

**REPORT TO THE ENVIRONMENTAL REVIEW
COMMISSION AND FISCAL RESEARCH DIVISION OF
THE NORTH CAROLINA GENERAL ASSEMBLY
ON
THE PILOT PROGRAM FOR INSPECTIONS OF
ANIMAL WASTE MANAGEMENT SYSTEMS
2009 SEMIANNUAL REPORT
January 1, 2008 – June 30, 2009**

INTRODUCTION

In accordance with Section 12.7(b) of S.L. 2005-276, the objective of the Animal Waste Management Inspection Pilot (hereinafter the pilot), is to determine how DSWC staff can respond more quickly and effectively, with technical assistance, to complaints and problems to help farms achieve compliance with environmental regulations. In addition, the program allows Department of Environment and Natural Resources (DENR) staff to test approaches for earlier identification of problems and to target DENR's resources for expediting corrective actions.

The pilot program started in 1997 with Columbus and Jones Counties was expanded in 1999 to include Brunswick County and in 2005 to include Pender County. This year, the General Assembly, through House Bill 461, extended the pilot program through September 1, 2011.

In non-pilot counties, DWQ performs annual routine compliance inspections of all permitted livestock operations. However, in the pilot counties, DSWC staff conducts *routine* compliance inspections in addition to performing *routine* operation reviews of all permitted livestock operations. In the pilot counties, DWQ staff provides regulatory oversight, performs compliance audits with DSWC staff of "targeted" potential high environmental impact farms, responds to DSWC referrals, and conducts additional compliance inspections for further investigation and enforcement actions as warranted.

There are 166 active swine farms and one horse farm in the pilot area of Brunswick, Columbus, Jones and Pender Counties. When the Environmental Protection Agency (EPA) revised its National Pollutant Discharge Elimination System (NPDES) regulation in response to the 2nd-Circuit Court of Appeals ruling in the *Waterkeeper et al. v. EPA*, the number of pilot farms operating under NPDES permits dropped from 95 to 1 in 2007. Currently, all 167 pilot farms are operating under State Non-discharge general permits.

PRECIPITATION

Annual precipitation amounts and events have the biggest impact on compliance performance by farms in the pilot program area. Animal waste management systems, including anaerobic lagoons and waste storage ponds, are generally designed to store one 25-year, 24-hour storm event (ranges from 7 to 8 inches in pilot area), 180 days of excess rainfall over evaporation, wash water, and animal waste. Heavy precipitation amounts greater than the historical average and/or periods of prolonged precipitation can strain the storage capacity of the waste system. In addition, the waste system's capacity to land apply waste to receiving crops is also diminished due to wet or frozen soil conditions, wind, and/or limited availability of adequate crops to utilize the nutrients in the waste. Conversely, dry conditions can negatively impact vegetative cover on dike walls of waste structures and damage receiving crops.

Figure A reflects the abnormally dry conditions experienced by the pilot area during the summer of 2008 and the early months of 2009. This was followed by above average precipitation during the spring of 2009. Actual precipitation totals for most of the pilot area were approximately 8% less than normal from January 2008 through June 2009.

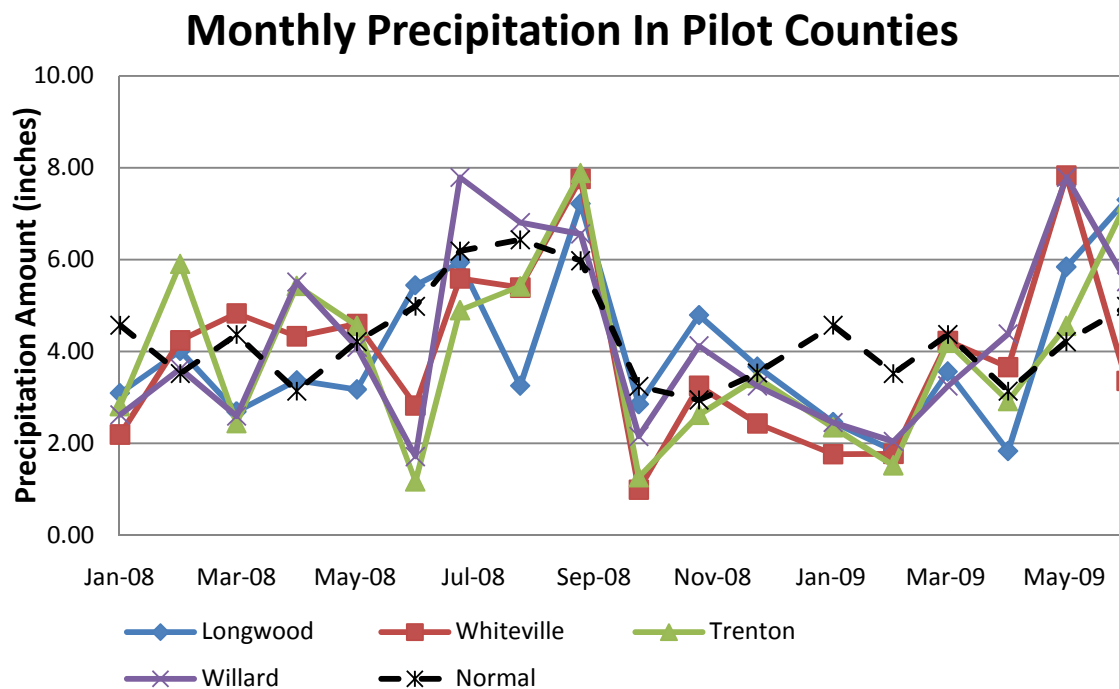


Figure A. January 2008 - June 2009 monthly normal and actual precipitation amounts measured at weather stations located within the four pilot counties. Source: North Carolina State Climate Office - CRONOS Database.

ENVIRONMENTAL IMPACT GROUPS

DSWC staff continued to use the environmental scale first described in the May 21, 2002 Addendum ERC Report to separate pilot animal operations based on their compliance performance and relative potential for environmental impact. Data is gathered through DENR's standard inspection form and entered into DWQ's Basinwide Implementation Management Systems (BIMS) database. The pilot's operational indicators and problem parameters are then queried and assessed from these documented site visits.

Table 1 lists the operational indicators used to assess animal waste management systems' performance on the pilot farms with assigned points to reflect the degree of "immediate" or "potential" threat a specific compliance deficiency would have on the environment. The program is based on the following 15 indicators with relative point values remaining constant since 2002.

Operational Indicators	Point Value
<i>Offsite discharge</i>	20
<i>Structural integrity compromised</i>	18
<i>Waste in structural freeboard range</i>	16
<i>Hydraulic overloading</i>	15
<i>Nitrogen over-applied $\geq 10\%$</i>	12
Waste level in storm storage	11
Irrigation system maintenance deficiency	11
Structural maintenance deficiency	10
Receiving crop inconsistent with waste plan	10
Irrigation records deficient	10
Lagoon level records deficient	9
Nitrogen over-applied $<10\%$	8
Receiving crop/sprayfield needs improvement	8
Waste analysis deficient	8
Soil analysis deficient	7

Table 1. Operational indicators and related point values are used by DENR staff to evaluate farm's potential impact on the environment. Items in italics represent "immediate threat" indicators.

Pilot farms were scored by the noncompliance points received for those operational indicators noted during each site visit and ranked by the total points received for all site visits in calendar year 2008. The farms were then

categorized into three potential impact groupings based on their total noncompliance scores.

Point ranges for these groupings, as shown in **Table 2**, were initially determined from farm performance in 2000 and remained unchanged through 2008.

Potential Impact Group	Noncompliance points
Low environmental impact	0 – 12 points per year
Medium environmental impact	13 – 30 points per year
High environmental impact	31 or more points per year

Table 2. Potential environmental impact groupings and corresponding noncompliance point ranges

Farms in the low and medium environmental impact groups are generally deemed to be responsive to technical assistance and subject to continued *routine* operation reviews and compliance inspections by DSWC. Farms scoring in the high impact group are subject to more intensive oversight by DSWC and DWQ staff.

PROGRAM FINDINGS

Site Visit Data

2008 activity from January 1 through December 31, both in and out of the pilot area, is reflected in the following data that was either queried from DWQ's Basinwide Implementation Management Systems (BIMS) database or presented in DWQ's Data Reports:

- Statewide - 2,421 animal operations were subject to permitting and inspection
- Statewide - DENR staff conducted 4,905 site visits (2,543 by DSWC & SWCD and 2,362 by DWQ)

- Pilot area - 167 animal operations were subject to permitting and inspection
- Pilot area - DENR staff conducted 363 site visits (347 by DSWC and 16 by DWQ)

Farm Performance Within the Pilot Program Area

In **Figure B**, pilot farms are grouped by their environmental impact scores and shown as a percentage of the total number of pilot farms in operation within a given year.

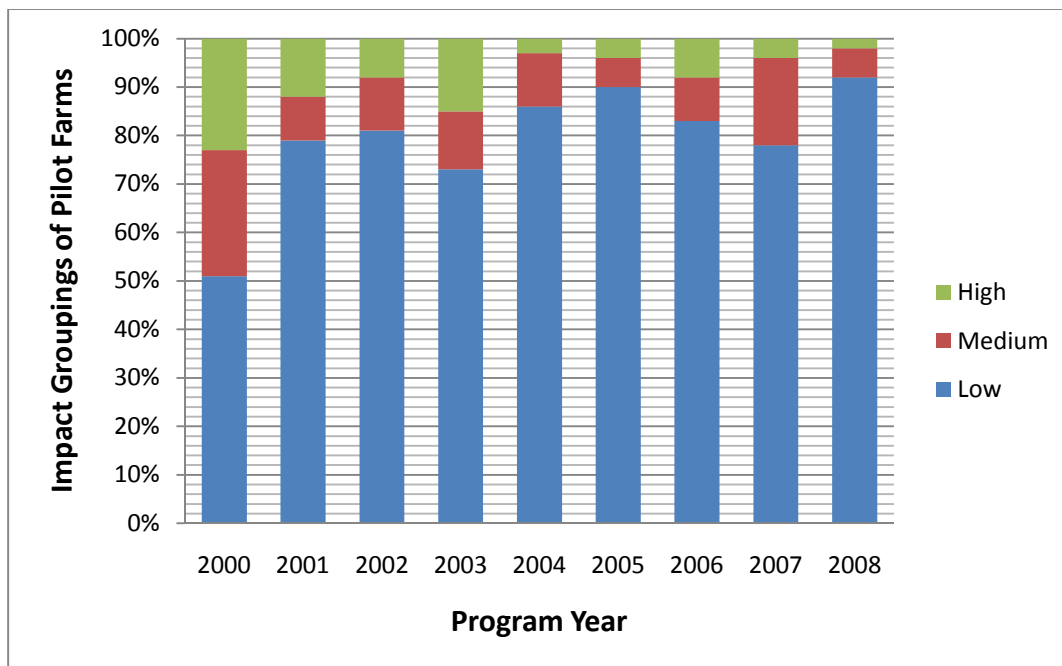


Figure B Pilot farms grouped into environmental impact categories

In 2008, 98% of the pilot farms were categorized in either the low or medium impact groups. Only 3 farms (2%) were determined to have gross scores of 31 or more points, thus placing them in the high environmental impact group. This number is down from a total of 7 farms receiving more than 30 noncompliance points in 2007.

As noted earlier, annual precipitation amounts and events have the biggest impact on compliance performance by farms in the pilot program area; however, the overall trend appears to reflect increased compliance over time.

Table 3 summarizes the frequency of occurrence for several of the program's operational indicators during 2008 and the first half of 2009. Inadequate rainfall and the associated lack of waste effluent available for land application and fertilization likely contributed to the high frequency of deficiencies for *receiving crop/application field*.

Operational Indicator (%)	2008	Jan-Jun '09
<i>Offsite discharge</i>	0.60	0.00
<i>Structural integrity compromised</i>	0.00	0.60
<i>Waste in structural freeboard range</i>	0.00	0.00
<i>Hydraulic overloading or ponding</i>	1.80	0.00
<i>Nitrogen over-applied $\geq 10\%$</i>	0.00	0.00
Waste level in storm storage	4.79	1.20
Irrigation system maintenance deficiency	0.00	0.00
Structural maintenance deficiency	6.59	2.40
Receiving crop inconsistent with waste plan	0.60	0.00
Irrigation records deficient	0.60	2.40
Waste level records deficient	2.99	2.40
Nitrogen over-applied < 10%	0.00	0.00
Receiving crop/application field deficient	14.97	4.79
Waste analysis deficient	2.40	0.60
Soil analysis deficient	4.19	3.59

Table 3. "Frequency of Occurrence" displayed as a percentage for finding an operational indicator on a pilot farm during 2008 and the first half of 2009. Items in italics represent "immediate threat" indicators.

When DSWC and DWQ staff inspects a farm jointly, each division is required to enter a report into BIMS for the same site visit; therefore, it should be noted that duplications are included in the pilot area site visit findings. This double reporting causes noted deficiencies to be counted and scored twice, thus increasing the rate of occurrence for any given operational indicator.

Cost & Labor Comparisons

Salaries, office rent, administrative and operating costs, coded work hours, and actual mileage costs were updated and compiled to determine a DSWC

operating cost of \$30.73 per hour for the 2008/2009 fiscal year. This cost is up from the \$29.26 per hour in 2006 and is due to increases in mileage and salary costs.

Table 4 reflects key cost and labor comparisons. The DSWC's per-visit costs are significantly less for pilot farms compared to non-pilot farms. This is in part due to a position vacancy in the pilot area during the first half of the fiscal year. Per-farm costs for pilot farms are higher than non-pilot farms as a direct function of the higher frequency of site visits made to pilot farms. In the pilot counties, DSWC conducts an additional farm visit to complete a compliance inspection.

Pilot Farms	Non-pilot Farms
\$147.68 per DSWC visit	\$202.30 per DSWC visit
2.08 visits per farm	1.02 visits per farm
4.81 hours per visit	6.58 hours per visit
\$307.74 per farm	\$205.52 per farm

Table 4. 2008/2009 Fiscal Year Key Cost and Labor Comparisons for DSWC Operation Review Staff

Producer Response

Despite more intense scrutiny received by operations in the pilot counties, DSWC staff believes the Pilot Program continues to be well received by the producers. Earlier Pilot reports included the following comments:

- *"Evaluations from both the operation reviews and compliance inspections were very positive with 94% of the total responses either strongly agreeing or agreeing that working with one agency would help minimize confusion and increase compliance..." - 1998 Final ERC Pilot Report*
- *"It was noted that anecdotal testimony from some participating farmers suggests a favorable reception to the pilot program" - 2005 Annual ERC Pilot Report*

- *"...over 75% of the producers expressed their support"* (for expansion of the Pilot into Pender County) - 2006 Annual ERC Pilot Report
- *"DSWC appears to be responding quickly and effectively, with technical assistance, to help producers identify problems earlier and to achieve compliance with environmental regulations"* – 2007 Annual ERC Pilot Report

CONCLUSIONS

From 1999 through June 30, 2009, the Pilot has collected data from 3,652 documented site visits to 167 permitted animal operations in Brunswick, Columbus, Jones, and Pender Counties. DSWC staff continues to use the data to study and better understand the factors that influence compliance and affect the potential for environmental impact by conventional animal waste management systems. During the report period, DSWC experienced or observed the following:

- In 2008, 98% of farms in the pilot counties were identified as having a medium or low potential impact based on operation indicators. Overall, the trend since 1999 has indicated increased compliance.
- Continued drought conditions through the 2008 growing season contributed to increased deficiencies in establishing and maintaining adequate receiving crops. The lack of adequate rainfall also lead to an increase in structural maintenance deficiencies related to inadequate vegetative cover.
- The impact of the statewide operation review program on producers, both in and out of the pilot area, indicate DSWC site visits are meeting the overall program objective of providing technical assistance.
- Producers in the pilot area have expressed a strong desire for the continuation of the Pilot Program.