

## Livestock operations that are expected to need a CNMP

Assessing CNMP costs begins with estimating the number of livestock operations that are expected to need a CNMP. As indicated in the introduction, the *Unified National Strategy for Animal Feeding Operations* stipulated that all animal feeding operations should have CNMPs to minimize the impacts of manure and manure nutrients on water quality. EPA defines an animal feeding operation as a "Lot or facility where 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 where crops, vegetation forage growth, or post-harvest residues are not sustained over any portion of the lot or facility in the normal growing season."

The best information source available on farms and characteristics of farms in the United States is the Census of Agriculture. The Census of Agriculture has information about the number and types of livestock on each farm. However, the census provides no information on how the animals are raised or to what extent or how long animals are held in confinement. Consequently, it is not possible to identify whether or not a farm in the census database is an animal feeding operation.

Farms that are expected to need a CNMP were therefore identified on the basis of the number and types of livestock on the farm and an estimate of the amount of manure produced annually by those livestock. The 1997 Census of Agriculture, which is the most recent census available, was used to make the determination. Farms with significant numbers of fattened cattle, poultry, and swine would clearly need a CNMP, since these livestock types are almost always raised in a confined setting. Dairies would also be expected to need a CNMP, since milk cows are confined for at least portions of the time each day for milking. Farms with an incidental number of these confined livestock types, however, would not be expected to implement a CNMP, even if the animals were confined. Similarly, most farms with pastured livestock types, such as beef cattle, horses, and sheep, would not meet the EPA definition of an animal feeding operation, and so

would not need a CNMP. However, some of the farms with pastured livestock types would be expected to need a CNMP if a significant amount of recoverable manure is produced on the farm.

Three criteria were developed to identify farms that may need a CNMP, with each criterion addressing a separate segment of the livestock operations as represented in the census database.

The first criterion is used to identify farms with too few livestock to be considered as a farm that would need a CNMP. It is based on a profile of farms with livestock in the United States, presented in appendix A. The profile reveals that, of the 1,911,859 farms in the United States in 1997, two-thirds—1,315,051 farms (69%)—reported some kind of livestock on the farm or reported livestock sales. About 27 percent of these farms (361,031 farms) were "farms with few livestock." Farms with few livestock were farms with

- less than 4 animal units of any combination of fattened cattle, milk cows, swine, chickens, and turkeys; and
- less than 8 animal units of cattle other than fattened cattle or milk cows; and
- less than 10 horses, ponies, mules, burros, or donkeys; and
- less than 25 sheep, lambs, or goats; and
- less than \$5,000 in gross sales of specialty livestock products.

An animal unit (AU) represents 1,000 pounds of live weight.

About 75 percent of the farms with few livestock had only pastured livestock types; 23 percent had at least some fattened cattle, milk cows, swine, chickens, or turkeys; and about 2 percent primarily had specialty livestock with gross sales of specialty livestock products below \$5,000. The average of gross livestock sales per farm was only \$2,149, and no livestock sales were reported for 34 percent of the farms. These farms are expected to be too small to need a CNMP.

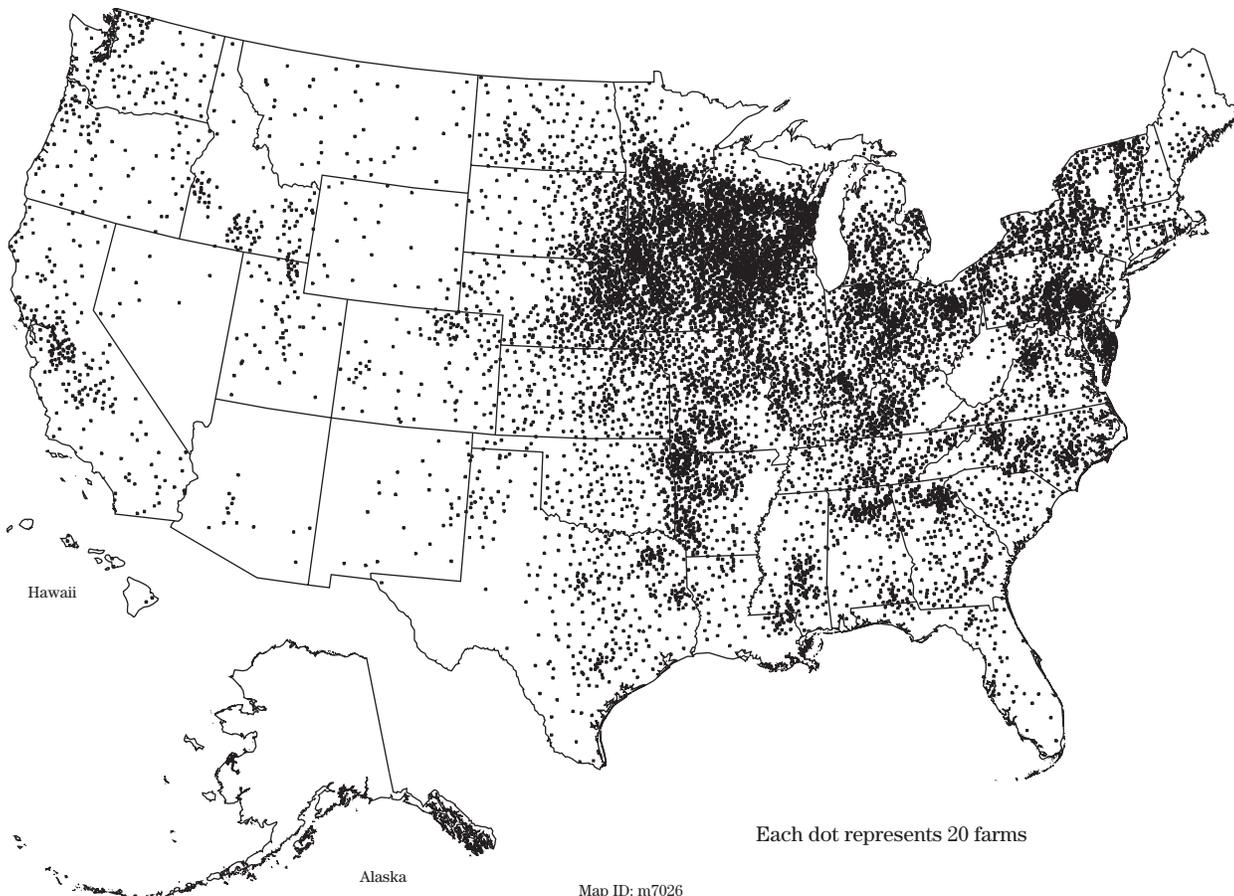
The second criterion for a farm that would need a CNMP was based on the amount of recoverable manure produced. Recoverable manure is the portion of manure that could be collected from the facility for land application or other use. Recoverable manure and manure nutrients were estimated for each farm in the census using procedures presented in appendix B. Included are estimates of recoverable manure for beef

cattle and other pastured livestock types. The calculation is heavily influenced by recoverability factors, which range from 5 percent to 20 percent for pastured livestock types with more than 1 AU per acre of pastureland and rangeland. (Recoverability factors are presented in appendix B.) The criterion used to identify a farm expected to need a CNMP is the same as the criterion used in appendix B for a manure-producing farm, which is production of more than 200 pounds of recoverable manure nitrogen annually. This criterion is equivalent to production of more than about 120 pounds of recoverable manure phosphorous annually. Farms at this threshold generate about 11 tons of manure (transport and handling weight) per year, which is less than a pickup truck load per month. (The actual amount varies by livestock type. The 11-ton estimate was empirically obtained by summarizing estimates from 3,218 farms with 190 to 200 pounds of recoverable manure nitrogen.)

Using this criterion, 255,070 farms were identified as farms that are expected to need a CNMP based on the amount of recoverable manure produced. However, this does not include farms with specialty livestock types because recoverable manure was not estimated for specialty livestock types.

The third criterion was developed to identify farms with specialty livestock types that may need a CNMP. Farms with specialty livestock types were defined to be farms with \$5,000 or more in gross sales of livestock products from fish, bees, rabbits, mink, poultry other than chickens and turkeys, and exotic livestock, and had few other livestock types on the farm (see appendix A). There were 8,834 of these farms in 1997. The dominant specialty livestock type—based on gross sales—was fish and other aquaculture species on 2,449 farms (28 percent), colonies of bees on 2,331 farms (26 percent), poultry other than chickens and

**Figure 1** CNMP farms (257,201 farms)



turkeys (such as ducks and geese) on 1,490 farms (17 percent), mink and rabbits on 641 farms (7 percent), and other exotic livestock on 1,923 farms (22 percent). Obviously, farms specializing in aquaculture or honey production would not need a CNMP. Furthermore, farms with other exotic livestock types would be expected to be largely pasture-based, and so would not likely need a CNMP. The two remaining groups—farms with poultry other than chickens and turkeys and farms with mink and rabbits—are most likely to be raising animals in confined settings, and so were identified as farms that may need a CNMP.

Including these 2,131 farms with specialty livestock types, the total number of census farms that are expected to need a CNMP is 257,201. These farms are referred to as **CNMP farms** throughout this publication. Figure 1 presents a map showing the geographical distribution of CNMP farms, and table 1 provides a breakdown by livestock type. The CNMP costs presented in this study are based on the assumption that all of these 257,201 farms would implement a CNMP.

## Overview of the cost assessment approach

The objective of this assessment is to estimate the costs of implementing CNMPs on all livestock operations in the United States that are expected to need a CNMP, assuming a 10-year implementation period. CNMP-related costs are those costs that would be incurred as a direct result of upgrading the livestock facility or modifying management practices to meet NRCS criteria for a CNMP. Costs associated with facility upgrades that are production-related and not directly related to meeting CNMP criteria are not included. The cost of development of the CNMP is also included, which covers alternatives development and evaluation, design, implementation, and followup. The assessment also does not address who would pay for the CNMP; the full cost is estimated without adjustment for government subsidies or technical assistance provided by USDA or other programs.

**Table 1** CNMP farms by dominant livestock type\*

Category of CNMP farm	Number of CNMP farms
Farms with more than 35 AU of the dominant livestock type	
Fattened cattle	10,159
Milk cows	79,318
Swine	32,955
Turkeys	3,213
Broilers	16,251
Layers/pullets	5,326
Confined heifers/veal	4,011
Small farms with confined livestock types dominant	42,565
Farms with pastured livestock types dominant**	61,272
Farms with specialty livestock types	2,131
<b>All CNMP farms</b>	<b>257,201</b>

\* Source: Appendix A, tables A-7 and A-8.

\*\* Includes 24,697 farms with pastured livestock types and few other livestock and 36,575 farms with 4-35 AU of confined livestock types with beef cattle (other than fattened cattle) as the dominant livestock type.