# *Nutrient Imports to Support AFOs in the Black River Basin, North Carolina*

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Animal Feeding Operations (AFOs), primarily swine and poultry-production facilities, have become particularly concentrated in the basin of the Black River, a coastal plain tributary of the Cape Fear River in eastern North Carolina. The concentration of AFOs in this small area drives a need for imports from outside the basin of substantial amounts of corn, wheat, and soy meals used as the base of animal feeds. Calculation of net imports of nitrogen and phosphorus, based on net feed material imports and manure nutrient outputs, shows that very high percentages and quantities of these imported nutrients are deposited in the basin. These quantities exceed the amounts of commercial fertilizer used in the basin but have not substantially replaced those fertilizers. Consequently, nutrient imports to the Black River basin now greatly exceed those occurring in the 1980s, with as yet incompletely understood consequences for regional air and water quality. However, studies to date have already documented a variety of impacts that may be attributed to AFOs.

The geographic concentration of AFOs and the consequent net imports of very large amounts of "new" nutrients to small areas pose important management challenges. Efforts should be made to determine the fates of imported nutrients and their impacts on regional ecosystems. Comprehensive nutrient-management plans that incorporate nutrient-export strategies should be considered. Regulatory efforts should include consideration of the spatial and temporal cumulative effects of concentrated AFOs.

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