criteria, North Carolina fatally weakened its best attempt yet at regulating hog farm pollution.[171]

The first class of such nondischarge facilities are those with less than 250 swine.[172] Larger animal waste management systems existing prior to February 1, 1993[173] were "deemed permitted" until December 31, 1997, by which time an approved animal waste management plan must be submitted to the DEM.[174] Once this plan was submitted, the operation was again deemed permitted.[175]

In this one fell swoop, all of the older facilities, which according to the hog industry itself are those more prone to failure,[176] were given a reprieve of five years. During that time, according to the plan envisioned by the regulations, the stressed resources of the DEM were not only forced to contend with approval of the proposed plans of new facilities, it also had to police these existing operations for discharges. According to Steve Tedder, Director of the DEM, the agency simply could not meet this burden.[177]

Animal waste management facilities that came on line[178] or signifi-

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170. *Id.* r. 2H.0217(a)(1)(A). An "animal waste management system" was defined as a combination of structural and non-structural practices which will properly collect, treat, store or apply animal waste to the land such that no discharge of pollutants occurs to the surface waters of the state by any means except as a result of a storm even more severe than the 25-year, 24-hour storm.

Id. r. 2H.0203(3).

If a facility fails to meet this definition, it is a CAFO under the CWA and is subject to individual permitting. Should it fail to comply with the permitting procedure it may face civil penalties, N.C. GEN. STAT. § 143-215.6A (1993) (establishing fines not to exceed $10,000 per day), or criminal penalties, *id.* § 143-215.6B (1993) (establishing fines of up to $500,000 for knowing and willful violations, up to $1,000,000 if persons are placed in danger of death or bodily harm).

171. DEM Director Tedder described these provisions as "inadequate." Nowlin Notes, *supra* note 15, at 6.

172. N.C. ADMIN. CODE tit. 15A, r. 2H.0217(a)(1)(A) (Oct. 1994).

173. The regulations define an "existing animal waste management system" as any system which "was completed and was being operated on the effective date of this Rule." *Id.* r. 2H.0203(14). These amendments were effective February 1, 1993.

174. *Id.* r. 2H.0217(a)(1)(D). For the procedures required of an "approved animal waste management plan," see *infra* note 184.

175. N.C. ADMIN. CODE tit. 15A, r. 2H.0217(a)(1)(E) (Oct. 1994).

176. Warrick, *Biggest Pig Firms*, *supra* note 110, at A3 (stating that pork producers believe "that a small core of independent operators is responsible for the industry's worst environmental offenses").

177. Nowlin Notes, *supra* note 15, at 7. Tedder told the commission that under current funding, his division would be eliminating 30 positions in fiscal year 1996. *Id.*

178. " 'New animal waste management system' means . . . systems which are constructed and operated at a site where no feedlot existed previously or where a system serving a feedlot has been abandoned or unused for a period of four years or more and is then put back into service." N.C. ADMIN. CODE tit. 15A, r. 2H.0203(20) (Oct. 1994).

cantly expanded their operations[179] after February 1, 1993, but before December 31, 1993, were "deemed permitted" if they had "submitted a registration form for the system to DEM" and were not "determined to have an adverse impact on water quality."[180]

In order to be deemed permitted, a facility constructed or expanded after December 31, 1993, had to submit an approved animal waste management plan before being stocked with animals.[181] Oceanview Farms was one of the facilities deemed permitted under this rule.[182] That fact alone is enough to support the contentions of those who argued that the provisions did not go far enough. It is even more illustrative of the difficulties the DEM had in monitoring facilities' compliance with the provisions.[183]

5. The "approved animal waste management plan"

As discussed above, under the North Carolina regulations any hog farm built or expanded upon after December 31, 1993, must show that its waste is controlled by a system that releases no waste to surface waters at any time short of the 25-year rainfall. Such a regulation, if it were truly enforced in accordance with the common sense meaning of its terms, would most likely solve the problem. In such an operation, no wastes would escape from the actual feeding lot or waste lagoon, and land application of wastes would be carried out without oversaturating the receiving soil with nutrients.

Unfortunately, the definition of "approved animal waste treatment plan" makes it all too evident why problems slipped through.[184] The pro-

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179. " 'Expanded animal waste management system' means . . . facilities which require an increase over the existing animal waste design treatment and storage capacity due to an increase in animal population at the feedlot." *Id.* r. 2H.0203(15).

180. *Id.* r. 2H.0217(a)(1)(F).

181. *Id.* r. 2H.0217(a)(1)(H)(vii).

182. For a discussion of the Oceanview Farms disaster, see *supra* notes 2-6, 113 and accompanying text.

183. Nowlin Notes, *supra* note 15, at 7. Both DEM Director Steve Tedder and the State Director of the Natural Resources Conservation Service, Dr. Dick Gallo, reported that the "industry is growing too fast for the agencies to keep up." *Id.*

184. The procedures for attaining an "approved animal waste management plan" are as follows:

> (i) The animal waste management practices or combination of practices which are selected to comprise a plan for a specific feedlot must meet the minimum standards and specifications of the U.S. Department of Agriculture—Soil Conservation Service contained in the Field Office Technical Guide or the standard of practices adopted by the Soil and Water commission or standards for any combination of practices which provide water quality protection and are approved by one of these two agencies.
>
> (ii) Plans must be certified by any technical specialist designated pursuant to rules adopted by the Soil and Water Conservation Commission and the certificate submitted to the DEM central office on forms approved or supplied by DEM. The technical specialist must certify that the best management practices which comprise the plan meet the applicable minimum standards and specifications . . . .
>
> (iii) The land application buffers must meet the conditions established in

visions require that the plan meet minimum federal guidelines and standards of practice.[185] Land application of wastes must be done on sites having a "vegetative buffer of at least 25 feet" from surface waters,[186] and storage facilities, such as anaerobic lagoons and ponds, must be maintained more than 100 feet from surface waters.[187] In order to certify that the plan meets these requirements, approval of the plan by a "technical specialist" is required.[188] The plan must then be submitted to the DEM.

Despite questions that one may have about the adequacy of the buffer zones maintained between surface waters and the hog waste under these regulations,[189] the largest problem with the regulations was the lack of funding to the agencies designated for enforcement.[190] Since the rules were promulgated, the DEM has inspected and approved fewer than one percent of the plans submitted, and fewer than ten percent of the facilities have even submitted their plans.[191] The agencies have no manpower available to accompany the "technical specialists," who are usually employees of the companies.[192] In the end, the DEM has little way of telling

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Subpart (a)(1)(C)(ii) of this Rule [which states that there must be a vegetative buffer of at least 25 feet from perennial waters].

(iv) The waste shall not be applied at greater than agronomic rates.

(v) For new or expanded animal waste management systems requiring a plan, plan approval must include an on-site inspection to confirm that animal waste storage and treatment structures such as but not limited to lagoons and ponds have been designed and constructed to meet the appropriate minimum standards and specifications.

(vi) New and expanded animal waste storage and treatment facilities such as but not limited to lagoons and ponds shall be located at least 100 feet from perennial waters . . . and other waters as determined by the local soil and water conservation district [unless there is no practical alternative and controls equivalent to such a buffer are used].

(vii) For new facilities, an animal waste management plan must be approved before animals are initially stocked. For an expanded facility, an animal waste management plan must be approved before the additional animals are stocked. New and expanded systems may be constructed in phases as long as each phase meets the minimum criteria established in Subpart (a)(1)(H)(i) of this Rule.

N.C. ADMIN. CODE tit. 15A, r. 2H.0217(a)(1)(H) (Oct. 1994). Subparts ix-xiii cover procedures for amending plans, sale of facilities, maintenance of records of third party applicators of waste, and retention of all forms by the operator. *Id.*

185. *Id.* r. 2H.0217(a)(1)(H)(i). For a scientific description of these standards, see generally EPA—NONPOINT MANAGEMENT, *supra* note 101.

186. N.C. ADMIN. CODE tit. 15A, r. 2H.0217(a)(1)(H)(iii) (Oct. 1994). This buffer may have been superseded by the Swine Farm Siting Act of 1995, N.C. GEN. STAT. §§ 106-801 to -803 (1995), which requires a fifty foot separation, although it does not specify that the buffer be vegetated. *Id.* § 106-803(a).

187. N.C. ADMIN. CODE tit. 15A, r. 2H.0217(a)(1)(H)(vi) (Oct. 1994).

188. *Id.* r. 2H.0217(a)(1)(H)(ii).

189. Consider that the Oceanview spill contaminated farmland nearly a mile from the site of the breach before draining into the New River. Satchell, *supra* note 2, at 55; Warrick, *Onslow Spill*, *supra* note 113, at A1.

190. Nowlin Notes, *supra* note 15, at 7; Randall Chase, *State Depends on Hog Farms to Check Own Waste Plans*, HERALD-SUN (Durham, N.C.), Dec. 8, 1995, at C5.

191. Nowlin Notes, *supra* note 15, at 7.

192. *Id.*; Chase, *supra* note 190, at C5.

if the plan submitted even corresponds with the actual operation.[193] The 1995 sweep which followed the Oceanview spill was the first time that the DEM had ever visited all of the hog farms in the state.[194] Enforcement of even the weakest provisions is impossible without adequate funding.

The net result of this system, and of the inability of the state to enforce it, would have been thousands of farms operating under the assumption that they met the 25-year, 24-hour storm requirement. Thus, unpermitted, many would have continued to pollute the waterways as nonpoint sources, for which neither the Federal nor state governments have allocated sufficient enforcement resources. Those facilities that did fail would have had to fail spectacularly in order to receive regulatory attention.

Prior to Senate Bill 1217, these provisions represented the bulk of state statutes and regulations which directly controlled the waste disposal capabilities on hog farms. It is clear from the length not only of the provisions but of this discussion that it is unfair to characterize North Carolina as a state with "minimal environmental and zoning regulations."[195] There have been definite problems of state favoritism of one industry over every other industry in the state; closing the application loophole will go a long way toward insuring better compliance by hog farmers.[196] North Carolina's problem lay in the lack of resources it made available to its watchdog agencies. Stiffer regulations do no good without a commitment on the part of the state to enforce those regulations. It is into this scenario that the General Assembly has thrust Senate Bill 1217.

B. Senate Bill 1217—A Huge Step in the Right Direction

The most vital and needed change in hog farm regulation brought about by the adoption of Senate Bill 1217 is the elimination of the "deemed permitted" categories discussed in the preceding section. As one of the chief recommendations of the Blue Ribbon Commission,[197] the adoption of a general permitting process represents a key step toward controlling the hog pollution problem.

1. The general permitting process

Perhaps the most important provision found in Senate Bill 1217 is the statement that "[n]o person shall construct or operate an animal waste management system for an animal operation without first obtaining

193. Nowlin Notes, *supra* note 15, at 7.

194. *Inspectors Begin "Blitz" of 2,500 Hog Farms' Lagoons*, GREENSBORO NEWS & REC., July 11, 1995, at B3.

195. Satchell, *supra* note 2, at 57.

196. For a discussion of the application loophole, see *supra* notes 161-67 and accompanying text. For a discussion of how Senate Bill 1217 closed the loophole, see *infra* notes 197-217 and accompanying text.

197. BLUE RIBBON REPORT, *supra* note 23, at 25.

a permit under this Part."[198] That promising sentence effectively eliminates the "deemed permitted" program followed by the North Carolina regulations.[199]

Under this new section, all "animal operations" must be permitted before they can dispose of waste.[200] To be permitted, an operation must make a written application to the EMC including an animal waste management plan.[201] In addition to the waste management plan, the proposal retains the requirement that all lagoons be built to withstand the 25-year, 24-hour storm.[202]

The new provisions, although retaining many of the technical requirements of the old regulations, should be far more effective because they take a different approach. Instead of assuming all farms to be in compliance until a disaster occurs,[203] Senate Bill 1217 requires the farms to first prove themselves safe, before they are permitted.

According to the General Assembly, the purpose of Senate Bill 1217 is to

> promote a cooperative and coordinated approach to animal waste management among the agencies of the State with a primary emphasis on technical assistance to farmers . . . to establish a permitting program for animal waste management systems that will protect water quality

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198. 1996 N.C. Sess. Laws ch. 626, pt. 1, § 1 (to be codified at N.C. GEN. STAT. § 143-215.10C(a)).

199. For a discussion of these regulations, see *supra* notes 161-67 and accompanying text.

200. Under the new statute, an "animal operation" includes "any agricultural farming activity involving 250 or more swine." 1996 N.C. Sess. Laws ch. 626, pt. 1, § 1 (to be codified at N.C. GEN. STAT. § 143-215.10B(1)). The statute also covers cattle, horses, sheep, and poultry. *Id.*

201. *Id.* (to be codified at N.C. GEN. STAT. § 143-215.10C(d)). Animal waste management plans must include several mandatory components under the new law, including:

> (1) A checklist of potential odor sources and . . . site-specific . . . best management practices to minimize those sources.
>
> (2) A checklist of potential insect sources and . . . site-specific . . . best management practices to minimize insect problems.
>
> (3) Provisions . . . [for] disposing of mortalities.
>
> (4) Provisions regarding best management practices for riparian buffers or equivalent controls, particularly along perennial streams.
>
> (5) Provisions regarding the use of emergency spillways and site-specific emergency management plans that set forth operating procedures to follow during emergencies in order to minimize the risk of environmental damage.
>
> (6) Provisions regarding periodic testing of waste products used as nutrient sources . . . within 60 days of the date of application . . . and . . . at least annually, of soils at crop sites where the waste products are applied . . . .
>
> (7) Provisions regarding waste utilization plans that assure a balance between nitrogen application rates and nitrogen crop requirements . . . .
>
> (8)Provisions regarding . . . records . . . including the dates and rates that waste products are applied . . . made available upon request by the Department.

Id. (to be codified at N.C. GEN. STAT. § 143-215.10C(e)).

202. *Id.* (to be codified at N.C. GEN. STAT. § 143-215.10C(b)).

203. For a discussion of the "deemed permitted" method utilized under previous regulations, see *supra* notes 161-67 and accompanying text.

and promote innovative systems and practices while minimizing the regulatory burden.[204]

The first goal, the protection of water quality, should stand a better chance of success under Senate Bill 1217 than under the previous regulatory regime. The general permitting process, and other initiatives passed by the General Assembly this year, represent a significant change in the way North Carolina regulates its water quality.[205] One of the boldest strokes of Senate Bill 1217 is hidden in the interior of the bill: a modest-looking strikeout that enables the Commission to issue, modify, and revoke special orders of consent to agricultural operations found in violation of pollution standards, a major change from the state's traditional hands-off approach to agriculture as an industry.[206]

The second stated goal of the General Assembly—to promote new and innovative technologies—is addressed in the provision which orders the EMC to encourage such development and to "provide sufficient flexibility in the regulatory process to allow for the timely evaluation of alternative and innovative animal waste management technologies."[207] The section also requires the EMC to keep enough flexibility in regulations to allow for the "prompt implementation of alternative . . . technologies that are demonstrated to provide improved protection."[208]

One further attempt by Senate Bill 1217 to meet the goal of improving technology was the amendment of the Agricultural Cost Share Program[209] to include assistance to farmers to obtain technology for the "closure of lagoons, emergency spillways, riparian buffers or equivalent controls, odor control, . . . insect control, and animal waste management."[210] According to the amendment, this "[f]unding for animal waste management shall be allocated for practices in river basins such that the funds will have the greatest impact in improving water quality."[211]

The bill also requires all operators of animal waste management systems to register with the Soil and Water Conservation District Office and begin the process of obtaining an approved waste plan.[212] Those who reg-

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204. 1996 N.C. Sess. Laws ch. 626, pt. 1, § 1 (to be codified at N.C. GEN. STAT. § 143-215.10A).

205. Among the programs adopted by the short session of the 1995 General Assembly are a fund to clean up the Neuse, the seeds of a trust fund set aside to purchase water quality easements along all of the rivers in North Carolina, and extra staffing for the DEM. According to the *Charlotte Observer*, environmental activists are "happy" about the programs produced from this session. *Something for Everyone: It Was an Ugly Session, But the New Budget's Not Bad*, CHARLOTTE OBSERVER, Aug. 6, 1996, at A10.

206. 1996 N.C. Sess. Laws ch. 626, pt. 2, § 3 (amending N.C. GEN. STAT. § 143-215.2(a) (1993)).

207. *Id.* pt. 1, § 1 (to be codified at N.C. GEN. STAT. § 143-215.10C(g)).

208. *Id.*

209. The Agriculture Cost Share Program for Nonpoint Source Pollution Control, N.C. GEN. STAT. §§ 143-215.74 to -215.74B (1993).

210. 1996 N.C. Sess. Laws ch. 626, pt. 5, § 9 (amending N.C. GEN. STAT. § 143-215.74(b)(5) (1993)).

211. *Id.*

212. *Id.* pt. 6, § 14(a).

ister by September 1, 1996 receive priority in the Cost Share Program; those who are not registered by December 31, 1997 will be penalized by the EMC which "shall strictly enforce those penalties available."[213]

Finally, the General Assembly has chosen to make all of these changes while "minimizing the regulatory burden" on farmers.[214] This goal is addressed in two major ways. First, the Cost Share Program encourages farmers and waste system operators to comply before the deadlines in order to receive valuable technical and financial assistance from the State.[215] Second, the bill provides for an extended phase-in period for the new requirements.[216]

Over five years, the new standards for permitting will impact, each year, twenty percent of the farms which exist in North Carolina on January 1, 1997.[217] After five years, all of the existing farms should have been permitted and should have been inspected at least once. This compromise language, while prompting some problems, does ease the burden on the farmers and probably ensured passage of the bill through the more conservative North Carolina House of Representatives.

2. The operations review program

The next promising section of Senate Bill 1217 requires the DEM and the Division of Soil and Water Conservation to develop a procedure for technical specialists to use in reporting and conducting annual reviews of all animal operations in the state.[218] According to the section, "[a]s part of its animal waste management plan, each animal operation shall have an operations review at least once a year."[219]

More important even than the yearly review is the section's requirement that the results of that review be reported to the DEM within 10 days,[220] or immediately if the specialist observes violations, leaks, overspraying or bypass of retaining ponds.[221] In addition, the technical specialists under the new program, unlike under the current system, may not

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213. *Id.* § 14(b), (c).

214. *Id.* pt. 1, § 1 (to be codified at N.C. GEN. STAT. § 143-215.10(a)).

215. *Id.* pt. 5, § 9 (amending N.C. GEN. STAT. § 143-215.74 (1993)). "Animal Waste Management System Operators" are certified according to the new rules which require that each system must be operated by someone who has been through at least 10 hours of classroom training followed by six additional hours of training every three years. *Id.* pt. 3, § 6(a) (to be codified at N.C. GEN. STAT. § 90-47.3(b)). The certificates cost each applicant $10 and may be revoked for violations. *Id.* (to be codified at N.C. GEN. STAT. § 90-47.4, -47.5). The requirements replace the old certification standards, N.C. GEN. STAT. §§ 143-215.74C to -215.74E (Supp. 1995), which are repealed by Senate Bill 1217. 1996 N.C. Sess. Laws ch. 626, pt. 6, § 13. Operators who are presently certified under the old standards are grandfathered into the new system, but must renew those certificates under the new standards. *Id.*

216. 1996 N.C. Sess. Laws ch. 626, pt. 7, § 19(c).

217. *Id.* § 19(c)(1).

218. *Id.* pt. 1, § 1 (to be codified at N.C. GEN. STAT. § 143-215.10D).

219. *Id.* (to be codified at N.C. GEN. STAT. § 143-215.10D(b)).

220. *Id.* (to be codified at N.C. GEN. STAT. § 143-215.10D(a)).

221. *Id.* (to be codified at N.C. GEN. STAT. §§ 143-215.10D(a), -215.10E).

have "a financial interest in any animal operation,"[222] and are instead to be "designated by the Soil and Water Conservation Commission."[223]

The second level of oversight is to be provided by the DEM through annual inspections of each facility "subject to a permit."[224] Violations may lead to fines of up to $10,000 for a first offense[225] or the issuance of a special order of consent under section 143-215.2(a).

Under these two programs, by the year 2002 every farm in North Carolina will receive two annual inspections: one from a technical specialist and one from an employee of the DEM. The result should be an end to the types of hidden-pipe discharges and overfilled lagoons that currently plague North Carolina's rivers.

3. *Conclusions*

Two changes that could have been made, but were passed up by the General Assembly, were a general moratorium on new farms and a greater role of local entities in zoning for hog farms and processing facilities. A moratorium would have enabled the agencies to catch up to their overwhelming workload, which now has been increased by the new inspection requirements. The author recommends that the moratorium on new farms be enacted and gradually lifted in tandem with the phase-in of permitting for existing farms under Senate Bill 1217.[226] Local zoning permission was first shot down in the Blue Ribbon Commission and never had a chance in the General Assembly.[227]

However, even without those two recommended steps, the changes brought about by Senate Bill 1217 represent a major step forward in North Carolina's regulation of intensive animal operations. While it is unfortunate that these changes will have to take effect slowly, over a period of five years, their effects should be dramatic. The technical standards adopted are not significantly tougher, and are indeed quite similar to the old regime. However, the oversight and implementation of these standards is no longer the province of voluntary compliance by the corporations. Under the new system, inspections and permitting, if done correctly, will ensure more environmentally sound practices and illegal discharges will be identified earlier.

C. *The North Carolina Right to Farm Act*

The first environmental law, for many purposes, was the common law action of nuisance, which enabled Farmer A to restrain Farmer B from pursuing activities on his own land which interfered with Farmer A's uses

222. *Id.* (to be codified at N.C. GEN. STAT. § 143-215.10D(c)).

223. *Id.* (to be codified at N.C. GEN. STAT. § 143-215.10B(6)).

224. *Id.* (to be codified at N.C. GEN. STAT. § 143-215.10F).

225. *Id.* pt. 2, § 4 (amending N.C. GEN. STAT. § 143-215(e) (Supp. 1995)).

226. For a discussion of the phase-in process, see *supra* notes 216-17 and accompanying text.

227. BLUE RIBBON REPORT, *supra* note 23, at 12.

of his land. In many states, the right is modified by a Right to Farm act, which has the express purpose of limiting nuisance suits against farm and forestry interests.[228] The North Carolina Right to Farm Act[229] is typical of these provisions. The act states:

> When other land uses extend into agricultural and forest areas, agricultural and forestry operations often become the subject of nuisance suits. As a result, agricultural and forestry operations are sometimes forced to cease. Many others are discouraged from making investments in farm and forest improvements. It is the purpose of this Article to reduce the loss to the State of its agricultural . . . resources.[230]

The act declares that "[n]o agricultural . . . operation [in existence for more than one year] . . . shall be or become a nuisance" as a result of a change in the character of the surrounding area.[231] The act goes further and invalidates any local or county ordinances that would have the effect of rendering a farming operation a nuisance.[232]

The preservation of farmland in the face of encroaching development is a necessary and noble goal. However, in the case of the North Carolina Right to Farm Act, the legislation could have the effect of furthering what it is meant to control. The statute applies "without limitation" to any agricultural operation, regardless of size.[233]

In the case of large scale hog farming, the Right to Farm Act could have the effect of denying rural residents the right to sue or zone to control their surroundings. If a small hog farm that has been in existence for at least one year decides to contract with a large corporation and expand operations, the Right to Farm law would, at least on its face, prevent neighbors from suing the farm due to odor or fly problems.

The North Carolina Court of Appeals recently announced a decision that could temper this incongruous effect of the Right to Farm Act. In *Durham v. Britt*,[234] the plaintiff was a real estate developer who lived on the property adjacent to a fifty-acre plot that he owned and wished to convert into a subdivision.[235] On the opposite side of the proposed development, the defendant operated a turkey farm which had been in existence since "the mid-1960's."[236] When the defendant began to convert his operation into a contract hog farm, the plaintiff sued, "stating claims of common law nuisance and intentional interference with prospective busi-

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228. *See* Margaret R. Grossman & Thomas G. Fischer, *Protecting the Right to Farm: Statutory Limits on Nuisance Actions Against the Farmer*, 1983 WIS. L. REV. 95, 117-18.

229. An Act to Protect Agricultural Operations from Nuisance Suits Under Certain Circumstances, N.C. GEN. STAT. §§ 106-700 to -701 (1995).

230. *Id.* § 106-700.

231. *Id.* § 106-701(a).

232. *Id.* § 106-701(d).

233. *Id.* § 106-701(b).

234. 117 N.C. App. 250, 451 S.E.2d 1 (1994), *disc. review denied*, 340 N.C. 260, 456 S.E.2d 828 (1995).

235. *Id.* at 251, 451 S.E.2d at 1.

236. *Id.*

ness advantage."[237]

The trial court granted summary judgment to the defendant, holding that the Right to Farm Act applied to the facts of the case and the plaintiff was therefore prevented from instituting a nuisance action.[238] The North Carolina Court of Appeals reversed and remanded, stating that it did not "believe the legislature intended [the act] to cover situations in which a party fundamentally changes the nature of the agricultural activity which had theretofore been covered under the statute."[239] The Supreme Court of North Carolina refused to hear the defendant's appeal of the reversal.[240]

This decision, if followed in future cases, could return the Right to Farm Act to its original purpose of preserving farmland instead of allowing it to protect conversions of that farmland to an industry every bit as threatening to rural life as any other. In rendering its decision, the North Carolina Court of Appeals strengthened the argument that concentrated hog production is not farming in the traditional sense and therefore deserves none of the traditional protection from regulation that small farmers have received.[241] The reasoning of the court should be adopted by the state's legislative and regulatory authorities, so that they will apply the same regulations to corporate agribusiness as are applied to other industries.

D. The Swine Farm Siting Act of 1995

One law directly applicable to hog farming operations resulted from the 1995 regular session of the General Assembly. The Swine Farm Siting Act (the "Siting Act")[242] established new setback rules for hog farms. The Siting Act, which was vociferously criticized by industry opponents as too lenient, was subsequently amended in 1996.[243] As amended by Senate Bill 1217, the Siting Act requires that "[a] swine house or a lagoon that is a component of a swine farm shall be located at least 1,500 feet from any occupied residence; at least 2,500 feet from any school, hospital, or church; and at least 500 feet from any property boundary."[244]

The act further requires that land application of waste be limited to an area "at least 50 feet from any boundary of property on which an occupied residence is located and from any perennial stream or river."[245] This marks an improvement over the *North Carolina Administrative*

237. *Id.* at 252, 451 S.E.2d at 1.

238. *Id.* at 252-53, 451 S.E.2d at 2.

239. *Id.* at 253-4, 451 S.E.2d at 3.

240. Durham v. Britt, 340 N.C. 260, 456 S.E.2d 828 (1995).

241. The court's language is revealing, as it chooses to characterize the shift to hog production as a change from the operation "of turkey houses" to "that of a hog production facility." *Durham*, 117 N.C. App. at 254, 451 S.E.2d at 3. Nowhere in the opinion does the term "hog farm" appear.

242. N.C. GEN. STAT. §§ 106-800 to -803 (1995).

243. 1996 N.C. Sess. Laws ch. 626, pt. 4, §§ 7-8.

244. *Id.* § 7 (amending N.C. GEN. STAT. § 106-803 (1995)).

245. *Id.*

Code, which provided only a 25 foot vegetated buffer.[246] It is unclear whether or not the lack of the term "vegetated" in the Siting Act effectively removes that requirement from the regulations. Both provisions could be followed at the same time, so that "at least 25 feet" of the required 50 foot distance must be a vegetative buffering area. Such a requirement would serve to better the protection against water pollution achieved by either provision alone.

Most significantly, Senate Bill 1217 added two new sections to the Siting Act.[247] The first provides for civil enforcement actions to be brought by "any person owning property directly affected by the siting requirements . . . against a swine farmer who has violated" the siting requirements.[248] Remedies include injunctive relief and damages.[249] The second section requires persons that plan to build a swine farm—that is subject to permitting under the new legislation—to "attempt to notify all adjoining property owners" and property owners located across a public road.[250] Given the public mood toward swine farming in many eastern communities, the notification provision is perhaps the most surprising admission by the General Assembly that the industry needed a drastic shock to force it to clean up its act. The law applies to all components of a swine farm enlarged or constructed after October 1995, unless the construction or enlargement is done pursuant to existing, registered and approved animal waste management plans.[251]

CONCLUSION

In conclusion, effective regulation of the North Carolina hog industry must take into account the industry's effects upon the vital rivers and sounds of the coastal region of the state. Despite last year's disastrous summer of catastrophic leaks and contaminated wells, there are some encouraging signs. The increased public attention on the industry brought about by those disasters has led to beneficial changes in the policies of the corporations themselves. One study, commissioned by an industry group, recommended mandatory inspections during construction, major changes in lagoon design, and an ongoing inspection and education program.[252] Additionally, Murphy Family Farms recently revoked one of its farmer's contracts when the facility was found to be in violation of company and state regulations.[253]

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246. N.C. ADMIN. CODE tit. 15A, r. 2H.0217(a)(1)(H)(iii) (Oct. 1994).

247. 1996 N.C. Sess. Laws ch. 626, pt. 4, § 7 (to be codified at N.C. GEN. STAT. §§ 106-804, -805).

248. *Id.* (to be codified at N.C. GEN. STAT. § 106-804(a)).

249. *Id.*

250. *Id.* (to be codified at N.C. GEN. STAT. § 106-805).

251. *Id.* § 8.

252. Joby Warrick, *Hog Study Urges Stronger Rules for Waste Lagoons*, NEWS & OBSERVER (Raleigh, N.C.), Feb. 8, 1996, at A3.

253. Joby Warrick, *Boss Hog Lays Down Law with Polluting Farmer*, NEWS & OBSERVER (Raleigh, N.C.), Dec. 2, 1995, at A1.

Senate Bill 1217 is the clearest example of the effect that the 1995 disasters had upon the industry and the General Assembly. While not perfect, it represents a quantum leap for North Carolina. In the words of one long-time critic of the hog industry, Senate Bill 1217 "made a substantial beginning towards making this state one of the strictest in this type of regulation."[254]

These developments are encouraging, because they show that pressure upon a polluting industry can work. Peer pressure and cooperation are crucial ingredients in the watershed maintenance plans which represent the future of nonpoint pollution control.[255]

In May of this year, the Blue Ribbon Study Commission on Agricultural Waste delivered its recommendations for reform and regulation of the North Carolina hog industry.[256] Many observers criticized the Commission, composed in large part of people with personal interests in the industry.[257] The Commission's own co-chair called it "a Board of Parole consisting of more than one-half prisoners."[258] Contrary to expectations, however, the Commission report was surprisingly well balanced.[259]

What resulted was an imperfect, but crucial impetus toward the eventual adoption of Senate Bill 1217 and whatever further action is in store in the next General Assembly. After years of neglect, we may be seeing the beginning of a balanced effort to preserve what is left of the waters of eastern North Carolina. If future General Assemblies follow the lead of the members of the Blue Ribbon Study Commission and obey their mandate, not their pocketbooks, we may yet have time to save the Neuse, the Cape Fear, and their sister rivers "down east." If not, those waterways, which have for centuries nourished, watered, and shaped the culture of North Carolina, will become little more than drainage ditches, and this great state will have lost a vital part of her soul.

John D. Burns

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254. Telephone Interview with Hon. Tim Valentine, former U.S. Representative and Co-chairman of the Blue Ribbon Study Commission (July 30, 1996).

255. GAO—AGRICULTURE AND THE ENVIRONMENT, *supra* note 77, at app. IV:4 (describing the importance of peer review and public participation in the success of stage one of the Tar-Pamlico plan).

256. *See* BLUE RIBBON REPORT, *supra* note 23.

257. *See, e.g.*, *Valentine's Lonely Voice*, NEWS & OBSERVER (Raleigh, N.C.), Jan. 20, 1996, at A12.

258. Interview with Hon. Tim Valentine, *supra* note 254.

259. Concededly, the balance only came after several threatened resignations by Co-chairman Valentine. *Hunt Urges Action on Waste Reform*, GREENSBORO NEWS & REC., Feb. 3, 1996, at B2. Valentine himself attributed the Commission's change of heart to "my screaming and certainly, above all, what the Governor had to say about the issue." Interview with Hon. Tim Valentine, *supra* note 254.