d. Odors

Odor is a significant concern because of its documented effect on moods, such as increased tension, depression, and fatigue. Odor also has the potential for vector attraction, and has been associated with a negative impact on property values. Additionally, many of the odor-causing compounds in manure can cause physical health impacts. For example, hydrogen sulfide is toxic, and ammonia gas is a nasal and respiratory irritant.

4. Recreational Impacts

As discussed above, CAFO pollutants contribute to the increase in turbidity, increase in eutrophication and algal blooms, and reduction of aquatic populations in rivers, lakes, and estuaries. Impaired conditions interfere with recreational activities and aesthetic enjoyment of these water bodies. Recreational activities include fishing, swimming, and boating. Fishing is reduced when fish populations decrease. Swimming is limited by increased risk of infection when pathogens are present. Boating and aesthetic enjoyment decline with the decreased aesthetic appeal caused by loss of water clarity and water surfaces clogged by algae. These impacts are more fully discussed in Section XI of this preamble.

VI. What Are Key Characteristics of the Livestock and Poultry Industries?

A. Introduction and Overview

1. Total Number and Size of Animal Confinement Operations

USDA reports that there were 1.1 million livestock and poultry farms in the United States in 1997. This number includes all operations that raise beef, dairy, pork, broilers, egg layers, and turkeys, and includes both confinement and non-confinement (grazing and rangefed) production. Only operations that raise animals in confinement will be subject to today's proposed regulations.

For many of the animal sectors, it is not possible to precisely determine what proportion of the total livestock operations are confinement operations and what proportion are grazing operations only. Data on the number of beef and hog operations that raise animals in confinement are available from USDA. Since most large dairies have milking parlors, EPA assumes that all dairy operations are potentially confinement operations. In the poultry sectors, there are few small non-confinement operations and EPA assumes that all poultry operations confine animals. EPA's analysis focuses on the largest facilities in these sectors only.

Using available 1997 data from USDA, EPA estimates that there are about 376,000 AFOs that raise or house animals in confinement, as defined by the existing regulations (Table 6-1). Table 6-1 presents the estimated number of AFOs and the corresponding animal inventories for 1997 across select size groupings. These estimates are based on the number of "animal units" (AU) as defined in the existing regulations at 40 CFR 122, with the addition of the revisions that are being proposed for immature animals and chickens. Data shown in Table 6-1 are grouped by operations with more than 1,000 AU and operations with fewer than 300 AU.

As shown in Table 6-1, there were an estimated 12,660 AFOs with more that 1,000 AU in 1997 that accounted for about 3 percent of all confinement operation. In most sectors, these larger-sized operations account for the majority of animal production. For example, in the beef, turkey and egg laying sectors, operations with more than 1,000 AU accounted for more than 70 percent of all animal inventories in 1997; operations with more than 1,000 AU accounted for more than 50 percent of all hog, broiler, and heifer operations (Table 6-1). In contrast, operations with fewer than 300 AU accounted for 90 percent of all operations, but a relatively smaller share of animal production.

USDA personnel have reviewed the data and assumptions used to derive EPA's estimates of the number of confinement operations. Detailed information on how EPA estimated the number of AFOs that may be subject to today's proposed regulations can be found in the *Development Document for the Proposed Revisions to the National Pollutant Discharge Elimination System Regulation and the Effluent Guidelines for Concentrated Animal Feeding Operations* (referred to as the "Development Document").

Table 6-1. Number of AFOs and Animals On-Site, by Size Group, 1997

Sector/ Size Category	Total AFOs	>1000 AU [1/]	<300 AU	Total	>1000 AU	<300 AU
	(number of operations)			(number of animals, 1000's)		
Cattle	106,080	2,080	102,000	26,840	22,790	2,420
Veal	850	10	640	270	10	210
Heifers	1,250	300	200	850	450	80
Dairy	116,870	1,450	109,740	9,100	2,050	5,000
Hogs: GF [2/]	53,620	1,670	48,700	18,000	9,500	2,700
Hogs: FF [2/]	64,260	2,420	54,810	38,740	21,460	5,810
Broilers	34,860	3,940	20,720	1,905,070	1,143,040	476,270
Layers: wet [3/]	3,110	50	2,750	392,940	275,060	58,940
Layers: dry [3/]	72,060	590	70,370			
Turkeys	13,720	370	12,020	112,800	95,880	2,260
Total [4/]	**375,700**	**12,660**	**336,590**	**na**	**na**	**na**

Sector/ Size Category	Total AFOs	>1000 AU [1/]	<300 AU	Total	>1000 AU	<300 AU
	(number of operations)			(number of animals, 1000's)		

Source: Derived by USDA from published USDA/NASS data, including 1997 Census of Agriculture. In some cases, available data are used to interpolate data for some AU size categories (see EPA's *Development Document*). Data for veal and heifer operations are estimated by USDA. Totals may not add due to rounding.

[1/] As defined for the proposed CAFO regulations, one AU is equivalent to: one slaughter or feeder cattle, calf or heifer; 0.7 mature dairy cattle; 2.5 hogs (over 55 pounds) or 5 nursery pigs; 55 turkeys; and 100 chickens regardless of the animal waste system used.

[2/] "Hogs: FF" are farrow-finish (includes breeder and nursery pigs); "Hogs: GF" are grower-finish only.

[3/] "Layers: wet" are operations with liquid manure systems; "Layers: dry" are operations with dry systems.

[4/] "Total AFOs" eliminates double counting of operations with mixed animal types. Based on survey level Census data for 1992, operations with mixed animal types account for roughly 25 percent of total AFOs.

2. Total Number of CAFOs Subject to the Proposed Regulations

Table 6-2 presents the estimated number of operations that would be defined as a CAFO under each of the two regulatory alternatives being proposed. The "*two-tier structure*" would define as CAFOs all animal feeding operations with more than 500 AU. The "*three-tier structure*" would define as CAFOs all animal feeding operations with more than 1,000 AU and any operation with more than 300 AU, if they meet certain "risk-based" conditions, as defined in Section VII. Table 6-2 presents the estimated number of CAFOs in terms of number of operations with more than 1,000 AU and operations for each co-proposed middle category (operations with between 500 and 1,000 AU and between 300 and 1,000 AU, respectively).

Based on available USDA data for 1997, EPA estimates that both proposed alternative structures would regulate about 12,660 operations with more than 1,000 AU. This estimate adjusts for operations with more than a single animal type. The two alternatives differ in the manner in which operations with less than 1,000 AU would be defined as CAFOs and, therefore, subject to regulation, as described in Section VII. As shown in Table 6-2, in addition to the 12,660 facilities with more than 1,000 AU, the two-tier structure at 500 AU threshold would regulate an additional 12,880 operations with between 500 and 1,000 AU. Including operations with more than 1,000 AU, the two-tier structure regulates a total of 25,540 AFOs that would be subject to the proposed regulations (7 percent of all AFOs).

Under the three-tier structure, an estimated 39,330 operations would be subject to the proposed regulations (10 percent of all AFOs), estimated as the total number of animal confinement operations with more than 300 AU. See Table 6-1. Of these, EPA estimates that a total of 31,930 AFOs would be defined as CAFOs (9 percent of all AFOs) and would need to obtain a permit (Table 6-2), while an estimated 7,400 operations would certify that they do not need to obtain a permit. Among those operations needing a permit, an estimated 19,270 operations have between 300 to 1,000 AU. For more information, see the *Economic Analysis*.

Table 6-2. Number of Potential CAFOs by Select Regulatory Alternative, 1997

Sector/Size Category	"Two-tier"						"Three-tier" >300 AU	
	>300AU	>500 AU	>750AU	>300AU	>500 AU	>750AU		
	(#Operations)			(%Total)			(#)	(%Total)
Cattle	4,080	3,080	2,480	4%	3%	2%	3,210	3%
Veal	210	90	40	25%	10%	4%	140	16%
Heifers	1,050	800	420	84%	64%	34%	980	78%
Dairy	7,140	3,760	2,260	6%	3%	2%	6,480	6%
Hogs: GF [1/]	4,920	2,690	2,300	9%	5%	4%	2,650	5%
Hogs: FF [1/]	9,450	5,860	3,460	15%	9%	5%	5,700	9%
Broilers	14,140	9,780	7,780	41%	28%	22%	13,740	39%
Layers: wet [2/]	360	360	210	12%	12%	7%	360	12%
Layers: dry [2/]	1,690	1,280	1,250	2%	2%	2%	1,650	2%
Turkeys	2,100	1,280	740	15%	9%	5%	2,060	15%
Total [3/]	**39,320**	**25,540**	**19,100**	**10.5%**	**6.8%**	**5.1%**	**31,930**	**8.5%**

Source: See Table 6-1.

[1/] FF= farrow-finish (includes breeder and nursery pigs); GF=grower-finish.

[2/] "Layers: wet" are operations with liquid manure systems. "Layers: dry" are operations with dry systems.

[3/] "Total" eliminates double counting of operations with mixed animal types (see Table 6-1).

EPA estimated the number of operations that may be defined as CAFOs under the three-tier structure using available information and compiled data from USDA, State Extension experts, and agricultural professionals. These estimates rely on information about the percentage of operations in each sector that would be impacted by the "risk-based" criteria described in Section VII. In some cases, this information is available on a state or regional basis only and is extrapolated to all operations nationwide. EPA's estimates reflect information from a majority of professional experts in the field. Greater weight is given to information obtained by State Extension agents, since they have broader knowledge of the industry in their state. More detailed information on how EPA estimated the number of operations that may be affected by the proposed regulations under the three-tier structure is available in the rulemaking record and in the *Development Document*.

EPA is also requesting comment on two additional options for the scope of the rule. One of these is an alternative two-tier structure with a threshold of 750 AU. Under this option, an estimated 19,100 operations, adjusting for operations with more than a single animal type, would be defined as CAFOs. This represents about 5 percent of all CAFOs, and would affect an estimated 2,930 beef, veal, and heifer operations, 2,260 dairies, and 5,750 swine and 9,980 poultry operations (including mixed operations). Under the other alternative, a variation of the three-tier structure being co-proposed today, the same 39,320 operations with 300 AU or greater would potentially be defined as CAFOs. However, the certification conditions for being defined as a CAFO would be different for

operations with 300 to 1,000 AU (as described later in Section VII). EPA has not estimated how many operations would be defined as CAFOs under this alternative three-tier approach, although EPA expects that it would be fewer than the 31,930 estimated for the three-tier approach being proposed today. If after considering comments, EPA decides to further explore this approach, it will conduct a full analysis of the number of potentially affected operations.

EPA does not anticipate that many AFOs with less than 500 AU (two-tier structure) or 300 AU (three-tier structure) will be subject to the proposed requirements. In the past 20 years, EPA is aware of very few AFOs that have been designated as CAFOs. Based on available USDA analyses that measure excessive nutrient application on cropland in some production areas and other farm level data by sector, facility size and region, EPA estimates that designation may bring an additional 50 operations under the proposed two-tier structure each year nationwide. EPA assumed this estimate to be cumulative such that over a 10-year period approximately 500 AFOs may become designated as CAFOs and therefore subject to the proposed regulations. EPA expects these operations to consist of beef, dairy, farrow-finish hog, broiler and egg laying operations that are determined to be significant contributors to water quality impairment. Under the three-tier structure, EPA estimates that fewer operations would be designated as CAFOs, with 10 dairy and hog operations may be designated each year, or 100 operations over a 10-year period. Additional information is provided in the *Economic Analysis*.

EPA expects that today's proposed regulations would mainly affect livestock and poultry operations that confine animals. In addition to CAFOs, however, the proposed regulations would also affect businesses that contract out the raising or finishing production phase to a CAFO but exercise "substantial operational control" over the CAFO (as described in Section VII.C.6).

EPA expects that affected businesses may include packing plants and slaughtering facilities that enter into a *production contract* with a CAFO. Under a production contract, a contractor (such as a processing firm, feed mill, or other animal feeding operation) may either own the animals and/or may maintain control over the type of production practices used by the CAFO. Processor firms that enter into a *marketing contract* with a CAFO are not expected to be subject to co-permitting requirements since the mechanism for "substantial operational control" generally do not exist. Given the types of contract arrangements that are common in the hog and poultry industries, EPA expects that packers/slaughterers in these sectors may be subject to the proposed co-permitting requirements.

As discussed later in Sections VI.D.1 and VI.E.1, EPA estimates that 94 meat packing plants that slaughter hogs and 270 poultry processing facilities may be subject to the proposed co-permitting requirements. Other types of processing firms, such as further processors, food manufacturers, dairy cooperatives, and renderers, are not expected to be affected by the co-permitting requirements since these operations are further up the marketing chain and do not likely contract with CAFOs to raise animals. Fully vertically integrated companies (e.g., where the packer owns the CAFO) are not expected to require a co-permit since the firm as the owner of the CAFO would require only a single

permit. EPA solicits comment on these assumptions as part of today's rulemaking proposal. EPA also expects that non-CAFO, crop farmers who receive manure from CAFOs would be affected under one of the two co-proposed options relating to offsite management of manure (see Section VII).

Additional information is provided in the *Economic Impact Analysis of Proposed Effluent Limitations Guidelines and National Pollutant Discharge Elimination System for Concentrated Animal Feeding Operations* (referred to as "Economic Impact Analysis").

3. Manure and Manure Nutrients Generated Annually at AFOs

USDA's National Resources Conservation Service (NRCS) estimates that 128.2 billion pounds of manure are "available for land application from confined AU" from the major livestock and poultry sectors. EPA believes these estimates equate to the amount of manure that is generated at animal feeding operations since USDA's methodology accounts for all manure generated at confinement facilities. USDA reports that manure nutrients available for land application totaled 2.6 billion pounds of nitrogen and 1.4 billion pounds of phosphorus in 1997 (Table 6-3). USDA's estimates do not include manure generated from other animal agricultural operations, such as sheep and lamb, goats, horses, and other farm animal species.

Table 6-3. Manure and Manure Nutrients "Available for Land Application", 1997

Sector	USDA Estimates: "Available for Application" from Confined AU" [a/]			EPA Estimates: Percentage Share by Facility Size Group [b/]			
	Total Manure	Total Nitrogen	Total Phosphorus	>1000 AU	>750 AU	>500 AU	>300AU
	(bill. lbs)	(million pounds)		(percent of total manure nutrients applied)			
Cattle [c/]	32.9	521	362	83%	85%	86%	90%
Dairy	45.5	636	244	23%	31%	37%	43%
Hogs	16.3	274	277	55%	63%	69%	78%
All Poultry	33.5	1,153	554	49%	66%	77%	90%
Total	**128.2**	**2,583**	**1,437**	**49%**	**58%**	**64%**	**72%**

Source:

a/ Manure and nutrients are from USDA/NRCS using 1997 Census of Agriculture and procedures documented developed by USDA. Numbers are "dry state" and reflect the amount of manure nutrient "available for application from confined AU" and are assumed by EPA to coincide with manure generated at confined operations.

b/ Percentage shares are based on the share of animals within each facility size group for each sector (shown in Table 6-1) across three facility size groups.

c/ "Cattle" is the sum of USDA's estimate for livestock operations "with fattened cattle" and "with cattle other than fattened cattle and milk cows."

The contribution of manure and manure nutrients varies by animal type. Table 6-3 shows that the poultry industry was the largest producer of manure nutrients in 1997, accounting for 45 percent

(1.2 billion pounds) of all nitrogen and 39 percent (0.6 billion pounds) of all phosphorus available for land application that year. Among the poultry sectors, EPA estimates that approximately 55 percent of all poultry manure was generated by broilers, while layers generated 20 percent and turkeys generated 25 percent. The dairy industry was the second largest producer of manure nutrients, generating 25 percent (0.6 billion pounds) of all nitrogen and 17 percent (0.2 billion pounds) of all phosphorus (Table 6-3). Together, the hog and beef sectors accounted for about one-fourth of all nitrogen and nearly 40 percent of all phosphorus from manure.

Table 6-3 shows EPA's estimate of the relative contribution of manure generated by select major facility size groupings, including coverage for all operations with more than 1,000 AU, all operations with more than 750 AU or 500 AU (two-tier structure), and all operations with more than 300 AU (three-tier structure). EPA estimated these shares based on the share of animals within each facility size group for each sector, as shown in Table 6-1. Given the number of AFOs that may be defined as CAFOs and subject to the proposed regulations (Table 6-1), EPA estimates that the proposed effluent guidelines and NPDES regulations will regulate 5 to 7 percent (two-tier structure) to 10 percent (three-tier structure) percent of AFOs nationwide. Coverage in terms of manure nutrients generated will vary by the proposed regulatory approach. As shown in Table 6-3, under the 500 AU two-tier structure, EPA estimates that the proposed requirements will capture 64 percent of all CAFO manure; under the 750 AU two-tier structure, EPA estimates that the proposed requirements will capture 58 percent of all CAFO manure. Under the three-tier structure, EPA estimates that the proposed requirements will capture 72 percent of all CAFO manure generated annually (Table 6-3). The majority of this coverage (49 percent) is attributable to regulation of operations with more than 1,000 AU.

Additional information on the constituents found in livestock and poultry manure and wastewater is described in Section V. Information on USDA's estimates of nutrients available for land application and on the relative consistency of manure for the main animal types is provided in the *Development Document*.

B. Beef Subcategory

1. General Industry Characteristics

Cattle feedlots are identified under NAICS 112112 (SIC 0211, beef cattle feedlots) and NAICS 112111, beef cattle ranching and farming (SIC 0212, beef cattle, except feedlots). This sector comprises establishments primarily engaged in feeding cattle and calves for fattening, including beef cattle feedlots and feed yards (except stockyards for transportation).

The beef cattle industry can be divided into four separate producer segments:

- *Feedlot operations* fatten or "finish" feeder cattle prior to slaughter and constitute the final phase of fed cattle production. Calves usually begin the finishing stage after 6 months of age or after reaching at least 400 pounds. Cattle are typically held for 150 to 180 days and weigh between 1,150 to 1,250 pounds (for steers) or 1,050 to 1,150 pounds (for heifers) at slaughter.

- *Veal operations* raise male dairy calves for slaughter. The majority of calves are "special fed" or raised on a low-fiber diet until about 16 to 20 weeks of age, when they weigh about 450 pounds.

- *Stocker or backgrounding operations* coordinate the flow of animals from breeding operations to feedlots by feeding calves after weaning and before they enter a feedlot. Calves are kept between 60 days to 6 months or until they reach a weight of about 400 pounds.

- *Cow-calf producers* typically maintain a herd of mature cows, some replacement heifers, and a few bulls, and breed and raise calves to prepare them for fattening at a feedlot. Calves typically reach maturity on pasture and hay and are usually sold at weaning. Cow-calf operators may also retain the calves and continue to raise them on pasture until they reach 600 to 800 pounds and are ready for the feedlot.

Animal feeding operations in this sector that may be affected by today's proposed regulations include facilities that confine animals. Information on the types of facilities in this sector that may be covered by the proposed regulations is provided in Section VII.

USDA reports that there were more than 106,000 beef feedlots in 1997, with a total inventory of 26.8 million cattle (Table 6.1). Due to ongoing consolidation in the beef sector, the total number of operations has dropped by more than one-half since 1982, when there were 240,000 operations raising fed cattle. EPA also estimates that there were 850 veal operations raising 0.3 million head and 1,250 stand-alone heifer operations raising 0.9 million head in 1997. Only a portion of these operations would be subject to the proposed regulations.

As shown in Table 6-2, under the two-tier structure, EPA estimates that there are 3,080 beef feedlots with more than 500 head (500 AU of beef cattle). EPA also estimates that there are about 90 veal operations and 800 heifer operations that may be subject to the proposed regulations. Under the three-tier structure, EPA estimates that 3,210 beef feedlots, 140 veal and 980 heifer operations with more than 300 head (300 AU) would meet the "risk-based" conditions described in Section VII and thus require a permit.

EPA expects that few operations that confine fewer than 500 AU of beef, veal, or heifers, would be designated by the permit authority. For the purpose of estimating costs, EPA assumes that no

beef, veal, or heifer operations would be designated as CAFOs and subject to the proposed regulations under the three-tier structure. Under the two-tier structure, EPA assumes that about four beef feedlots located in the Midwest would be designated annually, or 40 beef feedlots projected over a 10-year period.

The cattle feeding industry is concentrated in the Great Plains and Midwestern states. The majority of feedlots are located in the Midwest. However, the majority of large feedlots (i.e., operations with more than 1,000 head) are located in four Great Plains states—Texas, Kansas, Nebraska, and Colorado—accounting for nearly 80 percent of annual fed cattle marketings. Table 6-1 shows that, although the majority of beef feedlots (over 98 percent) have capacity below 1,000 head, larger feedlots with more than 1,000 head accounted for the majority of animal production. In 1997, feedlots with more than 1,000 head accounted for 85 percent of the nation's fed cattle inventory and sales. Cattle feeding has become increasingly concentrated over the last few decades. Feedlots have decreased in number, but increased in capacity. The decline in the number of operations is mostly among feedlots with less than 1,000 head.

The majority of cattle and calves are sold through private arrangements and spot market agreements. Production contracting is not common in the beef sector. Most beef sector contracts are marketing based where operations agree to sell packers a certain amount of cattle on a predetermined schedule. Production contracts are uncommon, but may be used to specialize in a single stage of livestock production. For example, custom feeding operations provide finish feeding under contract. Backgrounding or stocker operations raise cattle under contract from the time the calves are weaned until they are on a finishing ration in a feedlot. As shown by 1997 USDA data of animal ownership, production contracts account for a relatively small share (4 percent) of beef production. These same data show that production contracts are used to grow replacement breeding stock.

Despite the limited use of contracts for the finishing and raising phase of production, EPA expects that no businesses, other than the CAFO where the animals are raised, will be subject to the proposed co-permitting requirements. Reasons for this assumption are based on data from USDA on the use of production contracts and on animal ownership at operations in this sector. Additional information is provided in Section 2 of the *Economic Analysis*. EPA is seeking comment on this assumption as part of today's notice.

2. Farm Production and Waste Management Practices

Beef cattle may be kept on unpaved, partly paved, or totally paved lots. The majority of beef feedlots use unpaved open feedlots. In open feedlots, protection from the weather is often limited to a windbreak near the fence in the winter and/or sunshade in the summer; however, treatment facilities for the cattle and the hospital area are usually covered. Confinement feeding barns with concrete floors are also sometimes used at feedlots in cold or high rainfall areas, but account for only 1 to 2 percent of all operations. Smaller beef feedlots with less than 1,000 head, especially in areas with severe winter

weather and high rainfall, may use open-front barns, slotted floor housing, or housing with sloped gutters.

Wastes produced from beef operations include manure, bedding, and contaminated runoff. Paved lots generally produce more runoff than unpaved lots. Unroofed confinement areas typically have a system for collecting and confining contaminated runoff. Excessively wet lots result in decreased animal mobility and performance. For this reason, manure is often stacked into mounds for improved drainage and drying, as well as providing dry areas for the animals. If the barn has slotted floors, the manure is collected beneath slotted floors, and is scraped or flushed to the end of the barn where it flows or is pumped to a storage area for later application via irrigation or transported in a tank wagon. Waste may also be collected using flushing systems.

Waste from a beef feedlot may be handled as a solid or liquid. Solid manure storage can range from simply constructed mounds within the pens to large stockpiles. In some areas, beef feedlot operations may use a settling basin to remove bulk solids from the pen runoff, reducing the volume of solids prior to entering a storage pond, therefore increasing storage capacity. A storage pond is typically designed to hold the volume of manure and wastewater accumulated during the storage period, including additional storage volume for normal precipitation, minus evaporation, and storage volume to contain a 25-year, 24-hour storm event. An additional safety volume termed "freeboard" is also typically built into the storage pond design.

Veal are raised almost exclusively in confinement housing, generally using individual stalls or pens. Veal calves are raised on a liquid diet and their manure is highly liquid. Manure is typically removed from housing facilities by scraping or flushing from collection channels and then flushing or pumping into liquid waste storage structures, ponds, or lagoons.

Waste collected from the feedlot may be transported within the site to storage, treatment, and use or disposal areas. Solids and semisolids are typically transported using mechanical conveyance equipment, pushing the waste down alleys, and transporting the waste in solid manure spreaders. Flail-type spreaders, dump trucks, or earth movers may also be used to transport these wastes. Liquids and slurries are transferred through open channels, pipes, or in a portable liquid tank. The most common form of utilization is land application. However, the amount of cropland and pastureland that is available for manure application varies at each operation. Cattle waste may also be used as a bedding for livestock, marketed as compost, or used as an energy source.

Additional information on the types of farm production and waste management practices is provided in the *Development Document*.

C. Dairy Subcategory

1. General Industry Characteristics

Operations that produce milk are identified under NAICS 11212, dairy cattle and milk production (SIC 0241, dairy farms).

A dairy operation may have several types of animal groups present, including:

- *Calves* (0-5 months);
- *Heifers* (6-24 months);
- *Lactating dairy cows* (i.e., currently producing milk); and;
- *Cows close to calving and dry cows* (i.e., not currently producing milk); and
- *Bulls*.

Animal feeding operations in this sector that may be affected by today's proposed regulations include facilities that confine animals. Information on the types of facilities in this sector that may be covered by the proposed regulations is provided in Section VII.

In 1997, there were 116,900 dairy operations with a year-end inventory of 9.1 million milk cows that produced 156.1 billion pounds of milk (Table 6.1). Only a portion of these operations would be subject to the proposed regulations. As shown in Table 6.2, under the two-tier structure, EPA estimates that there are 3,760 dairy operations that confine more than 350 milk cows (i.e., 500 AU equivalent). Under the three-tier structure, EPA estimates that 6,480 dairy operations with more than 200 head (i.e., 300 AU equivalent) would meet the "risk-based" conditions described in Section VII and thus require a permit.

Table 6-1 shows that dairies with fewer than 200 head account for the majority (95 percent) of milking operations and account for 55 percent of the nation's milk cow herd. EPA expects that under the two-tier structure designation of dairies with fewer than 350 milk cows would be limited to about 22 operations annually, or 220 dairies projected over a 10-year time period. Under the three-tier structure, EPA expects annual designation of dairies with fewer than 200 milk cows would be limited to about 5 operations, or 50 operations over a 10-year period. EPA expects that designated facilities will be located in more traditional farming regions.

More than one-half of all milk produced nationally is concentrated among the top five producing states: California, Wisconsin, New York, Pennsylvania, and Minnesota. Other major producing states include Texas, Michigan, Washington, Idaho, and Ohio. Combined, these ten states accounted for nearly 70 percent of milk production in 1997. Milk production has been shifting from traditional to nontraditional milk producing states. Operations in the more traditional milk producing regions of the Midwest and Mid-Atlantic tend to be smaller and less industrialized. Milk production at larger operations using newer technologies and production methods is emerging in California, Texas, Arizona, New Mexico, and Idaho. Milk production in these states is among the fastest-growing in the nation, relying on economies of scale and a specialization in milk production to lower per-unit production costs. (Additional data on these trends are provided in Section IV.C).

Over the past few decades, the number of dairy operations and milk cow inventories has dropped, while overall milk production has been increasing. USDA reports that while the number of dairy operations dropped by more than one-half from 277,800 in 1982 to 116,900 in 1997, the amount of milk produced annually at these operations rose from 135.5 billion pounds to 156.1 billion pounds. These figures signal trends toward increased consolidation, large gains in per-cow output, and increases in average herd size per facility. From 1982 to 1997, the average number of dairy cows per facility doubled from 40 cows to 80 cows per facility.

Although milk and dairy food production has become increasingly specialized, it has not experienced vertical integration in the same way as other livestock industries. The use of production contracts is uncommon in milk production. In part, this is attributable to the large role of farmer-owned, farmer-controlled dairy cooperatives, which handle about 80 percent of the milk delivered to plants and dealers. Milk is generally produced under marketing-type contracts through verbal agreement with their buyer or cooperative. Data from USDA indicate that little more than 1 percent of milk was produced under a production contract in 1997. Use of production contracts in the dairy sector is mostly limited to contracts between two animal feeding operations to raise replacement heifers.

Despite the limited use of contracts between operations to raise replacement herd, EPA expects that no businesses other than the CAFO where the animals are raised will be subject to the proposed co-permitting requirements. Reasons for this assumption are based on data from USDA on the use of production contracts and on animal ownership at operations in this sector. Additional information is provided in Section 2 of the *Economic Analysis*. EPA is seeking comment on this assumption as part of today's notice of the proposed rulemaking.

2. Farm Production and Waste Management Practices

Animals at dairy operations may be confined in free-stalls, drylots, tie-stalls, or loose housing. Some may be allowed access to exercise yards or open pasture. The holding area confines cows that are ready for milking. Usually, this area is enclosed and is part of the milking center, which in turn may be connected to the barn or located in the immediate vicinity of the cow housing. Milking parlors are

separate facilities where the cows are milked and are typically cleaned several times each day to remove manure and dirt. Large dairies tend to have automatic flush systems, while smaller dairies simply hose down the area. Larger dairies in the northern states, however, may be more likely to use continuous mechanical scraping of alleys in barns. Cows that are kept in tie-stalls may be milked directly from their stalls.

Waste associated with dairy production includes manure, contaminated runoff, milking house waste, bedding, spilled feed and cooling water. Dairies may either scrape or flush manure, depending on the solids content in manure and wastewater. Scraping systems utilize manual, mechanical, or tractor-mounted equipment to collect and transport manure from the production area. Flushing systems use fresh or recycled lagoon water to move manure. Dairy manure as excreted has a solids content of about 12 percent and tends to act as a slurry; however, it can be handled as a semisolid or a solid if bedding is added. Semisolid manure has a solids content ranging from 10 to 16 percent. Dilution water may be added to the manure to create a slurry with a solids content of 4 to 10 percent. If enough dilution water is added to the manure to reduce the solids content below 4 percent, the waste is considered to be a liquid.

Manure in a solid or semisolid state minimizes the volume of manure that is handled. In a dry system, the manure is collected on a regular basis and covered to prevent exposure to rain and runoff; sources of liquid waste, such as milking center waste, are typically handled separately. In a liquid or slurry system, the manure is typically mixed with flushing system water from lagoons; the milking center effluent is usually mixed in with the animal manure in the lagoon or in the manure transfer system to ease pumping. Liquid systems are usually favored by large dairies because they have lower labor cost and because the dairies tend to use automatic flushing systems.

Methods used at dairy operations to collect waste include mechanical/tractor scraper, flushing systems, gutter cleaner/gravity gutters, and slotted floors. Manure is typically stored as a slurry or liquid in a waste storage pond or in structural tanks. Milking house waste and contaminated runoff must be stored as liquid in a waste storage pond or structure. One common practice for the treatment of waste at dairies includes solids separation. Another common practice for the treatment of liquid waste at dairies includes anaerobic lagoons. The transfer of dairy waste depends on its consistency: liquid and slurry wastes can be transferred through open channels, pumps, pipes, or in a portable tank; solid and semi-solid waste can be transferred by mechanical conveyance, solid manure spreaders, or by being pushed down curbed concrete alleys. The majority of dairy operations dispose of their waste through land application. The amount of crop and pastureland available for land application of manure varies by operation.

Additional information on the types of farm production and waste management practices is provided in the *Development Document*.

D. Hog Subcategory

1. General Industry Characteristics

Hog operations that raise or feed hogs and pigs either independently or on a contract basis are identified under NAICS 11221, hog and pig farming (SIC 0213, hogs).

Hog operations may be categorized by six facility types based on the life stage of the animal in which they specialize:

- *Farrow-to-wean* operations that breed pigs and ship 10- to 15-pound pigs to nursery operations.
- *Farrowing-nursery* operations that breed pigs and ship 40- to 60-pound "feeder" pigs to growing-finishing operations.
- *Nursery* operations that manage weaned pigs (more than 10 to 15 pounds) and ship 40- to 60-pound "feeder" pigs to growing-finishing operations.
- *Growing-finishing or feeder-to-finish* operations that handle 40- to 60-pound pigs and "finish" these to market weights of about 255 pounds.
- *Farrow-to-finish* operations that handle all stages of production from breeding through finishing.
- *Wean-to-finish* operations that handle all stages of production, except breeding, from weaning (10- to 15-pound pigs) through finishing.

Animal feeding operations in this sector that may be affected by today's proposed regulations include facilities that confine animals. Information on the types of facilities in this sector that may be covered by the proposed regulations is provided in Section VII.

In 1997, USDA reports that there were 117,880 hog operations with 56.7 million market and breeding hogs (Table 6-1). Not all of these operations would be subject to the proposed regulations. As shown in Table 6-2, under the two-tier structure, EPA estimates that there are 5,860 farrow-finish

feedlots (including breeder and nursery operations) and 2,690 grower-finish feedlots with more than 1,250 head (i.e., 500 AU equivalent). Under the three-tier structure, EPA estimates that 5,700 farrow-finish feedlots (including breeder and nursery operations) and 2,650 grower-finish feedlots with more than 750 head (i.e., 300 AU equivalent) would meet the "risk-based" conditions described in Section VII and thus require a permit.

Table 6-1 shows that the majority of hog operations (93 percent) have fewer than 1,250 head, accounting for about one-third of overall inventories. Nearly half the inventories are concentrated among the 3 percent of operations with more than 2,500 head. Under the two-tier structure EPA expects that designation of hog operations with fewer than 1,250 head will be limited to about 20 confinement operations annually, or 200 operations over a 10-year time period. Under the three-tier structure, EPA expects that about 5 hog operations with fewer than 750 head would be designated annually, or 50 operations over a 10-year time period. EPA expects that designated facilities will be located in more traditional farming regions.

Hog production is concentrated among the top five producing states, including Iowa, North Carolina, Minnesota, Illinois, and Missouri. Together these states supply 60 percent of annual pork supplies. The majority of operations are located in the Midwest; however, the Southeast has seen rapid growth in hog production in the past decade. Recent growth in this region is due to increased vertical integration, proximity to growing consumer markets, and the mild climate, which offers lower energy costs and improved feed efficiency. (Additional data on these trends are provided in Section IV.C).

The hog sector is undergoing rapid consolidation and becoming increasingly specialized. USDA reports that while the number of hog operations dropped by nearly two-thirds between 1982 and 1997 (from 329,800 to 109,800 operations), the number of feeder pigs sold has risen from 20.0 million to 35.0 million marketed head over the same period. As in other livestock sectors, increasing production from fewer operations is attributable to expansion at remaining operations. Data from USDA indicate that the average number of hogs per facility increased from 170 pigs in 1982 to 560 pigs in 1997. Increasing production is also attributable to substantial gains in production efficiency and more rapid turnover, which has allowed hog farmers to produce as much output with fewer animals.

The hog sector is rapidly evolving from an industry of small, independent firms linked by spot markets to an industry of larger firms that are specialized and vertically coordinated through production contracting. This is particularly true of large-scale hog production in rapidly growing hog production states such as North Carolina. Production contracting is less common in the Midwest where coordination efforts are more diversified.

Information from USDA on animal ownership at U.S. farms provides an indication of the potential degree of processor control in this sector. Data from USDA indicate the use of production contracts accounted for 66 percent of hog production in the Southern and Mid-Atlantic states in 1997,

especially among the larger producers. This indicates that a large share of hog production may be under the ownership or control of processing firms that are affiliated with hog operations in this region. This compares to the Midwest, where production contracting accounted for 18 percent of hog production. Production contracting in the hog sector differs from that in the beef and dairy sectors since it is becoming increasingly focused on the finishing stage of production, with the farmer ("grower") entering into an agreement with a meat packing or processing firm ("integrator"). Production contracts are also used between two independent animal feeding operations to raise immature hogs.

Businesses that contract out the growing or finishing phase of production to an AFO may also be affected by the proposed co-permitting requirements. Affected businesses may include other animal feeding operations as well as processing sector firms. By NAICS code, meat packing plants are classified as NAICS 311611, animal slaughtering (SIC 2011, meat packing plants). The Department of Commerce reports that there were a total of 1,393 red meat slaughtering facilities that slaughter hogs as well as other animals, including cattle and calves, sheep, and lamb. Of these, Department of Commerce's 1997 product class specialization identifies 83 establishments that process fresh and frozen pork and 11 establishments that process or cure pork. These data generally account for larger processing facilities that have more than 20 employees. EPA believes that processing firms that may be affected by the proposed co-permitting requirements will mostly be larger facilities that have the administrative and production capacity to take advantage of various contract mechanisms. This assumption is supported by information from USDA that indicates that production contracts in the hog sector are generally associated with the largest producers and processors. Section 2 of the *Economic Analysis* provides additional information on the basis for EPA's estimate of potential co-permittees. EPA is seeking comment on this assumption as part of today's notice of the proposed rulemaking.

Using these Department of Commerce data, EPA estimates that 94 companies engaged in pork processing may be subject to the proposed co-permitting requirements. This estimate does not include other processors under NAICS 311611, including sausage makers and facilities that "further process" hog hides and other by-products because these operations are considered to be further up the marketing chain and likely do not contract out to CAFOs.

2. Farm Production and Waste Management Practices

Many operations continue to have the traditional full range of pork production phases at one facility, known as farrow-to-finish operations. More frequently at new facilities, operations are specialized and linked into a chain of production and marketing. The evolution in farm structures has resulted in three distinct production systems to create pork products: 1) farrow-to-finish; 2) farrowing, nursery, and grow-finish operations; and 3) farrow-to-wean and wean-finish operations. Most nursery and farrowing operations, as well as practically all large operations of any type, raise pigs in pens or stalls in environmentally controlled confinement housing. These houses commonly use slatted floors to separate manure and wastes from the animal. Open buildings with or without outside access are

relatively uncommon at large operations, but can be used in all phases of pork production. Smaller operations, particularly in the Midwest, may utilize open lots or pasture to raise pigs.

Hog waste includes manure and contaminated runoff. Most confinement hog operations use one of three waste handling systems: flush under slats, pit recharge, or deep underhouse pits. Flush housing uses fresh water or recycled lagoon water to remove manure from sloped floor gutters or shallow pits. The flushed manure is stored in lagoons or tanks along with any precipitation or runoff that may come into contact with the manure. Flushing occurs several times a day. Pit recharge systems are shallow pits under slatted floors with 6 to 8 inches of pre-charge water. The liquid manure is pumped or gravity fed to a lagoon approximately once a week. Deep pit systems start with several inches of water, and the manure is stored under the house until it is pumped out for field application on the order of twice a year. Most large operations have 90 to 365 days storage. The deep pit system uses less water, creating a slurry that has higher nutrient concentrations than the liquid manure systems. Slurry systems are more common in the Midwest and the cooler climates.

Dry manure handling systems include those used at open buildings and lots, scraped lots, hoop houses, deep bedded systems, and high rise hog houses. These systems produce a more solid manure material that is readily handled with a tractor or front end loader. The solids are stored in stacks or covered until used as fertilizer. In some cases, solids are composted.

Storage lagoons are used to provide anaerobic bacterial decomposition of organic materials. When only the top liquid is removed for irrigation or some other use, a limited amount of phosphorus-rich sludge accumulates in the lagoon, which requires periodic removal. Vigorous lagoon mixing with an agitator or a chopper prior to irrigation is sometimes done to minimize the sludge accumulation. In certain climates, a settling and evaporation pond is used to remove solids, which are dried in a separate storage area. Some lagoons and tanks are covered with a synthetic material that reduces ammonia volatilization. Covers also prevent rainfall from entering the system and, therefore, reduce disposal costs.

Land application is the most common form of utilization. To mitigate odor problems and volatization of ammonia, liquid waste can be injected below the soil surface. Waste may also be distributed through an irrigation process. Waste management systems for hogs often incorporate odor control measures, where possible.

Additional information on the types of farm production and waste management practices is provided in the *Development Document*.

E. Poultry Subcategory

1. General Industry Characteristics

Poultry operations can be classified into three individual sectors based on the type of commodity in which they specialize. These sectors include operations that breed and/or raise:

- *Broilers* or young meat chickens that are raised to a live weight of 4 to 4.5 pounds and other meat-type chickens, including roasters that are raised to 8 to 9 pounds. Classification: NAICS 11232, broilers and other meat-type chickens (SIC 0251, broiler, fryer and roaster chickens).
- *Turkeys and turkey hens*, including whole turkey hens that range from 8 to 15 pounds at slaughter, depending on market, and also turkey "canners and cut-ups" that range from 22 to 40 pounds. Classification: NAICS 11233, turkey production (SIC 0253, turkey and turkey eggs).
- *Hens that lay shell eggs*, including eggs that are sold for human consumption and eggs that are produced for hatching purposes. Classification: NAICS 11231, Chicken egg production (SIC 0252, chicken eggs) and NAICS 11234, poultry hatcheries (SIC 0254, poultry hatcheries).

Animal feeding operations in this sector that may be affected by today's proposed regulations include facilities that confine animals. Information on the types of facilities in this sector that may be covered by the proposed regulations is provided in Section VII.

In 1997, the USDA reports that there were 34,860 broiler operations that raised a total of 1.9 billion broilers during the year. There were also 13,720 turkey operations raising a total 112.8 million turkeys. Operations with egg layers and pullets totaled 75,170 with an average annual inventory of 393 million egg layers on-site. (See Table 6-1). Not all of these operations would be subject to the proposed regulations.

Under the two-tier structure, EPA estimates that there are 9,780 broiler operations, 1,280 turkey operations and 1,640 egg laying and pullet operations that have more than 500 AU (i.e., operations with more than 50,000 chickens and more than 27,500 turkeys). Under the three-tier

structure, EPA estimates that 13,740 broiler operations, 2,060 turkey operations and 2,010 egg laying operations with more than 300 AU (i.e., operations with more than 30,000 chickens and more than 16,500 turkeys) would meet the "risk-based" conditions described in Section VII and thus require a permit.

EPA expects few, if any, poultry AFOs with fewer than 500 AU will be subject to the revised requirements. As shown in Table 6-1, most poultry operations have fewer than 500 AU. Under the two-tier structure, EPA expects that designation of broiler operations with fewer than 50,000 chickens will be limited to two broiler and two egg operations being designated annually, or a total of 40 poultry operations over a 10-year period. EPA expects that no turkey operations would be designated as CAFOs and subject to the proposed regulations. EPA expects that no confinement poultry operations will be designated as CAFOs under the proposed requirements under the three-tier structure.

Overall, most poultry production is concentrated in the Southeast and in key Midwestern states. As in the pork sector, the Southeast offers advantages such as lower labor, land, and energy costs; proximity to end markets; and milder weather, which contributes to greater feed efficiency. Nearly 60 percent of all broiler production is concentrated among the top five producing states, including Georgia, Arkansas, Alabama, Mississippi, and North Carolina. The top five turkey producing states also account for about 60 percent of all turkeys sold commercially. These include North Carolina, Minnesota, Virginia, Arkansas, and California. Missouri and Texas are also major broiler and turkey producing states. The top five states for egg production account for more than 40 percent of all egg production, including Ohio, California, Pennsylvania, Indiana, and Iowa. Other major egg producing states include Georgia, Texas, Arkansas, and North Carolina.

The number of operations in each of the poultry sectors has been declining while production has continued to rise. USDA reports that while the number of both turkey and broiler operations decreased by about 10,000 operations between 1982 and 1997, the number of animals sold for slaughter rose nearly twofold: the number of broilers sold rose from 3.5 billion to 6.7 billion and the number of turkeys sold rose from 167.5 million to 299.5 million. During the same period, the number of egg operations dropped nearly two-thirds (from 215,800 operations in 1982), while the number of eggs produced annually has increased from 5.8 billion dozen to 6.2 billion dozen. Increased production from fewer operations is due to expanded production from the remaining operations. This is attributable to increases in the average number of animals raised at these operations as well as substantial gains in production efficiency and more rapid turnover, which has allowed operators to produce more with fewer animals. Data from USDA indicate that average inventory size on poultry operations increased twofold on broiler operations and rose threefold at layer and turkey operations between 1982 and 1997. (Additional data on these trends are provided in Section IV.C). As in other sectors, larger operations control most animal inventories and sales.

The poultry industry is characterized by increasing integration and coordination between the animal production facility and the processing sector. Vertical integration has progressed to the point

where large multifunction producer-packer-processor-distributor firms are the dominant force in poultry meat and egg production and marketing. Coordination through production contracting now dominates the poultry industry. Today's integrators are subsidiaries of feed companies, independent processors, cooperatives, meat packers, or retailers, or affiliates of conglomerate corporations. These firms may own and/or direct the entire process from the production of hatching eggs to the merchandising of ready-to-eat-sized poultry portions to restaurants.

Production contracting in the poultry sector differs from that in the other livestock sectors since it is dominated by near vertical integration between a farmer ("grower") and a processing firm ("integrator"). Information from USDA on animal ownership at U.S. farms provides an indication of the potential degree of processor control in this sector. Data from USDA indicate production contracting accounted for virtually all (98 percent) of U.S. broiler production in 1997. This indicates that nearly all broiler production may be under the ownership or control of processing firms that are affiliated with broiler operations. Production contracting accounts for a relatively smaller share of turkey and egg production, accounting for 70 percent and 37 percent, respectively.

Businesses that contract out the growing or finishing phase of production to an AFO may also be affected by the proposed co-permitting requirements. Affected businesses may include other animal feeding operations as well as processing sector firms. Poultry processing facilities are classified under NAICS 311615, poultry processing, and NAICS 311999, all other miscellaneous (SIC 2015, poultry slaughtering facilities). The Department of Commerce reports that there were a total of 558 poultry and egg slaughtering and processing facilities in 1997. Of these, Department of Commerce's 1997 product class specialization for poultry identifies 212 establishments that process young chickens, 15 that process hens or fowl, and 39 that process turkeys (rounded to the nearest ten). These data generally account for larger processing facilities that have more than 20 employees. EPA believes that processing firms that may be affected by the proposed co-permitting requirements will mostly be larger facilities that have the administrative and production capacity to take advantage of various contract mechanisms. Section 2 of the *Economic Analysis* provides additional information on the basis for EPA's estimate of potential co-permittees. EPA is seeking comment on this assumption as part of today's notice of the proposed rulemaking.

Using these Department of Commerce data, EPA estimates that about 270 companies engaged in poultry slaughtering may be subject to the proposed co-permitting requirements. This estimate does not include egg processors under NAICS 311999 because these operations are considered to be further up the marketing chain and likely do not contract out to CAFOs.

2. Farm Production and Waste Management Practices

There are two types of basic poultry confinement facilities—those that are used to raise turkeys and broilers for meat and those that are used to house layers. Broilers and young turkeys are grown on floors on beds of litter shavings, sawdust, or peanut hulls; layers are confined to cages. Broilers are

reared in houses where an absorbent bedding material such as wood shavings or peanut hulls are placed on the floor at a depth of several inches. Breeder houses contain additional rows of slats for birds to roost. Broilers may also be provided supplementary heat during the early phases of growth. Turkeys as well as some pullets and layers are produced in a similar fashion. Pullets or chickens that are not yet of egg laying age are raised in houses on litter, or in cages. Most commercial layer facilities employ cages to house the birds, although smaller laying facilities and facilities dedicated to specialty eggs such as brown eggs or free range eggs may use pastures or houses with bedded floors. Layer cages are suspended over a bottom story in a high-rise house, or over a belt or scrape gutter. The gutter may be a shallow sloped pit, in which case water is used to flush the wastes to a lagoon. Flush systems are more likely to be found at smaller facilities in the South.

Poultry waste includes manure, poultry mortalities, litter, spilt water, waste feed, egg wash water, and also flush water at operations with liquid manure systems. Manure from broiler, breeder, some pullet operations, and turkey operations is allowed to accumulate on the floor where it is mixed with the litter. In the chicken houses, litter close to drinking water access forms a cake that is removed between flocks. The rest of the litter pack generally has low moisture content and is removed every 6 months to 2 years, or between flocks to prevent disease. This whole house clean-out may also require storage, depending on the time of year it occurs. The litter is stored in temporary field stacks, in covered piles, or in stacks within a roofed facility to help keep it dry. Commonly, treatment of broiler and turkey litter includes composting which stabilizes the litter into a relatively odorless material and which increases the market value of the litter. Proper composting raises the temperature within the litter such that pathogens are reduced, allowing reuse of the litter in the poultry house.

The majority of egg laying operations also use dry manure handling. Laying hens are kept in cages and the manure drops below the cages in both dry and liquid manure handling systems. Most of the dry manure laying operations are constructed as high rise houses where the birds are kept on the second floor and the manure drops to the first floor sometimes referred to as the pit. Ventilation flows through the house from the roof down over the birds and into the pit over the manure before it is forced out through the sides of the house. The ventilation drys the manure as it piles up into cones. Manure can be stored in high rise houses for up to a year before requiring removal. In dry layer houses with belts, the manure that drops below the cage collects on belts and is transported to a separate covered storage area. Layer houses with liquid systems use either a shallow pit or alleyway located beneath the cages for flushing. Flushed wastes are pumped to a lagoon.

Because of the large number of routine mortalities associated with large poultry operations, the disposal of dead birds is occasionally a resource concern. Poultry facilities must have adequate means for disposal of dead birds in a sanitary manner. To prevent the spread of disease, dead birds are usually collected daily. Disposal alternatives include incineration, rendering, composting, and in-ground burial or burial in disposal tanks. Much of the waste from poultry facilities is land applied.

Additional information on the types of farm production and waste management practices is provided in the *Development Document*.

VII. What Changes to the NPDES CAFO Regulations Are Being Proposed?

A. Summary of Proposed NPDES Regulations

EPA is co-proposing, for public comment, two alternative ways to structure the NPDES regulation for defining which AFOs are CAFOs. Both structures represent significant improvements to the existing regulation and offer increased environmental protection. The first alternative proposal is a "two-tier structure," and the second is a "three-tier structure." Owners or operators of all facilities that are defined as CAFOs in today's proposal, under either alternative, would be required to apply for an NPDES permit.

In the first co-proposed alternative, EPA is proposing to replace the current three-tier structure in 40 CFR 122.23 with a two-tier structure. See proposed §122.23(a)(3) for the two-tier structure, included at the end of this preamble. All AFOs with 500 or more animal units would be defined as CAFOs, and those with fewer than 500 animal units would be CAFOs only if they are designated as such by EPA or the State NPDES permit authority.

In the second co-proposed alternative, EPA is proposing to retain the current three-tier structure. All AFOs with 1,000 or more animal units would be defined as CAFOs, and those with less than 300 animals units would be CAFOs only if they are designated by EPA or the State NPDES permit authority. Those with 300 to 1,000 animal units would be CAFOs if they meet one or more of several specific conditions, and today's proposal would revise the existing conditions. These facilities could also be designated as CAFOs if they are found to be significant contributors of pollutants to waters of the United States. Further, all AFOs between 300 and 1,000 animal units would be required to certify to the permit authority that they do not meet any of the conditions. Those facilities unable to certify would be required to apply for a permit.

These regulatory alternatives are two of six different approaches that the Agency considered. Two of the approaches are also being seriously considered, but are not being proposed in today's action because they have not been fully analyzed. However, EPA is soliciting public comment on these two alternatives. One of the alternatives is a two-tier structure, similar to what is being proposed today, but would establish a threshold at the equivalent of 750 AU. The other alternative under consideration is a three-tier structure, with different certification and permitting requirements for facilities in the 300 AU to 1,000 AU tier. These alternatives are described in more detail in Section VII.B.5. After reviewing public comment, EPA may decide to pursue either of these alternatives.