

Table 11-3. Air Emissions and Energy Use for Swine Operations under the Two-Tier Structure (≥ 500 AU)

NWQI	Baseline	Regulatory Option								
		Option 1	Option 2	Option 3	Option 4	Option 5A	Option 5B	Option 6	Option 7	
Air Emissions										
Methane (CH ₄) (Gg/yr)	281	281	281	281	281	281	281	188	164	281
Carbon Dioxide (CO ₂) (Gg/yr)	120	120	120	120	120	120	120	80	73	120
Nitrous Oxide (N ₂ O) (Gg/yr)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5
Ammonia (NH ₃) (1000 Tons/yr)	128	128	128	128	128	128	128	93	126	135
Hydrogen Sulfide (H ₂ S) (1000 Tons/yr)	70	70	70	70	70	70	70	12	0	101
Volatile Organic Compounds (VOCs) (Tons/yr)	NC	Baseline + 12	Baseline + 31	Baseline + 31	Baseline + 31	Baseline + 31	Baseline + 31	Baseline + 16	Baseline + 11	Baseline + 31
Nitrogen Oxides (Tons/yr)	NC	Baseline + 43	Baseline + 115	Baseline + 115	Baseline + 115	Baseline + 115	Baseline + 115	Baseline + 63	Baseline + 9,600	Baseline + 115
Particulate Matter (PM) (Tons/yr)	NC	Baseline + 0.9	Baseline + 2	Baseline + 2	Baseline + 2	Baseline + 2	Baseline + 2	Baseline + 1	Baseline + 1	Baseline + 2
Carbon Monoxide (CO) (Tons/yr)	NC	Baseline + 130	Baseline + 360	Baseline + 360	Baseline + 360	Baseline + 360	Baseline + 360	Baseline + 200	Baseline + 130	Baseline + 360
Sulfur Oxides (1000 Tons/yr)	NC	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline + 37	Baseline
Energy Usage										
Electricity Usage (1000 kW-hr/yr)	NC	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline + (848,900)	Baseline
Fuel Usage (1000 Gallons/yr)	NC	Baseline + 65	Baseline + 121	Baseline + 121	Baseline + 121	Baseline + 121	Baseline + 121	Baseline + 4	Baseline + 45	Baseline + 121

Table 11-5. Air Emissions and Energy Use for Beef Operations Under the Three-Tier Structure (Includes Heifers)

NWQI	Baseline	Regulatory Option							
		Option 1	Option 2	Option 3	Option 4	Option 5A	Option 5B	Option 6	Option 7
Air Emissions									
Methane (CH ₄) (Gg/yr)	70.20	67.32	67.32	67.32	67.32		90.52	67.32	67.32
Carbon Dioxide (CO ₂) (Gg/yr)	30.08	28.85	28.85	28.85	28.85		38.79	28.85	28.85
Nitrous Oxide (N ₂ O) (Gg/yr)	32.55	32.54	32.54	32.54	32.54		47.56	32.54	32.54
Total Kjeldahl Nitrogen (TKN) (Tons/yr)	660580	657464	653382	653382	653382		653382	653382	649063
Ammonia (NH ₃) (Tons/yr)	562404	563461	563461	563461	563461		872675	563461	550052
Volatile Organic Compounds (VOCs) (Tons/yr)	NC	Baseline + 234	Baseline + 282	Baseline + 282	Baseline + 282		Baseline + 74	Baseline + 282	Baseline + 282
Nitrogen Oxides (NOx) (Tons/yr)	NC	Baseline + 901	Baseline + 1086	Baseline + 1086	Baseline + 1086		Baseline + 286	Baseline + 1086	Baseline + 1086
Particulate Matter (PM) (Tons/yr)	NC	Baseline + 18	Baseline + 22	Baseline + 22	Baseline + 22		Baseline + 6	Baseline + 22	Baseline + 22
Carbon Monoxide (CO) (Tons/yr)	NC	Baseline + 2794	Baseline + 3367	Baseline + 3367	Baseline + 3367		Baseline + 889	Baseline + 3367	Baseline + 3367
Energy Usage									
Electricity Usage (kW-hr/yr)	NC	Baseline + 26801558	Baseline + 21706406	Baseline + 21706406	Baseline + 21706406		Baseline + 21706406	Baseline + 21706406	Baseline + 21706406
Fuel Usage (gallons/yr)	NC	Baseline + 1909749	Baseline + 2300912	Baseline + 2300970	Baseline + 2300970		Baseline + 409593	Baseline + 2300996	Baseline + 2300912

Table 11-6. Air Emissions and Energy Use for Dairy Operations Under the Three-Tier Structure

NWQI	Baseline	Regulatory Option							
		Option 1	Option 2	Option 3	Option 4	Option 5A	Option 5B	Option 6	Option 7
Air Emissions									
Methane (CH ₄) (Gg/yr)	213.87	136.19	136.19	136.19	136.19	136.19	161.64	11.12	136.19
Carbon Dioxide (CO ₂) (Gg/yr)	91.66	58.37	58.37	58.37	58.37	58.37	69.27	1290	58.37
Nitrous Oxide (N ₂ O) (Gg/yr)	4.17	7.56	7.56	7.56	7.56	7.56	23.07	7.56	7.56
Total Kjeldahl Nitrogen (TKN) (Tons/yr)	159703	153360	151810	151810	151810	151810	151810	151810	151810
Ammonia (NH ₃) (Tons/yr)	218368	221407	221407	221407	221407	221407	258543	207969	218397
Volatile Organic Compounds (VOCs) (Tons/yr)	NC	Baseline + 211	Baseline + 178	Baseline + 178	Baseline + 178	Baseline + 178	Baseline + 192	Baseline + 242	Baseline + 178
Nitrogen Oxides (NOx) (Tons/yr)	NC	Baseline + 811	Baseline + 691	Baseline + 691	Baseline + 691	Baseline + 691	Baseline + 741	Baseline + 4377	Baseline + 691
Particulate Matter (PM) (Tons/yr)	NC	Baseline + 16	Baseline + 14	Baseline + 14	Baseline + 14	Baseline + 14	Baseline + 15	Baseline + 14	Baseline + 14
Carbon Monoxide (CO) (Tons/yr)	NC	Baseline + 2516	Baseline + 2143	Baseline + 2143	Baseline + 2143	Baseline + 2143	Baseline + 2296	Baseline + 2647	Baseline + 2143
Energy Usage									
Electricity Usage (kW-hr/yr)	NC	Baseline + 11074220	Baseline + 16066951	Baseline + 16066951	Baseline + 16066951	Baseline + 16066951	Baseline + 16066951	Baseline + (1,139,200,000)	Baseline + 16066951
Fuel Usage (Gallons/yr)	NC	Baseline + 17192511	Baseline + 1464917	Baseline + 1464917	Baseline + 1464917	Baseline + 1464917	Baseline + 1477361	Baseline + 1440274	Baseline + 1464917

Table 11-7. Air Emissions and Energy Use for Swine Operations Under the Three-Tier Structure

NWQI	Baseline	Regulatory Option							
		Option 1	Option 2	Option 3	Option 4	Option 5A	Option 5B	Option 6	Option 7
Air Emissions									
Methane (CH ₄) (Gg/yr)	256.32	256.32	256.32	256.32	256.32	100.84	167.74	139.59	256.32
Carbon Dioxide (CO ₂) (Gg/yr)	109.85	109.85	109.85	109.85	109.85	141.79	71.89	62.90	109.85
Nitrous Oxide (N ₂ O) (Gg/yr)	0.46	0.46	0.46	0.46	0.46	0.28	0.46	0.32	0.46
Total Kjeldahl Nitrogen (TKN) (Tons/yr)	57143	56753	56663	56663	56663	56831	23779	41891	56663
Ammonia (NH ₃) (Tons/yr)	115346	115346	115346	115346	115346	101312	82276	115346	122363
Hydrogen Sulfide (H ₂ S) (Tons/yr)	64511	64511	64511	64511	64511	0	10570	0	93477
Volatile Organic Compounds (VOCs) (Tons/yr)	NC	Baseline + 11	Baseline + 28	Baseline + 28	Baseline + 28	Baseline + 28	Baseline + 16	Baseline + 11	Baseline + 28
Nitrogen Oxides (NO _x -N) (Tons/yr)	NC	Baseline + 42	Baseline + 109	Baseline + 109	Baseline + 109	Baseline + 14143	Baseline + 61	Baseline + 9554	Baseline + 109
Particulate Matter (PM) (Tons/yr)	NC	Baseline + 0.88	Baseline + 2	Baseline + 2	Baseline + 2	Baseline + 2	Baseline + 1	Baseline + 0.84	Baseline + 2
Carbon Monoxide (CO) (Tons/yr)	NC	Baseline + 129	Baseline + 338	Baseline + 338	Baseline + 338	Baseline + 338	Baseline + 189	Baseline + 126	Baseline + 338
Sulfur Oxides (Sox-S) (Tons/yr)	NC	Baseline	Baseline	Baseline	Baseline	Baseline + 54525	Baseline	Baseline + 36961	Baseline
Energy Usage									
Electricity Usage (kW-hr/yr)	NC	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline + (848,900,000)	Baseline
Fuel Usage (Gallons/yr)	NC	Baseline + 61940	Baseline + 111033	Baseline + 111033	Baseline + 111033	Baseline + 110122	Baseline + 3577	Baseline + 41082	Baseline + 111033

Table 11-8. Air Emissions and Energy Use for Poultry Operations Under the Three-Tier Structure

NWQI	Baseline	Regulatory Option							
		Option 1	Option 2	Option 3	Option 4	Option 5A	Option 5B	Option 6	Option 7
Air Emissions									
Methane (CH ₄) (Gg/yr)	67.19	67.19	67.19	67.19	67.19	25.79	26.63	67.19	67.19
Carbon Dioxide (CO ₂) (Gg/yr)	28.79	28.79	28.79	28.79	28.79	239.24	11.41	28.79	28.79
Nitrous Oxide (N ₂ O) (Gg/yr)	16.30	16.30	16.30	16.30	16.30	16.27	16.80	16.30	16.30
Total Kjeldahl Nitrogen (TKN) (Tons/yr)	341627	340325	329444	329444	329444	329444	45285	329444	329444
Ammonia (NH ₃) (Tons/yr)	16507	16507	16507	16507	16507	14191	14485	16507	18003
Volatile Organic Compounds (VOCs) (Tons/yr)	NC	Baseline + 3	Baseline + 7	Baseline + 7	Baseline + 7	Baseline + 7	Baseline + 7	Baseline + 7	Baseline + 7
Nitrogen Oxides (NO _x -N) (Tons/yr)	NC	Baseline + 10	Baseline + 27	Baseline + 27	Baseline + 27	Baseline + 2343	Baseline + 27	Baseline + 27	Baseline + 27
Particulate Matter (PM) (Tons/yr)	NC	Baseline + 0.21	Baseline + 1	Baseline + 1	Baseline + 1	Baseline + 1	Baseline + 1	Baseline + 1	Baseline + 1
Carbon Monoxide (CO) (Tons/yr)	NC	Baseline + 32	Baseline + 82	Baseline + 82	Baseline + 82	Baseline + 82	Baseline + 82	Baseline + 82	Baseline + 82
Energy Usage									
Electricity Usage (kW-hr/yr)	NC	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline
Fuel Usage (Gallons/yr)	NC	Baseline + 314265	Baseline + 893365	Baseline + 893365	Baseline + 893365	Baseline + 893365	Baseline + 893365	Baseline + 893365	Baseline + 893365

3. Energy Impacts

The proposed regulatory options may result in increased energy use for operations that currently do not capture their runoff or other process wastewater. These operations would need to capture the feedlot runoff, divert it to a waste management system, and use this wastewater for irrigation or dispose of it by some alternative means.

For the land application areas, the proposed regulatory options assume all CAFOs will apply their manure and wastewater using agricultural application rates. In many instances this means that facilities would have to limit the amount of manure applied to the land which may result in decreased energy usage at the CAFO. However, total energy requirements for land application increase under all options due to the increased transportation of waste off-site. Additional energy is also required to operate composting equipment, and at swine CAFOs to operate recirculating pumps to reuse lagoon effluent as flush water.

Option 6 includes the use of anaerobic digesters with energy recovery to manage animal waste for large dairy and swine operations. Digesters require a continuous input of energy to operate the holding tank mixer and an engine to convert captured methane into energy. The energy required to continuously operate these devices, as well as the amount of energy generated by the system, have been determined from the FarmWare model, which was also used for estimating compliance costs. Under Option 6, EPA anticipates a net decrease in electricity use due to the energy savings from methane recovery.

B. Quantitative and Monetized Benefits

In addition to costs and impacts, EPA also estimated the environmental and human health benefits of today's proposed requirements. Benefits identified as a result of this proposed rule are associated with improvements in water quality.

EPA is not currently able to evaluate all human health and ecosystem benefits associated with water quality improvements quantitatively. EPA is even more limited in its ability to assign monetary values to these benefits. The economic benefit values described below and in the "Environmental and Economic Benefits of the NPDES/ELG CAFO Rules" (Benefit Report) should be considered a subset of the total benefits of this rule and should be evaluated along with descriptive assessments of benefits and the acknowledgment that even these may fall short of the real-world benefits that may result from this rule. For example, the economic valuation considers the effects of nitrogen, phosphorous, pathogens and sediment but does not evaluate the economic impacts of metals or hormones which can produce significant adverse environmental impacts.

Within these confines, EPA analyzed the effects of current water discharges and assessed the benefits of reductions in these discharges resulting from this proposed regulation. The CAFO industry waste effluents contain pollutants that, when discharged into freshwater and estuarine ecosystems, may alter aquatic habitats, affect aquatic life, and adversely affect human health.

For this proposed rule, EPA conducted four benefit studies to

estimate the impacts of controlling CAFO manure. The first study is a national water quality model (National Water Pollution Control Assessment Model) that estimates runoff from land application areas to rivers, streams, lakes and impoundments in the U.S. This study estimates the value society places in improvements in surface water quality associated with the different regulatory scenarios. Another study examines the expected improvements in shellfish harvesting as a result of CAFO regulation. A third study looks at incidences of fish kills that are attributed to animal feeding operations and estimates the cost of replacing the lost fish stocks. A fourth study estimates the benefits associated with reduced groundwater contamination. Each of these studies is described below.

1. Benefit Scenarios

There are eight benefit scenarios under consideration, four scenarios (1, 2/3, 4a and 4b) using a nitrogen application rate and the same 4 scenarios using a phosphorus application rate. Scenarios 1 2/3 have a three-tiered structure similar to the current rule. Tier 1 is 1,000 AU and greater; Tier 2 is 300—999 AU; Tier 3 is less than 300 AU. Scenarios 4a and 4b have a two-tiered structure. Under Scenario 4a, Tier 1 is 500 AU and greater; Tier 2 is less than 500 AU. Under Scenario 4b, Tier 1 is 300 AU and greater; Tier 2 is less than 300 AU. EPA is co-proposing a two-tier and a three-tier structure (phosphorus—Scenario 2/3 and Phosphorus—Scenario 4a). Table 11-9 summarizes the regulatory scenarios considered in the benefits analysis.

TABLE 11-9.—REGULATORY SCENARIOS CONSIDERED IN THE BENEFITS ANALYSIS

Regulatory scenario	NPDES revisions	Effluent guidelines revisions
Baseline	CAFOs include any AFO with over 1,000 AUs, as well as AFOs with 300 or more AUs that meet certain requirements.	Manure application not regulated.
Nitrogen—Scenario 1	Baseline scenario plus dry poultry and immature swine and heifer operations.	Nitrogen-based manure application.
Nitrogen—Scenario 2/3	New NPDES conditions for identifying CAFOs among AFOs with 300–1000 AUs, plus dry poultry and immature swine and heifer operations.	Nitrogen-based manure application.
Nitrogen—Scenario 4a	CAFOs include all AFOs with 500 or more AUs, plus dry poultry, immature swine and heifer manure operations.	Nitrogen-based manure application.
Nitrogen—Scenario 4b	CAFOs include all AFOs with 300 or more AUs, plus dry poultry, immature swine and heifer operations.	Nitrogen-based manure application.
Phosphorus Scenario 1	Baseline scenario plus dry poultry and immature swine and heifer operations.	Phosphorus-based manure application.
Phosphorus Scenario 2/3*	New NPDES conditions for identifying CAFOs among AFOs with 300–1000 AUs, plus dry poultry and immature swine and heifer operations.	Phosphorus-based manure application.
Phosphorus Scenario 4a*	CAFOs include all AFOs with 500 or more AUs, plus dry poultry, immature swine and heifer operations.	Phosphorus-based manure application.

TABLE 11-9.—REGULATORY SCENARIOS CONSIDERED IN THE BENEFITS ANALYSIS—Continued

Regulatory scenario	NPDES revisions	Effluent guidelines revisions
Phosphorus Scenario 4b	CAFOs include all AFOs with 300 or more AUs, plus dry poultry, immature swine and heifer operations.	Phosphorus-based manure application.

*Proposed scenarios.

EPA has developed a model facility analysis to assess changes in pollutant loadings under baseline conditions and proposed regulatory scenarios. First, the analysis disaggregates the universe of AFOs according to a suite of characteristics directly affecting manure generation, manure management, and pollutant loadings. AFOs are then grouped into five geographic regions. Within each geographic region, EPA defines model facilities by production sector, subsector, and size (number of animals).

EPA then calculates manure production and the associated production of pollutants for each model facility. EPA multiplies the number of animal units per model facility by the manure production per animal unit to determine total manure production. EPA then calculates total generation of nutrients based on the typical pollutant concentrations per unit of recoverable manure for each animal type.

The core modeling analysis focuses on land application practices for each model facility and the capacity for soil and crop removal of nutrients applied to the land.¹ EPA divides the total nitrogen and phosphorus generated in manure by the average total acreage available for land application for an operation in the given region, size class, and production sector. The ratio of nutrients applied to crop nutrient requirements provides a measure of the excess nutrients applied in the manure. This in turn forms the foundation for loadings analyses of regulatory scenarios that call for adherence to agronomic rates of nutrient application.

EPA models “edge-of-field” loadings (i.e., pollutant loadings at the boundary of the model facility) using the Groundwater Loading Effects of Agricultural Management Systems (GLEAMS) model. This field-scale model simulates hydrologic transport,

erosion, and biochemical processes such as chemical transformation and plant uptake. The model uses information on soil characteristics and climate, along with nutrient production data, to model losses of nutrients in surface runoff, sediment, and groundwater leachate. Loadings are modeled for the pre- and post-regulatory scenarios to estimate changes in loadings attributable to the proposed standards.

Finally, EPA extrapolates from the model facilities to develop national estimates of baseline and post-regulatory pollutant loadings from AFOs. Using the USDA Census of Agriculture, EPA determines the number of operations that raise animals under confinement. Then, EPA determines the number of CAFOs based on operations that are defined as CAFOs and smaller operations that are designated as CAFOs based on site-specific conditions, as established by the permitting authority. Finally, AFOs and CAFOs by region are placed into counties (and eventually watersheds) using published county level Census data. Therefore, the end product of the GLEAMS modeling is a spatial distribution of aggregated edge-of-field loadings that can be used in the water quality modeling and benefits monetization process described below.

National Surface Water Pollution Study. The National Water Pollution Control Assessment Model (NWPCAM) was employed to estimate national economic benefits to surface water quality resulting from implementation of various scenarios for regulating CAFOs. NWPCAM is a national-scale water quality model for simulating the water quality and economic benefits that can result from various water pollution control policies. NWPCAM is designed to characterize water quality for the Nation’s network of rivers and streams, and, to a more limited extent,

its lakes. Using GLEAMS output data, NWPCAM is able to translate spatially varying water quality changes resulting from different pollution control policies into terms that reflect the value individuals place on water quality improvements. In this way, NWPCAM is capable of deriving economic benefit estimates for scenarios for regulating CAFOs.

NWPCAM estimates pollutant loadings to the stream (nitrogen, phosphorous, metals, pathogens and sediment) for each regulatory scenario. These loadings by scenario (NWPCAM output) are used as input to the other studies. Thus, all stream loading estimates are derived from NWPCAM.

1. NWPCAM Loading reductions

Table 11-10 shows the estimated pollutant reduction for nitrogen, phosphorus, fecal coliform, fecal streptococci, and sediment for each of the five NPDES regulatory scenarios based on either nitrogen or phosphorus manure land application. Nitrogen reductions range from 14 million to 33 million kgs per year; phosphorus ranges from 35 million to 59 million kgs per year; fecal coliform from 26 billion to 38 billion colonies per year; fecal streptococci from 37 to 65 billion colonies per year; and sediment from 0 kgs to 38 million kgs per year.

The proposed Phosphorus—Scenario 2/3 shows a reduction of 30 M kg (66M lbs) of nitrogen, 54M kg (119M lbs) of phosphorus, 34 billion colonies of fecal coliform, 60 billion colonies of fecal strep, and 35B kg (77B lbs) of sediment. Phosphorus—Scenario 4a shows a reduction of 29 million kg (64M lbs) of nitrogen, 52 million kg (115 M lbs) of phosphorus, 32 billion and 58 billion colonies of fecal coliform and fecal streptococci, respectively and 34 billion kg (75B lbs) of sediment to our nation’s waters each year.

¹ In addition to modeling loadings based on manure application, EPA develops two

complementary analyses to examine loadings from storage structures and feedlots.

TABLE 11-10.—POLLUTANT REDUCTION BASED ON NITROGEN OR PHOSPHORUS MANURE APPLICATION RATES BY NPDES SCENARIO

	Nitrogen (million kg)	Phosphorus (million kg)	Fecal Coliform (billion colonies)	Fecal Strep (billion colonies)	Sediment (billion kg)
Nitrogen—Scenario 1	14	35	26	37	0
Nitrogen—Scenario 2/3	16	45	31	45	0
Nitrogen—Scenario 4a	15	42	29	44	0
Nitrogen—Scenario 4b	18	48	34	47	0
Phosphorus—Scenario 1	25	42	29	50	26
Phosphorus—Scenario 2/3*	30	54	34	60	35
Phosphorus—Scenario 4a*	29	52	32	58	34
Phosphorus—Scenario 4b	33	59	38	65	38

*proposed scenarios.

In addition, EPA estimated loadings reductions to surface waters for various metals found in manure: zinc, copper, cadmium, nickel and lead. The range of loadings reductions is shown in Table 11-11.

TABLE 11-11.—RANGE OF METAL LOADING REDUCTIONS ACROSS SCENARIOS

Metal	low (kg)	high (kg)
Zinc	10 M	19 M
Copper	546 K	1,051 K
Cadmium	23 K	39 K
Nickel	219 K	418 K
Lead	395 K	777 K

Table 11-12 is a list of metals and load reductions per year for the proposed scenarios.

TABLE 11-12.—METAL LOADING REDUCTIONS FOR SCENARIO 2/3—SCENARIO 4A

Metal	Kilograms*
Zinc	18 million/17 million.
Copper	1 million/895 thousand.
Cadmium	37 thousand/35 thousand.
Nickel	400 thousand/345 thousand.
Lead	740/690 thousand.

*rounded to the nearest 10.

The methods used to develop these loading reduction estimates are outlined in detail in the Environmental and Economic Benefits of the NPDES/ELG CAFO Rules.

2. Monetized Benefits

a. National Water Pollution Control Assessment Model (NWPCAM).

Economic benefits associated with the various AFO/CAFO scenarios are based on changes in water quality use-support (i.e., boatable, fishable, swimmable) and the population benefitting from the changes. Benefits are calculated state-by-state at the State (local) scale as well as at the national level. For each State, benefits at the local-scale represent the value that the State population is willing to pay for improvements to waters within the State or adjoining the State. For each State, benefits at the

national-scale represent the value that the State population is willing to pay for improvements to waters in all other states in the continental United States.

Based on the NWPCAM analysis, the total national willingness-to-pay (WTP) benefits at the local-scale for all water quality use-supports ranged from approximately \$4.3 million (1999 dollars) for the least stringent scenario to \$122.1 million for the most stringent scenario. The total national WTP benefits at the national-scale for all water quality use-supports ranged from approximately \$0.4 million (1999 dollars) for the least stringent scenario to \$22.7 million for the most stringent scenario. Total WTP benefits (i.e., sum of local-scale and national-scale) for all water quality use-supports ranged from approximately \$4.9 million (1999 dollars) for the least stringent scenario

to \$145 million for the most stringent scenario.

Table 11-13 summarizes the resulting estimates of economic benefits for each of the six regulatory scenarios analyzed. EPA estimates that the annual benefits of Phosphorus—Scenario 2/3 is approximately \$127 million per year; for Phosphorus—Scenario 4a is \$108 million per year.

TABLE 11-13.—ECONOMIC BENEFIT OF ESTIMATED IMPROVEMENTS IN SURFACE WATER QUALITY [In millions of 1999 dollars]

Regulatory scenario	Annual benefits
Nitrogen—Scenario 1	\$4.9
Nitrogen—Scenario 2/3	6.3
Nitrogen—Scenario 4a	5.5

TABLE 11–13.—ECONOMIC BENEFIT OF ESTIMATED IMPROVEMENTS IN SURFACE WATER QUALITY—Continued

[In millions of 1999 dollars]

Regulatory scenario	Annual benefits
Nitrogen—Scenario 4b	7.2
Phosphorus—Scenario 1	87.6
Phosphorus—Scenario 2/3*	127.1
Phosphorus—Scenario 4a*	108.5
Phosphorus—Scenario 4b	145.0

*Proposed scenarios.

b. *Shellfish Beds.* Pathogen contamination of coastal waters is a leading cause of shellfish bed harvest restrictions and closures. Sources of pathogens include runoff from agricultural land and activities. Using *The 1995 National Shellfish Register of Classified Growing Waters* (shellfish register) published by the National Oceanic and Atmospheric Administration (NOAA), EPA estimated the possible improvements to shellfish bed harvesting due to expected pathogen reductions of each regulatory scenario.

First, EPA characterized the baseline annual shellfish bed loadings. Then, EPA estimated the area of shellfish-growing waters for which current loadings are harvested. For the third step, EPA calculated the average annual per-acre yield of shellfish from harvested waters. Next, EPA estimated the area of shellfish-growing waters that are currently unharvested as a result of pollution from AFOs. From this, EPA calculated the potential harvest of shellfish from waters that are currently unharvested as a result of pollution from AFOs. Estimates for all scenarios range from \$1.8 million to \$2.9 million. Phosphorus—Scenario 3 is \$2.7 million and Phosphorus—Scenario 4a is \$2.4 million.

c. *Fishkills.* Episodic fish kill events resulting from spills, manure runoff, and other discharges of manure from animal waste feeding operations continue to remain a serious problem in the United States. The impacts from these incidents range from immediate and dramatic kill events to less dramatic but more widespread events. Manure dumped into and along the West Branch of the Pecatonica River in Wisconsin resulted in a complete kill of smallmouth bass, catfish, forage fish, and all but the hardiest insects in a 13 mile stretch of the river. Less immediate catastrophic impacts on water quality from manure runoff, but equally important, are increased algae growth or algae blooms which remove oxygen

from the water and may result in the death of fish. Manure runoff into a shallow lake in Arkansas resulted in a heavy algae bloom which depleted the lake of oxygen, killing many fish.

Fish health and fish kills are an indication of water quality. If fish cannot survive or are sick in their natural habitat then the public may view the water as unsuitable for recreational activities and fish unfit for human consumption. Parts of the Eastern Shore of the United States have been plagued with problems related to pfiesteria, a dinoflagellate algae that exist in rivers at all times, but can transform itself into a toxin that eats fish. Fish attacked by pfiesteria have lesions or large, gaping holes on them as their skin tissue is broken down; the lesions often result in death. The transformation of pfiesteria to the toxic form is believed to be the result of high levels of nutrients. Fish kills related to pfiesteria in the Neuse River in North Carolina have been blamed on the booming hog industry and the associated waste spills and runoff from the hog farms.

There is preliminary evidence that suggests that there are human health problems associated with exposure to pfiesteria. As a result, people most likely would limit or avoid recreational activities in waters with pfiesteria-related fish kills. The town of New Bern, a popular summer vacation spot along the Neuse River in North Carolina, was concerned about a decline in tourism after several major fish kills in the summer of 1995. Not only were fish killed, people became sick after swimming or fishing in the waters. People swimming in the waters reported welts and sores on their body. Summer camps canceled boating classes and children were urged to stay out of the water. Fishing boats were concerned about taking people fishing on the river. People were warned not to eat fish that were diseased or sick. At one point, after seeing miles and miles of dead fish, a top environmental official issued a warning urging people not to swim, fish, or boat in the fish-kill zone. Many blame the heavy rainfall which pumped pollutants from overflowing sewage plants and hog lagoons into the river, creating algae blooms, low oxygen and pfiesteria outbreaks as the cause of the fish kills.

Reports on fish kill events in the United States were collected by the Natural Resources Defense Council and the Izaak Walton League. Nineteen states reported information on historical and current fish kills. Using these data, EPA estimated the benefits related to reduced fish being killed for each

regulatory scenario. At a seven percent discount rate, benefits range from \$2 million to \$42 million. Benefits for Phosphorus—Scenario 3 range from \$2.4 million to \$30.6 million; for Phosphorus—Scenario 4a, from \$2.8 million to \$34.5 million.

d. *Groundwater Contamination.* CAFOs can contaminate groundwater and thereby cause health risks and welfare losses to people relying on groundwater sources for their potable supplies or other uses. Of particular concern are nitrogen and other animal waste-related contaminants (originating from manure and liquid wastes) that leach through the soils and the unsaturated zone and ultimately reach groundwaters. Nitrogen loadings convert to elevated nitrate concentrations at household and community system wells, and elevated nitrate levels in turn pose a risk to human health in households with private wells (nitrate levels in community wells are regulated to protect human health). The proposed regulation will generate benefits by reducing nitrate levels in household wells, and there is clear empirical evidence that households have a positive willingness to pay to reduce nitrate concentrations in their water supplies.

The federal health-based National Primary Drinking Water Standard for nitrate is 10 mg/L, and this Maximum Contaminant Level (MCL) applies to all Community Water Supply systems. Households relying on private wells are not subject to the federal MCL for nitrate but levels above 10 mg/L are considered unsafe for sensitive subpopulations (e.g., infants). Several economic studies indicate a considerable WTP by households to reduce the likelihood of nitrate levels exceeding 10 mg/L (e.g., \$448 per year per household (Poe and Bishop, 1991)). There also is evidence of a positive household WTP to reduce nitrate levels even when baseline concentrations are considerably below the MCL (approximately \$2 per mg/L of reduced nitrate concentration (Crutchfield *et al.*, 1997, De Zoysa, 1995)).

Based on extensive U.S. Geologic Survey (USGS) data on nitrate levels in wells throughout the country, an empirical model was developed to predict how each regulatory option would affect the distribution of nitrate concentrations in household wells. Table 11–14 indicates the number of household wells that are estimated to have baseline (i.e., without regulation) concentrations above 10 mg/L and that will have these concentration reduced to levels below the MCL for each option.

Also shown are the households with predicted nitrate levels that are below the MCL at baseline, but that will experience further reductions in nitrate levels due to the proposed regulation.

TABLE 11-14.—REDUCTION IN HOUSEHOLDS EXCEEDING MCL AND MG/L OF NITRATE IN WELLS

Regulatory Scenario	Reduction, from baseline, in # households exceeding 10 mg/L	Total number of mg/L reduced in wells at 1-10 mg/L baseline
Baseline # of households affected	1,277,137	6,195,332
Nitrogen—Scenario 1	152,204	961,741
Nitrogen—Scenario 2/3	152,204	1,007,611
Nitrogen—Scenario 4a	161,384	1,186,423
Nitrogen—Scenario 4b	161,384	1,186,423
Phos.—Scenario 1	161,384	1,103,166
Phos.—Scenario 2/3*	161,384	1,159,907
Phos.—Scenario 4a*	165,974	1,374,990
Phos.—Scenario 4b	165,974	1,374,990

* Proposed scenarios.

The monetized benefits of these nitrate concentration reductions is estimated to be \$49.4 million per year for Phosphorus—Scenario 2/3, as shown in Table 11-15. The total benefits of this scenario consist of \$47.8 million for the households that have nitrate levels reduced to below the MCL from baseline concentrations above 10 mg/L, plus an

additional \$1.5 million for those households with nitrate reductions relative to baseline levels below the MCL. The monetized benefits of these nitrate concentration reductions is estimated to be \$51.0 million per year for Phosphorus—Scenario 4a. The total benefits of this option consist of \$49.2 million for the households that have

nitrate levels reduced to below the MCL from baseline concentrations above 10 mg/L, plus an additional \$1.7 million for those households with nitrate reductions relative to baseline levels below the MCL. The household benefits of the other options are also shown in the table, and range from \$46.4–\$50.1 million per year.

TABLE 11-15.—ANNUALIZED MONETARY BENEFITS ATTRIBUTABLE TO REDUCED NITRATE CONCENTRATIONS

Regulatory scenario	Total benefits	Benefits from households exceeding MCL at baseline	Benefits from households between 1 and 10 mg/L at baseline
Nitrogen—Scenario 1	\$46,372,457	\$45,118,803	\$1,219,763
Nitrogen—Scenario 2/3	46,432,250	45,118,803	1,276,293
Nitrogen—Scenario 4a	49,386,622	47,840,089	1,498,104
Nitrogen—Scenario 4b	49,386,622	47,840,089	1,498,104
Phosphorus—Scenario 1	49,278,094	47,840,089	1,396,043
Phosphorus—Scenario 2/3*	49,352,058	47,840,089	1,465,648
Phosphorus—Scenario 4a*	50,993,067	49,200,732	1,729,337
Phosphorus—Scenario 4b	50,993,067	49,200,732	1,729,337

* Proposed scenarios.

e. Total Benefit of Proposed Regulatory Scenario. Table 11-16 shows the annualized benefits for each of the studies conducted. Table 11-17 shows the summary of annualized benefits for three discount rates (3, 5, and 7 percent). The total monetized benefits for this proposed rule are, at a minimum, \$163 million for

Phosphorus—Scenario 2/3 and \$146 million for Phosphorus—Scenario 4a, discounted at seven percent. At a three percent discount rate, the annualized benefits for Phosphorus—Scenario 3 are \$180 million and for Phosphorus—Scenario 4a, \$163 million. These represent the lower bound estimates for this analysis. The upper end of the

range would include estimates for drinking water treatment plant cost savings, surface water improvements from nonboatable to boatable water quality conditions, and other benefits that we were unable to estimate at this time. We plan to include some of these monetized benefits in the final rule.

TABLE 11-16.—ESTIMATED ANNUALIZED BENEFITS OF REVISED CAFO REGULATIONS

[1999 dollars, millions]

Regulatory Scenario	Recreational and non-use benefits	Reduced fish kills	Improved shellfishing	Reduced private well contamination
Nitrogen—Scenario 1	4.9	0.1–0.2	0.1–1.8	33.3–49.0
Nitrogen—Scenario 2/3	6.3	0.1–0.3	0.2–2.4	33.3–49.1
Nitrogen—Scenario 4a	5.5	0.1–0.3	0.2–2.2	35.5–52.2
Nitrogen—Scenario 4b	7.2	0.1–0.3	0.2–2.6	35.5–52.2

TABLE 11-16.—ESTIMATED ANNUALIZED BENEFITS OF REVISED CAFO REGULATIONS—Continued
[1999 dollars, millions]

Regulatory Scenario	Recreational and non-use benefits	Reduced fish kills	Improved shellfishing	Reduced private well contamination
Phosphorus—Scebarui 1	87.6	0.2–0.3	0.2–2.1	35.4–52.1
Phosphorus—Scenario 2/3*	127.1	0.2–0.4	0.2–2.7	35.4–52.1
Phosphorus—Scenario 4a*	108.5	0.2–0.4	0.2–2.4	36.6–53.9
Phosphorus—Scenario 4b	145.0	0.2–0.4	0.2–3.0	36.6–53.9

* Proposed scenarios.

TABLE 11-17.—SUMMARY OF ANNUALIZED BENEFITS
[1999 dollars, millions]

Regulatory scenario	Discount rates					
	3 percent		5 percent		7 percent	
	Low	High	Low	High	Low	High
Nitrogen—Scenario 1	54.1	55.9	45.0	46.9	38.4	40.2
Nitrogen—Scenario 2/3	55.7	58.0	46.6	48.9	39.9	42.3
Nitrogen—Scenario 4a	58.0	60.2	48.3	50.5	41.2	43.4
Nitrogen—Scenario 4b	59.7	62.3	50.1	52.6	43.0	45.5
Phosphorus—Scenario 1	140.0	142.1	130.4	132.4	123.3	125.4
Phosphorus—Scenario 2/3*	179.7	182.3	170.0	172.7	163.0	165.6
Phosphorus—Scenario 4a*	162.8	165.1	152.8	155.2	145.5	147.9
Phosphorus—Scenario 4b	199.4	202.2	189.4	192.2	182.1	185.0

* Proposed scenarios.

XII. Public Outreach

A. Introduction and Overview

EPA has actively involved interested parties to assist it in developing a protective, practical, cost-effective regulatory proposal. EPA has provided many opportunities for input in this rulemaking process. EPA has met with various members of the stakeholder community on a continuing basis through meeting requests and invitations to attend meetings, conferences, and site visits. These meetings with environmental organizations, agricultural organizations, producer groups, and producers representing various agricultural sectors have allowed EPA to interact with and receive input from stakeholders about the Unified Strategy and the NPDES and effluent limitations regulatory revisions. In addition, EPA convened a Small Business Advocacy Review Panel to address small entity concerns. EPA also sent an outreach package to and met with several national organizations representing State and local governments. More detailed information on EPA's public outreach is provided in the rulemaking record.

B. Joint USDA/EPA Unified AFO Strategy Listening Sessions

In the fall of 1998, EPA and USDA announced eleven public outreach

meetings designed to allow public comment on the Draft Unified National AFO Strategy. The meetings were held in the following cities: Tulsa, Oklahoma; Harrisburg, Pennsylvania; Ontario, California; Madison, Wisconsin; Seattle, Washington; Des Moines, Iowa; Chattanooga, Tennessee; Indianapolis, Indiana; Fort Worth, Texas; Denver, Colorado; and Annapolis, Maryland. Each meeting included a pre-meeting among state and regional officials, EPA, and USDA representatives to discuss the draft strategy and the issues posed by CAFOs in general. All participants in the public sessions, including numerous small entities, were given the opportunity to sign up and provide their comments to a panel consisting of EPA, USDA, and local representatives. Many of the commenters made points or raised issues germane to small entities. A transcript of these comments was used by EPA and USDA in developing the final Unified National AFO Strategy. These comments and concerns have been considered by EPA in the development of the revised NPDES CAFO regulations. The transcripts of these meetings are available on the OWM Web Site (www.epa.gov/owm/afo.htm) and are available in the record.

C. Advisory Committee Meeting

EPA was invited to meet with the Local Government Advisory Committee,

Small Community Advisory Subcommittee on September 8, 1999. At this Federal Advisory Committee Act meeting, EPA described the CAFO regulatory revisions being considered, and responded to questions concerning the effect of EPA's regulatory actions on small communities. While the CAFO regulations do not directly affect small communities, AFOs do have an effect on local economies and on the local environment. Thus, how they are regulated (or not regulated) has implications for local governments. EPA is keeping local government concerns in mind as it proceeds with the CAFO regulatory revisions and general public outreach activities.

D. Farm Site Visits

EPA conducted approximately 110 site visits to collect information about waste management practices at livestock and poultry operations. Agency staff visited a wide range of operations, including those demonstrating centralized treatment or new and innovative technologies. EPA staff visited livestock and poultry operations throughout the United States, the majority of which were chosen with the assistance of the leading industry trade associations and also by the Natural Resources Defense Council, the Clean Water Network, university experts, State cooperative and extension agencies, and state and EPA regional representatives.

EPA also attended USDA-sponsored farm tours, as well as tours offered at industry, academic, and government conferences. Details on these visits are provided in the rulemaking record.

EPA staff visited cattle feeding operations in Texas, Oklahoma, Kansas, Colorado, California, Indiana, Nebraska, and Iowa, as well as veal operations in Indiana. The capacities of the beef feedlots varied from 500 to 120,000 head. EPA also visited dairies in Pennsylvania, Florida, California, Colorado, and Wisconsin, with the total mature dairy cattle at the operations ranging from 40 to 4,000 cows. In addition, EPA visited broiler, layer and turkey facilities in Georgia, Arkansas, North Carolina, Virginia, West Virginia, Maryland, Delaware, Pennsylvania, Ohio, Indiana, and Wisconsin. EPA visited hog facilities in North Carolina, Ohio, Iowa, Minnesota, Texas, Colorado, Oklahoma, and Utah.

E. Industry Trade Associations

Throughout regulatory development, EPA has worked with representatives from the national trade groups, including: National Cattlemen's Beef Association (NCBA); American Veal Association (AVA); National Milk Producers Federation (NMPF); Professional Dairy Heifers Growers Association (PDHGA); Western United Dairymen (WUD); National Pork Producers Council (NPPC); United Egg Producers and United Egg Association (UEP/UEA); National Turkey Federation (NTF); and the National Chicken Council (NCC). All of the above organizations have provided assistance by helping with site visit selection, submitting supplemental data, reviewing descriptions of the industry and waste management practices, and participating in and hosting industry meetings with EPA.

F. CAFO Regulation Workgroup

EPA established a workgroup that included representatives from USDA and seven states, as well as EPA Regions and headquarters offices. The workgroup considered input from stakeholders and developed the regulatory options presented in today's proposal.

G. Small Business Advocacy Review Panel

1. Summary of Panel Activities

To address small business concerns, EPA's Small Business Advocacy Chairperson convened a Small Business Advocacy Review (SBAR) Panel under section 609(b) of the Regulatory Flexibility Act (RFA) as amended by the

Small Business Regulatory Enforcement Fairness Act (SBREFA). Participants included representatives of EPA, the Small Business Administration (SBA) and the Office of Management and Budget (OMB). "Small Entity Representatives" (SERs), who advised the Panel, included small livestock and poultry producers as well as representatives of the major commodity and agricultural trade associations. Information on the Panel's proceedings and recommendations is in the Final Report of the Small Business Advocacy Review Panel on EPA's Planned Proposed Rule on National Pollutant Discharge Elimination System (NPDES) and Effluent Limitations Guideline (Effluent Guidelines) Regulations for Concentrated Animal Feeding Operations (hereinafter called the "Panel Report"), along with other supporting documentation included as part of the Panel process. This information can be found in the rulemaking record.

Prior to convening a SBAR Panel, EPA distributed background information and materials to potential SERs on September 3, 1999 and September 9, 1999. On September 17, 1999, EPA held a conference call from Washington, D.C. which served as a pre-panel forum for small business representatives to provide input on key issues relating to the proposed regulatory changes to the "CAFO Rule." Twenty-seven small business representatives from the beef, dairy, swine, poultry, and exotic animal livestock industries participated in the conference call. A summary of the conference call is included in the Panel Report. Following the conference call, 19 of the 41 small business advisors and national organizations invited to participate on the conference call submitted written comments. These written comments are included in the Panel Report.

The SBAR Panel for the "CAFO Rule" was formally convened on December 16, 1999. On December 28, 1999, the Panel distributed an outreach package to the final group of SERs, which included many of the participants in EPA's September 17, 1999 outreach conference call. The package included: a SER outreach document, which provided a definition of a small business and described those entities most likely to be affected by the rule; an executive summary of EPA's cost methodology; regulatory flexibility alternatives; a cost methodology overview for the swine, poultry, beef, and dairy sectors; a cost annualization approach; and a list of questions for SERs. Additional modeling information was also sent to SERs on January 7, 2000 and January 10,

2000. A complete list of these documents can be found in the Panel Report; all information sent to the SERs is included in the record.

The SERs were asked to review the information package and provide verbal comments to the Panel during a January 5, 2000 conference call, in which 22 SERs participated. During this conference call, SERs were also encouraged to submit written comments. SERs were given an additional opportunity to make verbal comments during a second conference call held on January 11, 2000, in which 20 SERs participated. During both conference calls, SERs were asked to comment on the costs and viability of the proposed alternatives under consideration by EPA. A summary of both conference calls can be found in the Panel Report. Following the calls, the Panel received 20 sets of written comments from 14 SERs. A complete set of these comments is included in the Panel Report.

2. Summary of Panel Recommendations

A full discussion of the comments received from SERs and Panel recommendations is included in the Panel Report. The major issues summarized are as follows.

a. *Number of Small Entities.* The Panel reviewed EPA's methodology to develop its estimate of the small entities to which the proposed rule will likely apply. EPA proposed two alternative approaches to estimate the number of small businesses in these sectors. Both approaches identify small businesses in these sectors by equating SBA's annual revenue definition with the number of animals at an operation and estimate the total number of small businesses in these sectors using farm size distribution data from USDA. One approach equates SBA's annual revenue definition with operation size using farm revenue data, as described in Section X.J.2 of this document. Another approach equates SBA's annual revenue definition with the operation size using a modeling approach developed by EPA that calculates the amount of livestock revenue at an operation based market data, including the USDA-reported price received by producers, average yield, and the number of annual marketing cycles. (Additional information on this latter approach is in the rulemaking record.)

During the Panel process, and following formal consultation with SBA, the Panel participants agreed to use the first approach to estimate the number of small businesses in these sectors. More details on this approach is provided in Section X.J.2 and in Section 9 of the

Economic Analysis. More detail on the Panel's deliberation of the approach used to determine the number of small businesses is provided Sections 4 and 5 of the Panel Report and in other support documentation developed during the SBAR Panel process. The Panel noted that the revised methodology may not accurately portray actual small businesses in all cases across all sectors. The Panel also recognized that, under this small business definition, EPA would be regulating some small facilities, but urged EPA to consider the small business impacts of doing so.

b. *Potential Reporting, Record Keeping, and Compliance Requirements. Record Keeping Related to Off-Site Transfer of Manure.* The Panel reviewed EPA's consideration of record keeping and reporting requirements in connection with off-site transfer of manure. The Panel recommended that EPA review and streamline the requirements for small entities. In response to this recommendation, EPA is limiting its proposal to keep records of the name and address of the entity to which the CAFO is transferring manure, how much is being transferred and the nutrient content of the manure on-site. This information would allow EPA to track manure, and to follow-up with the third party recipient to ascertain whether the manure was applied in accordance with Clean Water Act requirements that may apply. EPA is also proposing under one co-proposed option that a CAFO obtain a certification from recipients that land application is done in accordance with proper agricultural practices. EPA assumes recipients of manure are mostly field crop producers who already maintain appropriate records relating to nutrient management. EPA is not proposing to establish specific requirements for these offsite recipients.

Permit Application and Certification Requirements. The Panel asked EPA to consider the burden associated with increasing the number of entities subject to permit between 300 AU and 1,000 AU. Furthermore, the Panel recommended that EPA carefully consider appropriate streamlining options before considering a more burdensome approach. EPA considered several alternative scenarios for the scope of permit coverage of facilities in this size group, and decided to simultaneously co-propose two scenarios, as each offers different means of accomplishing similar environmental outcomes.

The first alternative proposal would retain the current three-tier structure, but would require an operation in the

300–1,000 AU size tier to certify to the permitting authority that it does not meet any of the “risk-based” conditions (described in Section VII), and thus is not required to obtain a permit. The three-tier structure would require all AFOs with 300 AU or more to, at a minimum, obtain a permit nutrient plan and submit a certification to the permit authority. This alternative would provide the permit authority the opportunity to implement effective programs to assist AFOs in order to minimize how many would be required to apply for a permit. Because those certifying would not be CAFOs, however, they would have access to section 319 nonpoint source funds. This co-proposed alternative does not meet one of the goals of today's proposal, as recommended by the Panel, that is, to simplify the regulations to improve understanding and therefore compliance by the regulated community. Further, the conditions are such that all facilities with 300 AU or more would incur some cost associated with certifying they do not meet any of the conditions. EPA is also requesting comment on a variation of the three-tier structure that was presented to the SERs and generally favorably received by the Panel (see detailed discussion in Section VII.B.3).

The second alternative proposal would adopt a two-tier structure that defines all operations with 500 AU or more as CAFOs. (EPA is also requesting comment on a 750 AU threshold.) This proposal would provide regulatory relief for operations between 300 AU and 500 AU that may be considered CAFOs under the existing regulations. Operations in this size group would not be subject to the certification process and would not incur the costs associated with certification, such as the costs to obtain a certified Permit Nutrient Plan and to submit a certification to the permit authority. Under the two-tier structure, operations with more than 500 AU would all be required to apply for a permit. All facilities with fewer than 500 AU would be subject to permitting as CAFOs only through case-by-case designation based on a finding that the operation is a significant contributor of pollution by the permit authority. This proposal offers simplicity and clarity as to which entities will be subject to the proposed regulations and those that will not, which was recommended by the Panel, as well as indicated by the regulated community as one of the goals of today's proposal. Representatives of some State programs, however, have indicated that they would prefer an option that allows State non-NPDES programs to address

issues at CAFOs in their states, rather than being required to write permits.

EPA is also proposing to provide regulatory relief to small businesses by eliminating the mixed animal calculation. As a result, smaller operations that house a mixture of animal types where none of these animal types independently meets the regulatory threshold are not considered CAFOs under either of today's proposals, unless they are individually designated. EPA believes that this will provide maximum flexibility for these operations since most are now participating in USDA's voluntary CNMP program, as outlined in the AFO Strategy. For more information, see discussion in Section VII. A summary of EPA's economic analysis is provided in Section X.J of this preamble.

Frequency of Testing. The Panel reviewed EPA's consideration of requiring periodic soil testing. The Panel agreed that testing manure and soil at different rates may be appropriate, but expressed concern about the burden of any inflexible testing requirements on small businesses. The Panel recommended that EPA consider leaving the frequency of required testing to the discretion of local permit writers, and request comment on any testing requirements that are included in the proposed rule. The Panel further recommended that EPA weigh the burden of testing requirements to the need for such information.

EPA is proposing to require soil testing of each field every three years and manure testing once per year. The proposed frequency is consistent with standards in many states and also recommendations from agricultural extension services. To ensure that soils have not reached a critical concentration of phosphorus, EPA believes that it is necessary to establish a minimum sampling frequency and testing requirements for all CAFOs, regardless of size. Since it is believed that much of the water pollution from agriculture comes from field runoff, information on manure and soil content is essential for the operator to determine at what rate manure should be applied. EPA believes this information is essential for the permitting authority to know whether the manure is being land applied at proper rates. The local permit writer retains the discretion to require more frequent testing.

Groundwater Requirements Where Linked to Surface Water. The Panel reviewed EPA's consideration of an option that would require groundwater controls at facilities that are determined to have a direct hydrological connection

to surface water since there is reasonable potential for discharges to surface water via ground water at these facilities ("Option 3"). Because of the potentially high costs to small operators associated with both making a determination of a hydrologic link and installing controls (such as lagoon liners, mortality composting devices, groundwater monitoring wells, concrete pads, and other technologies), the Panel recommended that EPA examine this requirement, giving careful consideration to the associated small entity impacts, in light of the expected environmental benefits resulting from this option. The Panel further recommended that if EPA decides to propose any such requirements that it consider streamlining the requirements for small entities (e.g., sampling at reduced rates) or exempting them altogether.

(i) *Existing CAFOs.* EPA is proposing to require existing beef and dairy CAFOs to install groundwater controls when the groundwater beneath the production area has a direct hydrologic connection to surface water (Option 3, as described in Section VIII). This includes installation of wells and biannual sampling to monitor for any potential discharge from the production area. CAFOs are also expected to construct concrete pads or impermeable surfaces, as well as install synthetic liners if necessary to prevent discharges to surface water via direct hydrologic connection. The groundwater controls which are part of the proposed BAT requirements are in addition to the land application requirements which ensure that the manure and wastewater application to land owned or controlled by the CAFO is done in accordance with a PNP and does not exceed the nutrient requirements of the soil and crop. EPA has determined that this option represents the best available technology for existing beef and dairy CAFOs and that this requirement is economically achievable under both proposed permitting scenarios (i.e. the two-tier and three-tier structures), although some CAFOs in these sectors may experience increased financial burden. Because the risks from discharged pollutants from groundwater to surface water are location-specific, EPA believes that the proposed groundwater requirements are necessary at CAFOs where there is a hydrologic connection to surface waters. EPA's is proposing that these requirements are economically achievable by operations that are defined as CAFOs and are also small businesses. The results of EPA's small business analysis is provided in Section

X.J of this preamble. Moreover, EPA believes that the estimated benefits in terms of additional groundwater-surface water protections would be significant. EPA's pollution reduction estimates across options are presented in the Development Document.

EPA is not proposing BAT requirements for the existing swine, veal and poultry subcategories on the basis of Option 3, i.e., EPA rejected proposing groundwater monitoring and controls in the effluent guidelines for these CAFOs. As described in Section VIII of this preamble, EPA is proposing Option 5 as the best available technology economically achievable, which requires zero discharge from the animal production area with no exception for storm events. Were EPA to add the requirement to control discharges to groundwater that is directly connected to surface waters in addition to the Option 5 requirements, the costs would result in much greater financial impacts to hog and poultry operations. EPA's analysis shows that the full cost of groundwater controls ("Option 3") in addition to requirements under Option 5 would not be economically achievable by operations in these sectors.

(ii) *New CAFOs.* EPA is proposing to require that all new CAFOs in all subcategories install groundwater controls. EPA expects that requiring groundwater monitoring is affordable to new facilities since these facilities do not face the cost of retrofit. EPA's economic analysis of new facility costs is provided in Section X.F.1(b) of this preamble. More detailed information is provided in the Economic Analysis and the Development Document.

c. *Relevance of Other Federal Rules.* The Panel did not note any other Federal rules that may duplicate, overlap, or conflict with the proposed rule.

d. *Regulatory Alternatives.* The Panel considered a wide range of options and regulatory alternatives for reducing the burden on small business in complying with today's proposal. These included:

Revised Applicability Thresholds. The Panel recommended that EPA give serious consideration to the issues discussed by the Panel when determining whether to establish less stringent effluent limitations guidelines for smaller facilities, and whether to preserve maximum flexibility for the best professional judgement of local permit writers. The Panel also recommended that the Agency carefully evaluate the potential benefits of any expanded requirements for operations with between 300 and 1,000 AU and ensure that those benefits are sufficient to warrant the additional costs and

administrative burden that would result for small entities.

EPA is proposing to apply the effluent limitation guidelines to all facilities that are defined as CAFOs, although EPA is also requesting comment on an option under which they would only apply to facilities with greater than 1,000 AUs. Thus, under the three-tier structure all CAFOs with 300 AU or more would be subject to the effluent guidelines. Under the two-tier structure, all CAFOs with 500 AU or more would be subject to the effluent guidelines. EPA is also requesting comment on a 750 AU threshold for the two-tier structure. Under both of the co-proposed alternatives, EPA is proposing to eliminate the "mixed" animal calculation for operations with more than a single animal type for determining which AFOs are CAFOs. As a result, smaller operations that house a mixture of animal types where none of these animal types independently meets the regulatory threshold are not considered CAFOs under today's proposed rulemaking, unless they are individually designated. EPA believes that this will provide maximum flexibility for these operations since most are now participating in USDA's voluntary CNMP program, as outlined in the AFO Strategy. For more information, see discussion in Section VII.

EPA's two-tier proposal provides additional relief to small businesses. Under the two-tier structure, EPA is proposing to establish a regulatory threshold that would define as CAFOs all operations with more than 500 AU. This co-proposed alternative would provide relief to small businesses since this would remove from the CAFO definition operations with between 300 AU to 500 AU that under the current rules are defined as CAFOs. These operations would no longer be defined as CAFOs and may avoid being designated as CAFOs if they take appropriate steps to prevent discharges. In addition, if operations of any size that would otherwise be defined as CAFOs can demonstrate that they have no potential to discharge, they would not need to obtain a permit. Also, under the two-tier structure, EPA is proposing to raise the size standard for defining egg laying operations as CAFOs from 30,000 to 50,000 laying hens. This alternative would remove from the CAFO definition egg operations of this size that under the current rules are defined as CAFOs, if they utilize a liquid manure management system.

EPA believes that revising the regulatory thresholds below 1,000 AU is necessary to protect the environment

from CAFO discharges. At the current 1,000 AU threshold, less than 50 percent of all manure and wastewater generated annually would be captured under the regulation. Under the co-proposed alternatives, between 64 percent (two-tier) and 72 percent (three-tier) would be covered. (See Section IV.A of this preamble.) Total pre-tax compliance costs to CAFOs with fewer than 1,000 AU is estimated to range between \$226 million annually (two-tier) to \$298 million annually (three-tier), or about one-third of the total estimated annual costs (see Section X.E.1). EPA believes that the estimated benefits in terms of additional manure coverage justify the estimated costs. EPA estimates that 60 percent (two-tier) to 70 percent (three-tier) of all operations that are defined as CAFOs and are also small businesses are operations with less than 1,000 AU. EPA's economic analysis, however, indicates that these small businesses will not be adversely impacted by the proposed requirements. EPA's estimates of the number of small businesses and the results of its economic analysis is provided in Section X.J of this preamble.

Under each co-proposed alternative, EPA is proposing that operations that are not defined as CAFO (*i.e.*, operations with fewer animals than the AU threshold proposed) could still be designated as CAFOs on a case-by-case basis. During the Panel process, the Panel urged EPA not to consider changing the designation criteria for operations with less than 300 AU. This includes the criterion that the permitting authority must conduct an on-site inspection of any AFO, in making a designation determination. EPA is not proposing to eliminate the on-site inspection requirement. EPA believes it is appropriate to retain the requirement for an on-site inspection before the permitting authority determines that an operation is a "significant contributor of pollution." No inspection would be required to designate a facility that was previously defined or designated as a CAFO. EPA is, however, requesting comment on whether or not to eliminate this provision or to redefine the term "on-site" to include other forms of site-specific data gathering. In addition, EPA is proposing to delete two criteria, including discharge from manmade device and direct contact with waters of the U.S., as unnecessary to the determination of whether an operation should be designated as a CAFO. EPA is also proposing to clarify EPA's designation authority in States with

NPDES approved programs. For more information, see Section VII.

25-year, 24-hour Storm Event. At the time of SBREFA outreach, EPA indicated to SERs and to the Panel that it was considering removing the exemption, but not changing the design requirement for permitted CAFOs. The Panel expressed concern about removing this exemption for operations with fewer than 1000 AU. The Panel recommended that if EPA removes the exemption, it should fully analyze the incremental costs associated with permit applications for those facilities that are not presently permitted that can demonstrate they do not discharge in less than a 25-year, 24-hour storm event, as well as any costs associated with additional conditions related to land application, nutrient management, or adoption of BMPs that the permit might contain. The Panel recommended that EPA carefully weigh the costs and benefits of removing the exemption for small entities. The Panel also urged EPA to consider reduced application requirements for small operations affected by the removal of the exemption.

EPA is proposing to require that all operations that are CAFOs apply for a permit. EPA is proposing to remove the 25-year, 24-hour storm exemption from the definition of a CAFO. It is difficult to monitor, and removal of this exemption will make the rule simpler and more equitable. However, we are proposing to retain the 25-year, 24-hour storm event as a design standard in the effluent limitation guidelines for certain animal sectors (specifically, the beef and dairy cattle sectors). As a result, operations in these sectors that discharge only in the event of a 25-year, 24-hour storm would not be exempt from being defined as CAFOs, but would be in compliance with their permit as long as they met the 25-year, 24-hour storm design standard. EPA is proposing to establish BAT for the swine, poultry, and veal subcategories on the basis of Option 5 which bans discharge from the production area under any circumstances. The technology basis for this option is covered lagoons, and does not establish a different design standard for these lagoons. Removal of the exemption from the CAFO definition should have no impact on operations that are already employing good management practices. More information is provided in Sections VII and VIII of this document. Prior to proposing to remove this exemption, EPA evaluated the incremental costs associated with permit applications for those facilities that are not presently permitted and

other associated costs to regulated small entities. EPA's economic analysis is provided in Section X.J of this preamble. Estimated costs to the NPDES Permitting Authority are presented in Section X.G.1. Section X.I presents a comparison of the annualized compliance costs and the estimated monetized benefits.

Manure and Wastewater Storage Capacity. The Panel noted the SERs' concern about the high cost of additional storage capacity and recommended that EPA consider low-cost alternatives in its assessment of best available technologies economically achievable, especially for any subcategories that may include small businesses. The Panel was concerned about the high cost of poultry storage and asked EPA to consider low cost storage. EPA is proposing that facilities may not discharge pollutants to surface waters. To meet this requirement, facilities may choose to construct storage sheds, cover manure, collect all runoff, or any other equally effective combination of technologies and practices. The proposal does not directly impose any minimum storage requirements.

Land Application. The Panel recommended that EPA continue to work with USDA to explore ways to limit permitting requirements to the minimum necessary to deal with threats to water quality from over-application and to define what is "appropriate" land application, consistent with the agricultural stormwater exemption. The Panel recommended that EPA consider factors such as annual rainfall, local topography, and distance to the nearest stream when developing any certification and/or permitting requirements related to land application. The Panel also noted the high cost of P-based application relative to N-based application, and supported EPA's intent to require the use of P-based application rates only where necessary to protect water quality, if at all, keeping in mind its legal obligations under the CWA. The Panel recommended that EPA consider leaving the determination of whether to require the use of P-based rates to the permit writer's discretion, and continue to work with USDA in exploring such an option.

EPA recognizes that the rate of application of the manure and wastewater is a site-specific determination that accounts for the soil conditions at a CAFO. Depending on soil conditions at the CAFO, EPA is proposing to require that the operator apply the manure and wastewater either according to a nitrogen-standard or,

where necessary, on a phosphorus standard. If the soil phosphorus levels in a region are very high, the CAFO would be prohibited from applying any manure or wastewater. EPA believes that this will improve water quality in some production regions where the amount of phosphorus in animal manure and wastewater being generated exceeds crop needs and has resulted in a phosphorus build-up in the soils in those regions. Evidence of manure-phosphorus generation in excess of crop needs is reported in analyses conducted by USDA. Other data show that larger operations tend to have less land to land apply manure nutrients that are generated on-site. EPA believes that each of the co-proposed alternatives establish a regulatory threshold that ensures that those operations with limited land on which to apply manure are permitted. Under the three-tier structure, EPA is proposing risk conditions that would require nutrient management (i.e., PNPs) at operations with 300 to 1,000 AU. In addition, EPA is proposing under one co-proposed option to require letters of certification be obtained from off-site recipients of CAFO manure. Operations that are not defined as CAFOs, but that are determined to be a "significant contributor of pollution" by the permit authority, may be designated as CAFOs.

EPA is proposing a method for assessing whether phosphorus-based application is necessary that is consistent with USDA's policy on nutrient management. In all other areas, a nitrogen-based application rate would apply. EPA's proposal grants flexibility to the states in determining the appropriate basis for land application rates. EPA will continue to work with USDA to evaluate appropriate measures to distinguish proper agricultural use of manure.

Co-Permitting. The Panel reviewed EPA's consideration of requiring corporate entities that exercise substantial operational control over a CAFO to be co-permitted. The Panel did not reach consensus on this issue. The Panel was concerned that any co-permitting requirements may entail additional costs and that co-permitting cannot prevent these costs from being passed on to small operators, to the extent that corporate entities enjoy a bargaining advantage during contract negotiations. The Panel thus recommended that EPA carefully consider whether the potential benefits from co-permitting warrant the costs particularly in light of the potential shifting of those costs from corporate entities to contract growers. The Panel also recommended that if EPA does

require co-permitting in the proposed rule, EPA consider an approach in which responsibilities are allocated between the two parties such that only one entity is responsible for compliance with any given permit requirement. This would be the party that has primary control over that aspect of operations. Flexibility could also be given to local permit writers to determine the appropriate locus of responsibility for each permit component. Finally, the Panel recommended that if EPA does propose any form of co-permitting, it address in the preamble both the environmental benefits and any economic impacts on small entities that may result and request comment on its approach. If EPA does not propose a co-permitting approach, the Panel recommended that EPA discuss the strengths and weaknesses of this approach and request comment on it.

EPA is proposing in the rule to clarify that co-permitting is appropriate where a corporate or other entity exercises substantial operational control over a CAFO. Data show that some corporations concentrate growers geographically, thus producing a high concentration of nutrients over a limited area. EPA is leaving to the States decisions on how to structure co-permitting. A discussion of the strength and weaknesses of co-permitting is contained in Section VII.C.5 with several solicitations of comment. EPA is also soliciting comment on an Environmental Management System as a sufficient program to meet co-permitting requirements. Please refer to Section VII.C.5 for further discussion of Environmental Management Systems.

CNMP Preparer Requirements. The Panel reviewed EPA's consideration of requiring permittees to have CNMPs (Comprehensive Nutrient Management Plans) developed by certified planners. The Panel recommended that EPA work with USDA to develop low cost CNMP development services or allow operators to write their own plans. The Panel was concerned about the cost of having a certified planner develop the plans and urged EPA to continue to coordinate with other federal, state and local agencies in the provision of low-cost CNMP development services, and should facilitate operator preparation of plans by providing training, guidance and tools (e.g., computer programs).

EPA is proposing that CAFOs, regardless of size, have certified Permit Nutrient Plans (PNPs) that will be enforceable under the permit. The proposal states that USDA's Technical Guidance for Developing CNMPs may be used as a template for developing PNPs. EPA believes that USDA

documentation and standards will be appropriate for use as the primary technical references for developing PNPs at CAFOs. In the proposal, EPA has identified certain practices that would be required elements of PNPs in order to protect surface water from CAFO pollutant discharges. These practices are consistent with some of the practices recommended in USDA's CNMP guidance; however, the PNP would not need to include all of the practices identified in the USDA guidance. As an enforceable part of the permit, the PNP would need to be written either by a certified planner or by someone else and reviewed and approved by a certified planner. EPA believes it is essential that the plans be certified by agriculture specialists because the permit writer will likely rely to a large extent on their expertise. The plans would need to be site specific and meet the requirements outlined in this rule. EPA is continuing to coordinate with other regulatory agencies and with USDA on the development of these proposed requirements. EPA has concluded that development of the PNP is affordable to small businesses in these sectors and will improve manure management and lead to cost savings at the CAFO. EPA's economic analysis is provided in Section X.J of this preamble. More detailed information on the cost to develop a PNP is in the Development Document.

General vs. Individual Permits. The Panel reviewed EPA's consideration of requiring individual permits for CAFOs that meet certain criteria, or increasing the level of public involvement in general permits for CAFOs. The Panel recommended that EPA not expand the use of individual permits for operations with less than 1,000 AU. EPA believes that individual permits may be warranted under certain conditions such as extremely large operations, operations with a history of compliance problems, or operations in environmentally sensitive areas. Accordingly, EPA is co-proposing two options. In one option, each State develops its own criteria, after soliciting public input, for determining which CAFOs would need to have individual rather than general permits. EPA is also coproposing an option that would establish a national criteria for issuing individual permits. The criteria identifies a threshold that represents the largest operations in each sector. (See Section XII for a detailed discussion.)

Immature Animals. The Panel reviewed EPA's consideration to include immature animals for all animal types in determining the total number of

animal units at a CAFO. The Panel recommended that EPA count immature animals proportionally to their waste generation. EPA is proposing to continue to account for only the mature animals at operations where all ages of animals are maintained (mostly dairy and hog operations). Once an operation is covered by the existing regulations, however, all manure and wastewater generated by immature animals that are confined at the same operation with mature animals would also be subject to the requirements. EPA is proposing to maintain this requirement because all young animals are not always confined and immature populations vary over time, whereas the mature herd is of a more constant size. Furthermore, the exclusion of immature animals adds to the simplicity we are seeking in this rulemaking. However, EPA is proposing to include immature animals as subject to the regulations only in stand-alone nursery pig and heifer operations. For stand-alone nursery pig operations, EPA is proposing to account for immature animals proportionate to their waste generation, as discussed in Section VIII. Stand-alone heifer operations are included under the beef subcategory and are subject to the proposed regulations if they confine more than 500 heifers (two-tier) or more than 300 AU, under certain conditions (three-tier).

e. Other Recommendations. Benefits. The Panel recommended that the EPA evaluate the benefits of the selected regulatory options and that EPA carefully evaluate, in a manner consistent with its legal obligations, the relative costs and benefits (including quantified benefits to the extent possible) of each option in order to ensure that the options selected are affordable (including to small farmers), cost-effective, and provide significant environmental benefits. EPA has conducted an extensive benefit analysis of all the options and scenarios considered. The findings of the benefit analysis are found in Section XI of this report. More detailed information is provided in the Benefits Analysis. Section X.I presents a comparison of the annualized compliance costs and the estimated monetized benefits.

Estimated Compliance Costs. The Panel recommended that EPA continue to refine the cost models and consider additional information provided. EPA has continued to refine the cost models and has reviewed all information provided to help improve the accuracy of the models. A summary of EPA's cost models is provided in Section X of this preamble. More detailed information is provided in the Economic Analysis and

Development Document provided in the rulemaking record.

Public Availability of CNMP. The Panel urged EPA to consider proprietary business concerns when determining what to make publicly available. To the extent allowed under the law, EPA should continue to explore ways to balance the operators' concerns over the confidentiality of information that could be detrimental if revealed to the operators' competitors, with the public's interest in knowing whether adequate practices are being implemented to protect water quality. EPA is not requiring CAFOs to submit the PNP to the permit authority. However, EPA is proposing that the PNP must be available upon the request of States and EPA. The agencies would make the plans available to the public on request. EPA is proposing to require the operator of a permitted CAFO to make a copy of the PNP cover sheet and executive summary available for public review. EPA is also requesting comment as to whether CAFOs should be able to claim these elements of the PNP as confidential business information and withhold those elements of the PNP from public review on that basis, or alternately, that whether other portions of the PNP should be made available as well.

Dry Manure. The Panel asked EPA to consider the least costly requirements for poultry operations with dry manure management systems. The Panel recommended that in evaluating potential requirements for dry manure poultry operations, EPA consider the effects of any such requirements on small entities. EPA is not mandating a specific storage technology or practice, but is proposing a zero discharge performance standard and a requirement that poultry operations develop and implement a PNP. EPA is also proposing that certain monitoring and recordkeeping requirements would be appropriate. EPA's economic analysis is provided in Section X.J of this preamble. More detailed cost information is provided in the Development Document.

Coordination with State Programs. The Panel recommended that EPA consider the impact of any new requirements on existing state programs and include in the proposed rule sufficient flexibility to accommodate such programs where they meet the minimum requirements of federal NPDES regulations. The Panel further recommended that EPA continue to consult with states in an effort to promote compatibility between federal and state programs. EPA has consulted with states. There were seven states

represented on the CAFO workgroup (see Section XII.G.1). In addition, EPA asked for comment on the proposed options from nine national associations that represent state and local government officials. (See Section XIII.G.) In conducting its analyses for this rulemaking, EPA accounted for requirements under existing state programs. A summary of EPA's estimated costs to the NPDES Permitting Authority are presented in Section X.G.1 and Section XIII.B.

XIII. Administrative Requirements

A. Executive Order 12866: "Regulatory Planning and Review"

Under Executive Order 12866 [58 FR 51735, October 4, 1993], the Agency must determine whether the regulatory action is "significant" and therefore subject to OMB review and the requirements of the Executive Order. The Order defines "significant regulatory action" as one that is likely to result in a rule that may:

- (1) have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
- (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order."

It has been determined that this proposed rule is a "significant regulatory action" under the terms of Executive Order 12866. As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations will be documented in the public record.

B. Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), 5 U.S.C. 601 et seq.

The RFA generally requires an agency to prepare a regulatory flexibility analysis for any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities.

Small entities include small businesses, small organizations, and small governmental jurisdictions.

The RFA provides default definitions for each type of small entity. It also authorizes an agency to use alternative definitions for each category of small entity, "which are appropriate to the activities of the agency" after proposing the alternative definition in the **Federal Register** and taking comment. 5 U.S.C. § 601(3)–(5). In addition to the above, to establish an alternative small business definition, agencies must consult with the Small Business Administration (SBA) Chief Counsel for Advocacy.

For purposes of assessing the impacts of today's rule on small entities, small entity is defined as: (1) a small business based on annual revenue standards established by SBA, with the exception of one of the six industry sectors where an alternative definition to SBA's is proposed; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

The definitions of small business for the livestock and poultry industries are in SBA's regulations at 13 CFR 121.201. These size standards were updated in September, 2000. SBA size standards for these industries define a "small business" as one with average revenues over a 3-year period of less than \$0.5 million annually for dairy, hog, broiler, and turkey operations, \$1.5 million for beef feedlots, and \$9.0 million for egg operations. In today's rule, EPA is proposing to define a "small" egg laying operation for purposes of its regulatory flexibility assessments under the RFA as an operation that generates less than \$1.5 million in annual revenue. Because this definition of small business is not the definition established under the RFA, EPA is specifically seeking comment on the use of this alternative definition as part of today's notice of the proposed rulemaking. EPA has consulted with the SBA Chief Counsel for Advocacy on the use of this alternative definition. EPA believes this definition better reflects the agricultural community's sense of what constitutes a small business and more closely aligns with the small business definitions codified by SBA for other animal operations. A summary of EPA's analysis pertaining to the alternative definition is provided in Section 9 of the Economic Analysis. A summary of EPA's consultation with SBA is provided in the record.

In accordance with Section 603 of the RFA, EPA prepared an initial regulatory flexibility analysis (IRFA) that examines the impact of the proposed rule on small entities along with regulatory alternatives that could reduce that impact. The IRFA is available for review in the docket (see Section 9 of the Economic Analysis). This analysis is summarized in Section X.J of this preamble. Based on available information, there are no small governmental operations or nonprofit organizations that operate animal feeding operations that will be affected by today's proposed regulations.

The majority (95 percent) of the estimated 376,000 AFOs are small businesses, as defined by SBA. Of these, EPA estimates that there are 10,550 operations that will be subject to the proposed requirements that are small businesses under the two-tier structure. Under the three-tier structure, an estimated 14,630 affected operations are small businesses. The difference in the number of affected small businesses is among poultry producers, particularly broiler operations. Section X.J.2 provides additional detail on how EPA estimated the number of small businesses.

Based on the IRFA, EPA is proposing concludes that the proposed regulations are economically achievable to small businesses in the livestock and poultry sectors. EPA's economic analysis concludes that the proposed requirements will not result in financial stress to small businesses in the veal, dairy, hog, turkey, and egg sectors. However, EPA's analysis concludes that the proposed regulations may result in financial stress to 150 to 280 small broiler operations under the two-tier and three-tier structure, respectively. In addition, EPA estimates that 10 to 40 small beef and heifer operations may also experience financial stress under each of the proposed tier structures. EPA considers these operations—comprising about 2 percent of all affected small CAFO businesses—may be vulnerable to closure. Details of this economic assessment are provided in Section X.J.

EPA believes that moderate financial impacts that may be imposed on some operations in some sectors is justified given the magnitude of the documented environmental problems associated with animal feeding operations, as described in Section V of this document. Section IV further summarizes EPA's rationale for revising the existing regulations, including: (1) address reports of continued discharge and runoff from livestock and poultry operations in spite of the existing requirements; (2) update

the existing regulations to reflect structural changes in these industries over the last few decades; and (3) improve the effectiveness of the existing regulations. Additional discussion of the objectives of and legal basis for the proposed rule is presented in Sections I through III.

Section XIII.F summarizes the expected reporting and recordkeeping requirements required under the proposed regulation based on information compiled as part of the Information Collection Request (ICR) document prepared by EPA.

Section X.J.4 summarizes the principal regulatory accommodations that are expected to mitigate future impacts to small businesses under the proposed regulations. Under both of the co-proposed alternatives, EPA is proposing to eliminate the "mixed" animal calculation for operations with more than a single animal type for determining which AFOs are CAFOs. As a result, smaller operations that house a mixture of animal types where none of these animal types independently meets the regulatory threshold are not considered CAFOs under today's proposed rulemaking, unless they are individually designated. Additional accommodations are being proposed under the two-tier structure. Under the two-tier structure, EPA is proposing to establish a regulatory threshold that would define as CAFOs all operations with more than 500 AU. EPA is also considering a two-tier alternative that would define all operations with more than 750 AU as CAFOs. The two-tier structure would provide relief to small businesses since this would remove from the CAFO definition operations with between 300 AU and 500 AU (or 750 AU) that under the current rules may be defined as CAFOs. Also, under the two-tier structure, EPA is proposing to raise the size standard for defining egg laying operations as CAFOs. This alternative would remove from the CAFO definition egg operations with between 30,000 and 50,000 laying hens (or 75,000 hens) that under the current rules are defined as CAFOs, if they utilize a liquid manure management system. Additional information on the regulatory relief provisions being proposed by EPA is provided in Section VII of this preamble.

As required by section 609(b) of the RFA, as amended by SBREFA, EPA also conducted outreach to small entities and convened a Small Business Advocacy Review Panel to obtain advice and recommendations from representatives of the small entities that potentially would be subject to the rule's requirements. Consistent with the

RFA/SBREFEA requirements, the Panel evaluated the assembled materials and small entity comments on issues related to the elements of the IRFA. A complete summary of the Panel's recommendations is provided in the Final Report of the Small Business Advocacy Review Panel on EPA's Planned Proposed Rule on National Pollutant Discharge Elimination System (NPDES) and Effluent Limitations Guideline (Effluent Guidelines) Regulations for Concentrated Animal Feeding Operations (April 7, 2000). This document is included in the public record. As documented in the panel report, the participants of the Small Business Advocacy Review Panel did not identify any Federal rules that duplicate or interfere with the requirements of the proposed regulation.

Section XII.G of this document provides a full summary of the Panel's activities and recommendations. This summary also describes each of the subsequent actions taken by the Agency, detailing how EPA addressed each of the Panel's recommendations. EPA is interested in receiving comments on all aspects of today's proposal and its impacts on small entities.

C. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), P.L. 104-4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with "Federal mandates" that may result in expenditures to State, local, and tribal governments, in the aggregate, or to the private sector, of \$100 million or more in any one year.

Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative, if the Administrator publishes with the final rule an explanation why that alternative was not adopted.

Before EPA establishes any regulatory requirements that may significantly or

uniquely affect small governments, including tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

EPA has determined that today's proposed regulations contain a Federal mandate that may result in expenditures of \$100 million or more for the private sector in any one year. Accordingly, EPA has prepared the written statement required by section 202 of the UMRA. This statement is contained in the Economic Analysis and also the Benefits Analysis for the rule. These support documents are contained in the record. In addition, EPA has determined that the rules contain no regulatory requirements that might significantly or uniquely affect small governments. Thus, today's rules are not subject to the requirements of section 203 of the UMRA. Additional information that supports this finding is provided below.

A detailed discussion of the objectives and legal basis for the proposed CAFO regulations is presented in Sections I and III of the preamble. A consent decree with the Natural Resources Defense Council established a deadline of December 2000 for EPA to propose effluent limitations for this industry.

EPA prepared several supporting analyses for the final rules. Throughout this preamble and in those supporting analyses, EPA has responded to the UMRA section 202 requirements. Costs, benefits, and regulatory alternatives are addressed in the Economic Analysis and the Benefits Analysis for the rule. These analyses are summarized in Section X and Section XI of this preamble. The results of these analyses are summarized below.

EPA prepared a qualitative and quantitative cost-benefit assessment of the Federal requirements imposed by today's final rules. In large part, the private sector, not State, local and tribal governments, will incur the costs of the proposed regulations. Under the two-tier structure, total annualized compliance costs to industry are projected at \$831 million (pre-tax)/\$572 million (post-tax). The cost to off-site recipients of CAFO manure is estimated at \$10 million per year. Under the three-tier structure, costs to industry are estimated at \$930 million per year (pre-tax)/\$658 million (post-tax), and the

annual cost to off-site recipients of manure is estimated at \$11 million. This analysis is summarized in Section X.E.1 of this preamble.

Authorized States are expected to incur costs to implement the standards, but these costs will not exceed the thresholds established by UMRA. Under the two-tier structure, State and Federal administrative costs to implement the permit program are estimated to be \$6.2 million per year: \$5.9 million for States and \$350,000 for EPA. Under the three-tier structure, State and Federal administrative costs to implement the permit program are estimated by EPA at \$7.7 million per year, estimated at \$7.3 million for States and \$416,000 for EPA. This analysis is summarized in Section X.G.1 of this preamble. More detailed information is provided in the Economic Analysis. The Federal resources (i.e., water pollution control grants) that are generally available for financial assistance to States are included in Section 106 of the Clean Water Act. There are no Federal funds available to defray the costs of this rule on local governments. Since these rules do not affect local or tribal governments, they will not result in significant or unique impacts to small governments.

Overall, under the two-tier structure, the projected total costs of the proposed regulations are \$847 million annually. Under the three-tier structure, total social costs are estimated at \$949 million annually.

The results of EPA's economic impact analysis show that the percentage of operations that would experience financial stress under each of the proposed tier structures represent 7 percent of all affected CAFOs (Section X.F.1). This analysis is conducted without taking into account possible financial assistance to agricultural producers that could offset the estimated compliance costs to CAFOs to comply with the proposed regulations, thus mitigating the estimated impacts to these operations. Federal programs, such as USDA's Environmental Quality Incentives Program (EQIP), and other State and local conservation programs provide cost-share and technical assistance to farmers and ranchers who install structural improvements and implement farm management practices, including many of the requirements that are being proposed today by EPA. EQIP funds are limited to livestock and poultry operations with fewer than 1,000 animal units (AUs), as defined by USDA, but could provide assistance to operations with less than 1,000 AU as well as to some larger operations in the poultry and hog sectors.

EPA also conducted an analysis that predicts and quantifies the broader market changes that may result due to compliance. This analysis examines changes throughout the economy as impacts are absorbed at various stages of the food marketing chain. The results of this analysis show that consumer and farm level price changes will be modest. This analysis is summarized in Section X.F.3.

EPA does not believe that there will be any disproportionate budgetary effects of the rules on any particular area of the country, particular types of communities, or particular industry segments. EPA's basis for this finding with respect to the private sector is addressed in Section 5 of the Economic Analysis based on an analysis of community level impact, which is summarized in Section X.G.2 of the preamble. EPA considered the costs, impacts, and other effects for specific regions and individual communities, and found no disproportionate budgetary effects. EPA's basis for this finding with respect to the public sector is available in the record.

The proposed mandate's benefits are primarily in the areas of reduced health risks and improved water quality. The Benefits Analysis supporting the rulemaking describes, qualitatively, many such benefits. The analysis then quantifies a subset of the benefits and, for a subset of the quantified benefits, EPA monetizes (i.e., places a dollar value on) selected benefits. EPA's estimates of the monetized benefits of the proposed regulations are estimated to range from \$146 million to \$165 million under the two-tier structure. Under the three-tier structure, estimated benefits range from \$163 million to \$182 million annually. This analysis is summarized in Section XI of this preamble.

EPA consulted with several States during development of the proposed rules. Some raised concerns that the national rule would have workload and cost implications for the State. Some States with implementation programs underway or planned want to have their programs satisfy the requirements of the proposed rule. Other States expressed concerns about the loss of cost-share funds to AFOs once they are designated as point sources. There were additional comments regarding inconsistencies with the Unified Strategy. See Section IX.A for a discussion of alternative State programs, Section X.G for a discussion of State costs and the workload analysis, Sections III.D and VII.B for a discussion of consistency with the AFO Strategy, and Section IX.E for a discussion of cost-share funds.

For the regulatory decisions in today's rules (allowing for the options reflected by the co-proposal), EPA has selected alternatives that are consistent with the requirements of UMRA in terms of cost, cost-effectiveness, and burden. The proposal is also consistent with the requirements of the CWA. This satisfies section 205 of the UMRA. As part of this rulemaking, EPA had identified and considered a reasonable number of regulatory alternatives. (See Section VII for NPDES Scenarios and Section VIII for effluent guidelines technology options). Section X.E compares the costs across these alternatives. Section X.H provides a cost-effectiveness analysis that shows that the proposed BAT Option is the most cost-effective of these alternatives. Sections VII and VIII of the preamble are devoted to describing the Agency's rationale for each regulatory decision. Section IV of this document further summarizes EPA's rationale for revising the existing regulations.

D. Executive Order 13045: "Protection of Children from Environmental Health Risks and Safety Risks"

Executive Order 13045 (62 FR 19885, April 23, 1997) applies to any rule that: (1) Is determined to be "economically significant" as defined under E.O. 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health and safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This proposed rule is subject to E.O. 13045 because it is an economically significant regulatory action as defined by E.O. 12866, and we believe that the environmental health or safety risks addressed by this action have or may have disproportionate effects on children. Accordingly, we have evaluated, to the extent possible, the environmental health or safety effects of pollutants from CAFOs on children. The results of this evaluation are contained in sections V.C and XI.B of the preamble as well as the Environmental Assessment and Benefits Assessment (these documents have been placed in the public docket for the rule).

The Agency believes that the following pollutants have or may have a disproportionate risk to children: nitrates, pathogens, trace metals such as zinc, arsenic, copper, and selenium, pesticides, hormones, and endocrine disruptors. These health risks are

summarized in Section V.C and described in detail in the Environmental Assessment. With the exception of nitrates in drinking water, the Agency has very little of the detailed information necessary to conduct an assessment of these risks to children for these pollutants. The Agency solicits risk and exposure data and models that could be used to characterize the risks to children's health from CAFO pollutants.

There is evidence that infants under the age of six months may be at risk from methemoglobinemia caused by nitrates in private drinking water wells, typically when ingesting water with nitrate levels higher than 10 micrograms/liter. The Agency only has enough information to determine that a chronic dose of 10 micrograms/liter may cause an adverse health effect, but there is no dose-response function for nitrates, nor does the Agency have other information necessary to conduct a detailed health risk assessment (for example, the actual number of cases of methemoglobinemia are not reported and are thus highly uncertain). Instead, the Agency has estimated the reduction in the number of households that will be exposed to drinking water with nitrate levels above 10 micrograms/liter in Chapter 8 of the Benefits Assessment (noting that the Agency does not have information on the number of households exposed to nitrates that also have infants). The Agency assumes that nitrate levels lower than 10 micrograms/liter pose no risk of methemoglobinemia.

The Agency estimates that there are approximately 13.5 million households with drinking water wells in counties with animal feeding operations. Of these, the Agency estimates that approximately 1.3 million households are exposed to nitrate levels above 10 micrograms/liter. The Agency further estimates that approximately 166,000 households would have their nitrate levels brought below 10 micrograms/liter under the two-tier structure. Approximately 161,000 households would have their nitrate levels brought below 10 micrograms/liter under the three-tier structure. Furthermore, the Agency estimates that options more stringent than those proposed would have small incremental changes in pollutant loadings to groundwater (see the Technical Development Document). Thus, the Agency expects the number of additional households protected from nitrate levels greater than 10 micrograms/liter would be negligible under more stringent options. The Agency therefore does not believe that requirements more stringent than those

proposed would provide meaningful additional protection of children's health risks from methemoglobinemia. Furthermore, the Agency is only able to regulate groundwater quality through NPDES permits if there is a direct hydrologic connection to surface water (see Section VII.C.2.j).

Methemoglobinemia is only one children's health risk caused by CAFO pollutants, as discussed above, in Section V.C, and elsewhere in the record. It was the only risk to children's health which the Agency was able to quantify (if incompletely) in any way. The options considered by the Agency, as well as the rationale for the proposed options, are discussed in detail in Sections VII and VIII of this preamble. To the extent possible under the authority of the CWA, EPA chose options that were protective of environmental and human health, including children's health. These option selections were based on the best risk assessments possible given the limited data available. The public is invited to submit or identify peer-reviewed studies and data, of which the Agency might not be aware that assessed results of early life exposure to nitrates or any other pollutant discharged by CAFOS.

E. Executive Order 13084: Consultation and Coordination With Indian Tribal Governments

Under Executive Order 13084, EPA may not issue a regulation that is not required by statute that significantly or uniquely affects the communities of Indian tribal governments, and that imposes substantial direct compliance costs on those communities, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by the tribal governments, or EPA consults with those governments. If EPA complies by consulting, Executive Order 13084 requires EPA to provide to the Office of Management and Budget, in a separately identified section of the preamble to the rule, a description of the extent of EPA's prior consultation with representatives of affected tribal governments, a summary of the nature of their concerns, and a statement supporting the need to issue the regulation. In addition, Executive Order 13084 requires EPA to develop an effective process permitting elected and other representatives of Indian tribal governments "to provide meaningful and timely input in the development of regulatory policies on matters that significantly or uniquely affect their communities."

Today's rule does not significantly or uniquely affect the communities of

Indian tribal governments nor imposes substantial direct compliance costs on them. First, there are currently no tribal governments that have been authorized to issue NPDES permits. Thus, there will be no burden to tribal governments. Second, few CAFO operations are located on tribal land. Therefore, compliance costs to tribal communities will not be significant. Accordingly, the requirements of section 3(b) of Executive Order 13084 do not apply to this rule.

However, EPA has let tribal communities know about this rulemaking through a presentation of potential rule changes at the National Environmental Justice Advisory Committee meeting in Atlanta in June, 2000 and through notices in tribal publications.

F. Paperwork Reduction Act

The information collection requirements in this proposed rule have been submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* An Information Collection Request (ICR) document has been prepared by EPA (ICR No. 1989.01) and a copy may be obtained from Sandy Farmer by mail at Collection Strategies Division; U.S. Environmental Protection Agency (2822); 1200 Pennsylvania Ave., NW, Washington, DC 20460, by email at farmer.sandy@epamail.epa.gov, or by calling (202) 260-2740. A copy may also be downloaded off the internet at <http://www.epa.gov/icr>.

Today's proposed rule would require all animal feeding operations (AFOs) that meet the proposed CAFO definition to apply for a permit and develop a certified permit nutrient plan and to implement that plan. Implementation of the plan includes the cost of recording animal inventories, manure generation, field application of manure and other nutrients (amount, rate, method, incorporation, dates), manure and soil analysis compilation, crop yield goals and harvested yields, crop rotations, tillage practices, rainfall and irrigation, lime applications, findings from visual inspections of feedlot areas and fields, lagoon emptying, and other activities on a monthly basis. Records may include manure spreader calibration worksheets, manure application worksheets, maintenance logs, and soil and manure test results.

The average annual burden for this rule covering both the private and public sector for the three-tiered option is 1.6 million hours and \$37 million annually; for the two-tiered option, burden is 1.2 million hours annually at

\$29 million annually. These values do not account for State programs that may already be requiring some of the recordkeeping and reporting requirements already. Thus, this burden would be an overestimate to the degree that some States already require such actions.

For the three-tiered structure, the average annual CAFO burden is estimated to be 80 hours with the frequency of responses based on requirements ranging from two times per year to once every five years. There are 19,519 likely CAFO respondents and 28 states. Under this scenario, the state annual average burden is estimated at 3,214 hours. The average annual operation and maintenance costs are estimated at \$4.3 million for CAFOs and \$60,000 for States; labor costs are estimated at \$28.9 million for CAFOs and \$2.6 million for States; capital costs are estimated at \$1.6 million for CAFOs and \$0.0 for States.

For the two-tiered structure, CAFO average annual burden per respondent is 81 hours and the State burden is 2,500 hours. There are 15,015 likely CAFO respondents and 28 states. The 28 state count is an average over three years assuming that half the delegated states will have a program established in year one, half in year 2 and all in year three. Average annual operation and maintenance costs are \$3.3 million for CAFOs and \$60,000 for States; labor costs are \$22.6 million for CAFOs and \$2.0 million for States; capital costs are \$1.3 million for CAFOs and \$0.0 for States.

The burden required for this rulemaking will allow EPA to determine whether a CAFO operator is monitoring his waste management system in an environmentally safe way. This data will be used to assess compliance with the rule and help determine enforcement cases. The Permit Nutrient Plan data requirements ensure that the CAFO owner has established the appropriate application rate for their fields on which they spread manure; is providing adequate operation and maintenance for the storage area and feedlot, and is meeting the requirements to keep agriculture waste out of the Nation's waters. The information requested herein is mandatory (33 U.S.C. 1318 (Section 308 of the Clean Water Act)). The Agency is requesting comment in this proposal on how much, if any of this information should be confidential business information.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, disclose or provide information to or for a Federal

agency. Burden estimates include the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information. Additional burden has been estimated for off-site recipients who must certify that they are applying manure in an appropriate manner.

An Agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless the collection form displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR Part 9 and 48 CFR Chapter 15.

Comments are requested on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques. Send comments on the ICR to the Director, Collection Strategies Division; U.S. Environmental Protection Agency (2822); 1200 Pennsylvania Ave., NW, Washington, DC 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th St., N.W., Washington, DC 20503, marked "Attention: Desk Officer for EPA." Include the ICR number in any correspondence. Since OMB is required to make a decision concerning the ICR between 30 and 60 days after [January 12, 2001 **Federal Register**], a comment to OMB is best assured of having its full effect if OMB receives it by February 12, 2001. The final rule will respond to any OMB or public comments on the information collection requirements contained in this proposal.

G. Executive Order 13132: "Federalism"

Executive Order 13132, entitled "Federalism" (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have Federalism implications." "Policies that have Federalism implications" is defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship

between the national government and the States, or on the distribution of power and responsibilities among the various levels of government."

This proposed rule does not have Federalism implications. It will not have substantial direct effects on the States, on this relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. EPA estimates that the average annual impact on all authorized States together is \$6.0 million. EPA does not consider an annual impact of \$6 million on States a substantial effect. In addition, EPA does not expect this rule to have any impact on local governments.

Further, the revised regulations would not alter the basic State-Federal scheme established in the Clean Water Act under which EPA authorizes States to carry out the NPDES permitting program. EPA expects the revised regulations to have little effect on the relationship between, or the distribution of power and responsibilities among, the Federal and State governments. Thus, Executive Order 13132 does not apply to this rule.

In the spirit of Executive Order 13132, and consistent with EPA policy, EPA consulted with representatives of State and local governments in developing this proposed rule. EPA sent a summary package outlining the proposed changes to the State and local associations that represent elected officials including the National Governor's Association, National Conference of State Legislators, U.S. Conference of Mayors, Council of State Governments, International City/County Management Association, National Association of Counties, National Association of Towns and Townships, and County Executives of America. In addition, as discussed in Section XII.F., there was State representation on the CAFO Regulation Workgroup.

EPA received four responses from these national associations, the National Governor's Council, the National League of Cities, the National Council of State Legislators and the National Association of Conservation Districts. EPA also received a letter from the Governor of Delaware and the Delaware Congressional delegation. The National Governor's Association (NGA), the National League of Cities (NLC) and the National Association of Conservation Districts (NACD) disagree with EPA's assessment that the rule would have minimal impact on the States. Except for this issue, the NLC supported the rule package especially the coverage of

poultry and immature animals, the clarification of stormwater runoff exemptions, the lower threshold, and the seven strategic issues EPA listed to address pollution from animal feeding operations. NLC encouraged EPA to exercise its authority to issue NPDES permits where a delegated State has not taken appropriate action.

NGA and Delaware want the flexibility to design functionally equivalent programs. NGA and NACD expressed concern regarding lowering the threshold as this would bring in more entities to be permitted and the States already have a permit backlog. In addition, they are concerned that 319 and EQIP funds will no longer be available to operations that are defined as CAFOs. Another concern is the elimination of the 25 year/24 hour exemption. NGA comments address the burden on the State permitting authority (backlog issue) and the unfairness of facilities that work with states to eliminate discharges would still have to get a permit. On the issue of adequate public involvement in general permits as well as the site specific requirements of the Effluent Limitation Guideline, NGA is concerned the advantage of general permits as a time saver for the states may be lost. In response to NGA's concerns, EPA met with NGA and discussed the package and its potential impacts. EPA, also upon request, met with the National Association of State Legislators to review the package and answer their questions. (See Section IX for discussion of alternative State programs. See Section VII.B for a discussion of rule scope. See Section X.G for costs to permitting authorities. See Section VII.C for discussion of the 25 year/24 hour storm exemption. See Section VII.E for discussion of public involvement.)

The primary concern raised by the States represented on the CAFO Regulation Workgroup was to clarify and simplify the rules to make them more understandable and easier to implement. Many of the proposed changes were made with this objective in mind. Also, the States wanted EPA to accept functionally equivalent State programs. To address this concern, as stated in the Joint Unified USDA/EPA AFO Strategy (see "Strategic Issue #3"), where a State can demonstrate that its program meets the requirements of an NPDES program consistent with 40 CFR Part 123, EPA is proposing to amend the current NPDES authorization to recognize the State program. In addition, States were concerned about the cost of implementing any changes to the program. EPA believes the costs to the States for implementing this

proposed rule will not be high. EPA is assuming that all States will adopt the sample general permit. Some States already have a general permit that would just need to be modified.

In the spirit of Executive Order 13132, and consistent with EPA policy to promote communications between EPA and State and local governments, EPA specifically solicits comment on this proposed rule from State and local officials.

H. Executive Order 12898: "Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations"

The requirements of the Environmental Justice Executive Order are that* * * EPA will * * * review the environmental effects of major Federal actions significantly affecting the quality of the human environment. For such actions, EPA reviewers will focus on the spatial distribution of human health, social and economic effects to ensure that agency decisionmakers are aware of the extent to which those impacts fall disproportionately on covered communities." EPA has determined that this rulemaking is economically significant. However, the Agency does not believe this rulemaking will have a disproportionate effect on minority or low income communities. The proposed regulation will reduce the negative affects of CAFO waste in our nation's waters to benefit all of society, including minority communities.

The National Environmental Justice Advisory Committee (NEJAC) submitted a set of recommendations to EPA regarding CAFOs that included recommendations to be addressed in revisions to EPA's regulations for CAFO's. Each recommendation is addressed below.

The NEJAC recommended that EPA "promulgate new, effective regulations that set uniform, minimum rules for all AFOs and CAFOs in the United States." In response, EPA believes that today's proposed rule revisions would represent new, uniform and effective requirements for CAFOs (AFOs by definition are not point sources and so would not be subject to today's proposed CAFO rules).

The Committee requested that EPA impose a zero discharge standard on runoff from land application of CAFO wastes. For the reasons described in section VIII. C.3., BAT Options Considered, of today's notice, EPA believes it is not appropriate to set a technology-based standard at this level with respect to land application runoff.

NEJAC requested that EPA prohibit or restrict the siting of facilities in certain areas such as flood plains. Siting of private industry is primarily a local issue and should be addressed at the local level. Discharge limitations proposed today should, however, discourage operators from locating in flood plains. Proposed requirements for swine, veal and poultry CAFOs would require no discharge under any circumstances. Beef and dairy CAFOs would have to comply with zero discharge except in the event of a chronic or catastrophic storm which exceeds the 25 year, 24 hour storm. If existing operations are located in flood plains it is in their best interest to divert uncontaminated storm water away from their production area to avoid inundation of the production area and potential breaching of their manure storage system during flood events. EPA proposes to prohibit manure application to crop or pasture land within 100 feet of surface waters, tile intake structures, agricultural drainage wells, and sinkholes which will also minimize the risk of discharge under flood conditions.

NEJAC requested monitoring requirements in the rule. EPA has proposed an appropriate set of monitoring requirements to be included in CAFO permits (See section XIII of today's notice).

NEJAC also requested public notification of the construction or expansion of CAFOs or issuance of permits. Under today's proposed rules, EPA would require individual permits, which are subject to individual public notice and comment, for facilities that are located in an environmentally sensitive area; have a history of operational or compliance problems; are an exceptionally large or significantly expanding facility; or where the Director is aware of significant public concern about water quality impacts from the CAFO. For all other facilities that are to be covered by general permits, for purposes of public notice, today's proposal would require the permitting authority to publish on a quarterly basis its receipt of Notices of Intent (NOIs) submitted by CAFOs.

NEJAC further recommended that EPA require States and tribes to develop inspection programs that allow unannounced inspections of all CAFOs and to make these programs available for public comment. This concern is already addressed by existing Clean Water Act requirements. Specifically, under the Act, EPA may conduct unannounced inspections, and States must have the authority to inspect to the same extent as EPA. Although there is no specific requirement that State

inspection plans be made publicly available, they may be available under State law.

NEJAC requested that EPA require the adoption of non-lagoon technology. Section XIII of today's notice describes the control technologies that EPA has investigated and which ones EPA proposes to identify in these regulations as the best available technologies. As described in Section XIII, this proposal finds that it would not be appropriate to prohibit the use of lagoon technologies.

NEJAC recommended requiring States and tribes to implement remediation programs for phased-out CAFO operations. In today's proposed rule, EPA proposes to require a CAFO to remain under permit coverage until it no longer has the potential to discharge manure or associated wastewaters.

Finally, NEJAC recommended that EPA impose stringent penalties on violating facilities. The Clean Water Act provides authority to subject violators to substantial penalties. The issue of which penalties are appropriate to impose in individual situations is beyond the scope of this rulemaking.

I. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act (NTTAA) of 1995, (Pub. L. No. 104-113 Sec. 12(d) 15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standard bodies. The NTTAA directs EPA to provide Congress, through the Office of Management and Budget (OMB), explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This rulemaking involves technical standards. The rule requires operations defined as CAFOs in the beef and dairy subcategories to monitor groundwater for total dissolved solids (TDS), total chlorides, fecal coliform, total coliform, ammonia-nitrogen and TKN. EPA performed a search to identify potentially voluntary consensus standards that could be used to measure the analytes in today's proposed guideline. EPA's search revealed that consensus standards exist and are already specified in the tables at 40 CFR Part 136.3 for measurement of many of the analytes. All pollutants in today's proposed rule have voluntary consensus

methods. EPA welcomes comments on this aspect of the proposed rulemaking and, specifically, invites the public to identify potentially-applicable voluntary consensus standards and to explain why such standards should be used in this regulation.

XIV. Solicitation of Comments

A. Specific Solicitation of Comment and Data

EPA solicits comments on all aspects of today's proposal. In addition, throughout this preamble, EPA has solicited specific comments and data on many individual topics. The Agency reiterates its interest in receiving comments and data on the following issues:

1. EPA solicits comment on the use of a two tier structure based on lowering the existing 1,000 animal unit threshold to 500 for determining which AFOs are defined as CAFOs, and the elimination of the existing 300 to 1,000 animal unit category. EPA also solicits comment on the effect of a 500 AU threshold on the horse, sheep, lamb and duck sectors, as well as on the use of a 750 animal unit threshold for all sectors.

2. EPA solicits comment on the use of a three tier structure, including the proposed criteria that could result in an AFO in the middle Group being defined as a CAFO and on whether to use different criteria that provide more flexibility than those in today's proposal.

3. EPA solicits comment on revising the requirements for designation to eliminate the direct contact and man-made device criteria from the designation requirements of the CAFO regulations, and allow the designation of CAFOs by EPA in States with NPDES authorized programs. EPA also solicits comment on whether or not to eliminate the "on-site" requirement for conducting inspections and, instead, allow other forms of site-specific information gathering to be used.

4. EPA solicits comment on its proposal to clarify the definition of an AFO to clearly distinguish feedlots from pasture land and clarify coverage of winter feeding operations.

5. EPA solicits comment on eliminating the use of the term "animal unit" or AU and the mixed animal calculation in determining which AFOs are CAFOs.

6. EPA solicits comment on removing the 25-year, 24-hour storm event exemption from the definition of a CAFO.

7. EPA solicits comment on the proposal to remove the limitation on the type of manure handling or watering

system employed at poultry operations (i.e., subjecting dry poultry operations to the CAFO regulations). With regard to a two tier structure, EPA solicits comment on establishing the threshold for poultry operations at 50,000 birds or greater.

8. EPA solicits comment on including immature swine and dairy cattle, or heifers, when confined apart from the dairy, for purposes of defining potential CAFOs. With regard to a two tier structure, EPA solicits comment on establishing the threshold limit for immature swine (weighing 55 pounds or less) at 5,000.

9. EPA solicits comment on requiring, under a two tier structure, all CAFOs to apply for a NPDES permit and issuing permits to those operations that cannot demonstrate they have no potential to discharge pollutants.

10. EPA solicits comment on requiring, under a three tier structure, all AFOs from 300 AU to 1000 AU to certify they do not meet threshold conditions, receive a determination they have no potential to discharge, or apply for a permit.

11. EPA solicits comments on the proposed co-permitting provisions and the factors for determining substantial operational control. EPA solicits comment on whether there are additional factors that indicate substantial operational control which should be included in the regulation. EPA also requests comment on how to structure the co-permitting provisions of the rulemaking to achieve the intended environmental outcome without causing negative impacts on growers. EPA requests comments on its cost passthrough assumptions in general and as they relate to the analysis of processor level impacts under the proposed co-permitting requirements.

12. EPA solicits comment on addressing discharges to ground water with a direct hydrological connection to surface water. EPA requests comment on how a permit writer might identify CAFOs at risk of discharging to surface water via ground water. EPA is also requesting comment on the proposal to place the burden on the permit applicant to provide a hydrologist's statement when rebutting the presumption that a CAFO has potential to discharge to surface water via direct hydrological connection with ground water. EPA solicits comment on the assumption that 24 percent of the affected operations have a hydrologic connection to surface waters.

13. EPA solicits comment on the definition of CAFO including the production area and land application area, and on the proposed requirements

that would subject land application to specified permit requirements.

14. EPA solicits comment on defining the agricultural storm water discharge exemption to apply only to those discharges which occurred despite the implementation of all the practices required by today's proposal at CAFO land application areas. EPA also requests comments on the alternative applications of the agricultural storm water discharge exemption discussed.

15. EPA solicits comment on requiring a certification from off-site recipients of CAFO-generated manure that such manure is being land applied according to proper agricultural practices or, the alternative of tracking such off-site transfers through record keeping and providing information to the recipients regarding proper management.

16. EPA solicits comment on restricting the land application of manure to those conditions where it serves an agricultural purpose and does not result in pollutant discharges to waters of the U.S. (potentially including prohibiting land application at certain times or using certain methods).

17. EPA solicits comment on requiring CAFO operators to develop and implement a PNP for managing manure and wastewater at both the production area and land application area.

18. EPA invites comment on today's proposal to define PNPs as the effluent guideline subset of elements addressed in the CNMP. EPA is especially interested in knowing whether PNP is the best term to use to refer to the regulatory components of the CNMP, and whether EPA's explanation of both the differences and relationship between these two terms (PNP and CNMP) is clear and unambiguous. EPA is also soliciting comments on whether a PNP with the addition of erosion control practices would be sufficient additional controls to prevent runoff. EPA further requests comment on the proposal to require that PNPs be developed, or reviewed and modified, by certified planners, as well as on conditions, such as no changes to the crops, herd or flock size, under which rewriting the PNP would not be necessary and therefore, would not require the involvement of a certified planner.

19. EPA requests comment on the public availability of PNPs, including whether it is proper to determine that the PNPs must be publicly available under CWA Section 402(j) and under CWA Section 308 as "effluent data," or whether only a portion of PNP information should be publically

available. EPA solicits comment on today's proposal that the operator of a permitted CAFO must make a copy of the PNP cover sheet and executive summary available for public review. EPA is also requesting comment on whether CAFOs should be able to claim these elements of the PNP as confidential business information and withhold those elements of the PNP from public review on that basis, or alternately, that whether other portions of the PNP should be made available as well. EPA also requests comment on the proposal to require new facilities seeking coverage under a general permit, as well as applicants for individual permits, to submit a copy of the PNP to the permit authority along with the NOI or permit application, and whether, for individual permits, the PNP should be part of the public notice and comment process along with the permit.

20. EPA is requesting public comment on the suitability of requiring erosion control as a special condition of a NPDES permit to protect water quality from sediment eroding from fields where CAFO manure is applied to crops. If erosion control is desirable, EPA is soliciting comment as to which approach would be the most cost-efficient. EPA solicits comment and data on the costs and benefits of controlling erosion and whether erosion control should be a required component of PNPs.

21. EPA solicits comment on requiring an operator of a permitted CAFO that ceases to be a CAFO to maintain permit coverage until his or her facility is properly closed.

22. EPA requests comment on whether the procedures discussed regarding general permits are adequate to ensure public participation or whether individual permits should be required for any of the categories of facilities discussed above. Specifically, EPA requests comment on whether individual permits should be required for (a) Facilities over a certain size threshold; (b) all new facilities; (c) facilities that are significantly expanding; (d) facilities that have historical compliance problems; or (e) operations that are located in areas with significant environmental concerns.

23. EPA solicits comment on the applicability of the proposed revised effluent limitations guidelines, including the thresholds under the two tier and three tier structure, the inclusion of veal production as a new subcategory, and the changes regarding applicability to chickens, mixed animals, and immature swine and dairy. EPA also requests comment on another

three-tier option for defining a CAFO under which the effluent guidelines proposed today would not be applicable to facilities with 1,000 AU or less.

24. EPA solicits comment on the proposed revised effluent limitations guidelines for CAFOs, specifically today's proposed requirements on the land application of manure and wastewater. EPA solicits comment on the proposal to allow States to establish the appropriate phosphorus-based method to be used as the basis for the land application rate at CAFOs.

25. EPA requests comment on its analysis and on its proposed determination that Option 3 is economically achievable as BAT for the beef and dairy sectors. In addition, consistent with its intention at the time of the SBREFA outreach process, EPA requests comment on retaining the 25-year, 24-hour storm design standard (and thus basing BAT on Option 2) for the swine, veal and poultry subcategories.

26. EPA solicits comment on the assumptions used for estimating the compliance cost impacts for feedlots to implement each of the model technologies considered for the proposed standards. EPA also solicits comment on the proposal's impact on small businesses.

27. EPA solicits comment on the new source option for dairies that would prohibit any wastewater discharge from the production area. Specifically whether this option is technically feasible, since it assumes that all animals in confinement will be maintained under roof.

28. EPA solicits comment on establishing BAT requirements on pathogens. Specifically on the appropriate technologies that will reduce pathogens and the estimated cost for these technologies.

B. General Solicitation of Comment

EPA encourages public participation in this rulemaking. EPA asks that comments address any perceived deficiencies in the record supporting this proposal and that suggested revisions or corrections be supported by data.

EPA invites all parties to coordinate their data collection activities with the Agency to facilitate mutually beneficial and cost-effective data submissions. Please refer to the **FOR FURTHER INFORMATION** section at the beginning of this preamble for technical contacts at EPA.

List of Subjects

40 CFR Part 122

Administrative practice and procedure, confidential business information, Hazardous substances, Reporting and recordkeeping requirements, water pollution control.

40 CFR Part 412

Environmental protection, Feedlots, livestock, waste treatment and disposal, Water pollution control.

Dated: December 15, 2000.

Carol M. Browner,
Administrator.

For the reasons set out in the preamble title 40, chapter I of the Code of Federal Regulations is proposed to be amended as follows:

PART 122—EPA ADMINISTERED PERMIT PROGRAMS: THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

1. The authority citation for part 122 continues to read as follows:

Authority: The Clean Water Act, 33 U.S.C. 1251 *et seq.*

2. Amend § 122.21 by adding paragraphs (i)(1)(iv) through (ix) to read as follows:

§ 122.21 Application for a permit (applicable to State programs, see § 123.25).

* * * * *

(i) * * *

(1) * * *

(iv) Either a copy of the cover sheet and executive summary of the permittee's current Permit Nutrient Plan that meet the criteria in 40 CFR 412.37(b) and is being implemented, or draft copies of these documents together with a statement on the status of the development of its Permit Nutrient Plan. If the CAFO is subject to 40 CFR part 412 and draft copies are submitted, they must, at a minimum, demonstrate that there is adequate land available to the CAFO operator to comply with the land application provisions of part 412 of this chapter, if applicable, or describe an alternative to land application that the operator intends to implement.

(v) Acreage available for application of manure and wastewater;

(vi) Estimated amount of manure and wastewater that the applicant plans to transfer off-site;

(vii) Name and address of any person or entity that owns animals to be raised at the facility, directs the activity of persons working at the CAFO, specifies how the animals are grown, fed, or medicated, or otherwise exercises control over the operations of the facility;

(viii) Indicate whether buffers, setbacks or conservation tillage are implemented at the facility to control runoff and protect water quality; and

(ix) Latitude and longitude of the CAFO, to the nearest second.

3. Section 122.23 is revised to read as follows:

§ 122.23 Concentrated animal feeding operations (applicable to State NPDES programs, see § 123.25).

(a) *Definitions applicable to this section:* (1) For land on which manure from an animal feeding operation or concentrated animal feeding operation has been applied, the term “*agricultural storm water discharge*” means a discharge composed entirely of storm water, as defined in § 122.26(a)(13), from a land area upon which manure and/or wastewater has been applied in accordance with proper agricultural practices, including land application of manure or wastewater in accordance with either a nitrogen-based or, as required, a phosphorus-based manure application rate.

(2) An *animal feeding operation or AFO* is a facility where 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. Animals are not considered to be stabled or confined when they are in areas such as pastures or rangeland that sustain crops or forage growth during the entire time that animals are present. Animal feeding operations include both the production area and land application area as defined below.

Option 1 for Paragraph (a)(3)

(3) *Concentrated animal feeding operation or CAFO* means an AFO that either:

(i) Confines a number of animals equal to or greater than the number specified in any one or more of the following categories. For the purposes of determining the number of animals at an operation, two or more AFOs under common ownership are considered to be a single AFO if they adjoin each other or if they use a common area or system for the disposal of wastes. Once an operation is defined as a CAFO, the requirements of this section apply with respect to all animals in confinement at the operation and all wastes and waste waters generated by those animals, regardless of the type of animal.

(A) 350 mature dairy cattle;

(B) 500 veal;

(C) 500 cattle other than veal or mature dairy cattle;

(D) 1,250 swine each weighing over 25 kilograms (approximately 55 pounds);

(E) 5000 swine each weighing less than 25 kilograms (approximately 55 pounds);

(F) 250 horses;

(G) 5,000 sheep or lambs;

(H) 27,500 turkeys;

(I) 50,000 chickens; or

(J) 2,500 ducks; or

(ii) Is designated as a CAFO under paragraph (b) of this section.

Option 2 for Paragraph (a)(3):

(3) *Concentrated animal feeding operation or CAFO* means an AFO which either is defined as a CAFO under paragraph (a)(3)(i) or (ii) of this section, or is designated as a CAFO under paragraph (b) of this section. Two or more AFOs under common ownership are considered to be a single AFO for the purposes of determining the number of animals at an operation, if they adjoin each other or if they use a common area or system for the disposal of wastes. Once an operation is defined as a CAFO, the requirements of this section apply with respect to all animals in confinement at the operation and all wastes and waste waters generated by those animals, regardless of the type of animal.

(i) Tier 1 AFOs. An AFO is a CAFO if more than the numbers of animals specified in any of the following categories are confined:

(A) 700 mature dairy cattle;

(B) 1,000 veal;

(C) 1,000 cattle other than veal or mature dairy cattle;

(D) 2,500 swine each weighing over 25 kilograms (approximately 55 pounds);

(E) 10,000 swine each weighing less than 25 kilograms (approximately 55 pounds);

(F) 500 horses;

(G) 10,000 sheep or lambs;

(H) 55,000 turkeys;

(I) 100,000 chickens; or

(J) 5,000 ducks.

(ii) Tier 2 AFOs. (A) If the number of animals confined at the operation falls within the following ranges for any of the following categories, the operation is a Tier 2 AFO. A Tier 2 AFO is a CAFO unless it meets all of the conditions in paragraph (a)(3)(ii)(B) of this section and its operator submits to the Director a certification that it meets those conditions. The certification shall take the form specified in section 122.22(d).

(1) 200 to 700 mature dairy cattle,

(2) 300 to 1,000 veal,

(3) 300 to 1,000 cattle other than veal or mature dairy cattle,

(4) 750 to 2,500 swine each weighing over 25 kilograms (approximately 55 pounds),

(5) 3,000 to 10,000 swine each weighing less than 25 kilograms (approximately 55 pounds),

(6) 150 to 500 horses,

(7) 3,000 to 10,000 sheep or lambs,

(8) 16,500 to 55,000 turkeys,

(9) 30,000 to 100,000 chickens, or

(10) 1,500 to 5,000 ducks.

(B) A Tier 2 AFO is not a CAFO if it meets all of the following conditions and its operator submits to the Director a certification that it meets the following conditions:

(1) Waters of the United States do not come into direct contact with the animals confined in the operation;

(2) There is sufficient storage and containment to prevent all pollutants from the production area from entering waters of the United States as specified in 40 CFR Part 412.

(3) There has not been a discharge from the production area within the last five years;

(4) No part of the production area is located within 100 feet of waters of the United States;

(5) In cases where manure or process-generated wastewaters are land applied, they will be land applied in accordance with a Permit Nutrient Plan that includes the BMP requirements identified at 40 CFR 412.31(b) and 412.37; and

Option 2a for Paragraph (a)(3)(ii)(B)(6)

(6) With respect to the off-site transfer of manure or process-generated wastewaters to persons who receive 12 tons or more of manure or wastewater in any year, the owner or operator will first obtain assurances that, if the manure will be land applied, it will be applied in accordance with proper agriculture practices, which means that the recipient shall determine the nutrient needs of its crops based on realistic crop yields for its area, sample its soil at least once every three years to determine existing nutrient content, and not apply the manure in quantities that exceed the land application rates calculated using one of the methods specified in 40 CFR 412.31(b)(1)(iv); adequate assurances include a certification from the recipient, the fact that the recipient has a permit, or the existence of a State program that requires the recipient to comply with requirements similar to 40 CFR 412.31(b). The owner or operator will provide the recipient of the manure with a brochure to be provided by the state permitting authority or EPA that describes the recipient's responsibilities for appropriate manure management.

Option 2b for Paragraph (a)(3)(ii)(B)(6)

(6) With respect to manure or process-generated wastewaters that are

transferred off-site, the owner or operator will first provide the recipient of the manure with an analysis of its content and a brochure to be provided by the State permitting authority or EPA that describes the recipient's responsibilities for appropriate manure management.

(4) The term *land application area* means any land under the control of the owner or operator of the production area whether it is owned, rented, or leased, to which manure and process wastewater from the production area is or may be applied.

(5) The term *operator*, for purposes of this section, means:

(i) An operator as that term is defined in § 122.2; or

(ii) A person who the Director determines to be an operator on the basis that the person exercises substantial operational control of a CAFO. Whether a person exercises substantial operational control depends on factors that include, but are not limited to, whether the person:

(A) Directs the activity of persons working at the CAFO either through a contract or direct supervision of, or on-site participation in, activities at the facility;

(B) Owns the animals; or

(C) Specifies how the animals are grown, fed, or medicated.

(6) The term *production area* means that part of the AFO that includes the animal confinement area, the manure storage area, the raw materials storage area, and the waste containment areas. The animal confinement area includes but is not limited to open lots, housed lots, feedlots, confinement houses, stall barns, free stall barns, milkrooms, milking centers, cowyards, barnyard, exercise yards, animal walkways, and stables. The manure storage area includes but is not limited to lagoons, sheds, liquid impoundments, static piles, and composting piles. The raw materials storage area includes but is not limited to feed silos, silage bunkers, and bedding materials. The waste containment area includes but is not limited to settling basins, and areas within berms, and diversions which separate uncontaminated storm water. Also included in the definition of production area is any eggwash or egg processing facility.

(b) *Designation as a CAFO.* The EPA Regional Administrator, or in States with approved NPDES programs, either the Director or the EPA Regional Administrator, may designate any AFO as a CAFO upon determining that it is a significant contributor of pollutants to the waters of the United States.

(1) In making this designation, the Director or the EPA Regional Administrator shall consider the following factors:

(i) The size of the AFO and the amount of wastes reaching waters of the United States;

(ii) The location of the AFO relative to waters of the United States;

(iii) The means of conveyance of animal wastes and process waste waters into waters of the United States;

(iv) The slope, vegetation, rainfall, and other factors affecting the likelihood or frequency of discharge of animal wastes and process waste waters into waters of the United States; and,

(v) Other relevant factors.

Option 1 for Paragraph (b)(2)

(2) No AFO shall be designated under this paragraph (b) until the Director or the EPA Regional Administrator has conducted an on-site inspection of the operation and determined that the operation should and could be regulated under the permit program; except that no inspection is required to designate a facility that was previously defined or designated as a CAFO.

Option 2 for Paragraph (b)(2)

(2) No AFO shall be designated under this paragraph (b) until the Director or the EPA Regional Administrator has conducted an on-site inspection of the operation and determined that the operation should and could be regulated under the permit program; except that no inspection is required to designate a facility that was previously defined or designated as a CAFO. In addition, no AFO with less than 300 animal units may be designated as a concentrated animal feeding operation unless:

(i) Pollutants are discharged into waters of the United States through a manmade ditch, flushing system, or other similar manmade device; or

(ii) Pollutants are discharged directly into waters of the United States which originate outside of the facility and pass over, across, or through the facility or otherwise come into direct contact with the animals confined in the operation.

(c) *Who must apply for an NPDES permit?* (1) *All CAFOs must apply for a permit.* For all CAFOs, the CAFO owner or operator must apply for an NPDES permit, except as provided in paragraph (c)(2) of this section. Specifically, the CAFO owner or operator must either apply for an individual NPDES permit or submit a notice of intent for coverage under a CAFO general permit. If the Director has not made a general permit available to the CAFO, the CAFO owner or operator must apply for an individual permit.

(2) *Exception.* The CAFO owner or operator does not need to apply for an NPDES permit if the owner or operator has received from the Director a determination under paragraph (e) of this section that the CAFO has no potential to discharge.

(3) *Co-permitting.* Any person who is an "operator" of a CAFO on the basis that the person exercises substantial operational control of a CAFO (see § 122.23(a)(5)(ii)) must apply for a permit. Such operators may apply for an NPDES permit either alone or together as co-permittees with other owners or operators of the CAFO.

(d) *In which case will the Director not issue an NPDES permit?* The Director shall not issue an NPDES permit if the Director has determined that the CAFO has "no potential to discharge" pursuant to paragraph (e) of this section.

(e) *"No potential to discharge" determinations.* (1) *Determination by Director.* The Director, upon request, may make a case-specific determination that a CAFO has no potential to discharge pollutants to waters of the United States. In making this determination, the Director must consider the potential for discharges from both the production area and any land application areas, and must also consider any potential discharges via ground waters that have a direct hydrologic connection to surface waters. For purposes of this subsection, the term "no potential to discharge" means that there is no potential for any CAFO manure or waste waters to be added to waters of the United States, without qualification. For example, a CAFO may not claim that there is no potential to discharge even if the only pollutants that the CAFO has a potential to discharge would be exempt from NPDES requirements. A CAFO has a potential to discharge if it has had a discharge within the preceding five years.

(2) *Supporting information.* In requesting a determination of no potential to discharge, the CAFO owner or operator must submit any supporting information along with the request. The Director has discretion to accept or reject any additional information that is submitted at a later date.

(3) *Requesting a "no potential to discharge" determination does not postpone the duty to apply for a permit.* The owner or operator must apply for a permit according to the date specified in section (f) unless it has received a no potential to discharge determination before that date.

(4) *CAFO bears the risk of any actual discharge.* Any unpermitted CAFO that discharges pollutants into the waters of the United States is in violation of the

Clean Water Act even if it has received a "no potential to discharge" determination from the Director.

(f) *By when must I apply for a permit for my CAFO?* (1) For all CAFOs, the owner or operator of the CAFO must apply for an NPDES permit no later than [insert date that is three years after the date of publication of the final rule], except as provided in paragraphs (f)(2) through (6) of this section.

(2) *Operations that are defined as CAFOs prior to [insert date that is three years after the date of publication of the final rule].* For operations that are CAFOs under regulations that are in effect prior to [insert date that is three years after the date of publication of the final rule], the owner or operator must apply for an NPDES permit under 40 CFR 122.21(a) within the time period specified in 40 CFR 122.21(c).

(3) *Operations that become CAFO new sources or new dischargers after [insert date that is three years after the date of publication of the final rule].* For operations that meet the criteria in 40 CFR 122.23 for being defined as a CAFO for the first time after [insert date that is three years after the date of publication of the final rule], the owner or operator must apply for an NPDES permit 180 days prior to the date on which they first meet those criteria.

(4) *Operations that are designated as CAFOs.* For operations for which EPA or the Director has issued a case-specific designation that the operation is a CAFO, the owner or operator must apply for a permit no later than 90 days after issuance of the designation.

(5) *Persons who are operators because they exercise "substantial operational control" over a CAFO.* Persons who the Director determines to be operators because they exercise substantial operational control over a CAFO must apply for a permit within 90 days of the Director's determination.

(6) *No potential to discharge.* Notwithstanding any other provision of this section, a CAFO that has received a "no potential to discharge" determination under paragraph (e) of this section is not required to apply for an NPDES permit.

(g) *Are AFOs subject to Clean Water Act requirements if they are not CAFOs?* AFOs that are neither defined nor designated as CAFOs are subject to NPDES permitting requirements if they discharge the following from a point source:

(1) *Non-wet weather discharges:* discharges from their production area or land application area that are not composed entirely of storm water as defined in § 122.26(b)(13).

(2) *Wet weather discharges:* discharges from their land application area that are composed entirely of storm water as defined in § 122.26(b)(13), if the discharge has been designated under § 122.26(a)(1)(v) as requiring an NPDES permit. Discharges may be designated under § 122.26(a)(1)(v) if they are not agricultural storm water discharges as defined in § 122.23(a)(1).

(h) *If I do not operate an AFO but I land apply manure, am I required to have a NPDES permit?* If you have not been designated by your permit authority, you do not need a NPDES permit to authorize the discharge of runoff composed entirely of storm water from your manure application area. The land application of manure that results in the point source discharge of pollutants to waters of the United States may be designated pursuant to § 122.26(a)(1)(v) as requiring a NPDES permit if the application is not in accordance with proper agriculture practices. Proper agriculture practices means that the recipient shall determine the nutrient needs of its crops based on realistic crop yields for its area, sample its soil at least once every three years to determine existing nutrient content, and not apply the manure in quantities that exceed the land application rates calculated using one of the methods specified in 40 CFR 412.31(b)(1)(iv).

(i) *What must be required in NPDES permits issued to CAFOs.* Permits issued to CAFOs must require compliance with the following:

(1) All other requirements of this part.

(2) The applicable provisions of part 412.

(3) *Duty to Maintain Permit Coverage.* No later than 180 days before the expiration of the permit, the permittee must submit an application to renew its permit. However, the permittee need not reapply for a permit if the facility is no longer a CAFO (e.g., where the numbers of confined animals has been reduced below the level that meets the definition of a CAFO) and the permittee has demonstrated to the satisfaction of the Director that there is no remaining potential for a discharge of manure or associated waste waters that were generated while the operation was a CAFO. With respect to CAFOs, this section applies instead of §§ 122.21(d) and 122.41(b).

(4) *Co-permittees.* In the case of a permit issued to more than one owner or operator of the CAFO, the permit may allocate to one of the permit holders the sole responsibility for any permit requirement, except that all permit holders must be jointly responsible for the management of manure in excess of

what can be applied on-site in compliance with part 412

(5) Permits issued to CAFOs that meet the applicability requirements of Subpart C (Beef and Dairy) or Subpart D (Swine, Poultry and Veal) of 40 CFR Part 412 shall also require compliance with paragraph (j) of this section.

(6) Permits issued to CAFOs that do not meet the applicability requirements of Subpart C or Subpart D of 40 CFR Part 412 (including beef, dairy, swine, poultry or veal facilities not subject to those parts, and facilities with other types of animals) shall also require compliance with paragraph (k) of this section.

(j) *What must be required in NPDES permits issued to CAFOs that are subject to part 412, Subparts C (Beef and Dairy) and D (Swine, Poultry and Veal)?* Permits issued to CAFOs that meet the applicability requirements of Subpart C or Subpart D of 40 CFR Part 412 must require compliance with all of the following:

(1) Requirements to use the method in 40 CFR 412.31(b)(1)(iv) chosen by the Director to determine phosphorous field conditions and to determine appropriate manure application rates. The permit shall specify the factors to be considered and the analytical methods to be employed when determining those rates.

(2) Prohibitions against or restrictions on applying manure to land during times and using methods which, in light of local crop needs, climate, soil types, slope and other factors, would not serve an agricultural purpose and would be likely to result in pollutant discharges to waters of the United States.

(3) Requirement to notify the Director when the permittee's Permit Nutrient Plan has been developed or revised. Notification of the development of the permittee's initial Permit Nutrient Plan must be submitted no later than 90 days after the CAFO submits its NOI or obtains coverage under an individual permit. With the notice, the permittee shall provide a copy of the cover sheet and executive summary of the permittee's current Permit Nutrient Plan that has been developed under 40 CFR 412.37(b).

Option 1 for Paragraphs (j)(4) and (5)

(4) *Transfer of manure to other persons.* The Director may waive the requirements of this paragraph if an enforceable state program subjects the recipient of CAFO wastes to land application requirements that are equivalent to the requirements in 40 CFR 412.31(b). The requirements of paragraph (f) of this section apply only to transfers to persons who receive 12

tons or more of wastes from the CAFO in any year. Prior to transferring manure and other wastes to other persons, the permittee shall:

(i) Obtain from each intended recipient of the CAFO waste (other than haulers that do not land apply the waste) a certification that the recipient will do one of the following. The certification must contain a statement that the recipient understands that the information is being collected on behalf of the U.S. Environmental Protection Agency or State and that there are penalties for falsely certifying. The permittee is not liable if the recipient violates its certification;

(A) Land apply the wastes in accordance with proper agriculture practices, which means that the recipient shall determine the nutrient needs of its crops based on realistic crop yields for its area, sample its soil at least once every three years to determine existing nutrient content, and not apply the manure in quantities that exceed the land application rates calculated using the method specified in 40 CFR 412.31(b)(1)(iv) chosen by the Director;

(B) Land apply the wastes in compliance with the terms of an NPDES permit that addresses for discharges from the land application area; or

(C) Use the manure for purposes other than land application.

(ii) Obtain from any commercial waste hauler the name and location of the recipient of the wastes, if known;

(iii) Provide the recipient of the manure with an analysis of its content; and

(iv) Provide the recipient of the manure with a brochure to be provided by the State permitting authority or EPA that describes the recipient's responsibilities for appropriate manure management.

(5) *Record keeping requirements.* Requirements to keep, maintain for five years and make available to the Director or the Regional Administrator:

(i) Records of the inspections and of the manure sampling and analysis required by 40 CFR 412.37(a);

(ii) Records required by 40 CFR 412.37(e) related to the development and implementation of Permit Nutrient Plans required by 40 CFR 412.37(b); and

(iii) Records of each transfer of wastes to a third party, including date, recipient name and address, quantity transferred, an analysis of manure content and a copy of the certifications required by paragraph (j)(4) of this section. If the waste is transferred to a commercial waste hauler, records of where the hauler indicated it would take the waste, if known. If the waste is to be packaged as fertilizer, incinerated

or used for a purpose other than direct land application, records of the analysis of the manure are not required.

Option 2 for Paragraphs (j)(4) and (5):

(4) *Transfer of manure to other persons.* Prior to transferring manure and other wastes to other persons, the permittee shall:

(i) Provide the recipient of the manure with an analysis of its content;

(ii) Provide the recipient of the manure with a brochure to be provided by the State permitting authority or EPA that describes the recipient's responsibilities for appropriate manure management; and

(iii) Obtain from any commercial waste hauler the name and location of the recipient of the wastes, if known.

(5) *Record keeping requirements.* Requirements to keep, maintain for five years and make available to the Director or the Regional Administrator:

(i) Records of the inspections and of the manure sampling and analysis required by 40 CFR 412.37(a);

(ii) Records required by 40 CFR 412.37(e) related to the development and implementation of Permit Nutrient Plans required by 40 CFR 412.37(b); and

(iii) Records of each transfer of wastes to a third party, including date, recipient name and address, quantity transferred, and an analysis of manure content. If the waste is transferred to a commercial waste hauler, records of where the hauler indicated it would take the waste, if known. If the waste is to be packaged as fertilizer, incinerated or used for a purpose other than direct land application, records of the analysis of the manure are not required.

(6) For CAFOs subject to 40 CFR 412.43 (existing swine, poultry and veal facilities), the Director must determine based on topographical characteristics of the region whether there is a likelihood that a CAFO may discharge from the production area via ground water that has a direct hydrologic connection to waters of the United States. If the Director finds there is such a likelihood, and the Director determines there is the potential for an excursion of State water quality standards due to such discharge, the Director must impose any water quality-based effluent limits necessary to comply with § 122.44(d). The Director may omit such water quality-based effluent limits from the permit if the permittee has provided a hydrologist's statement that demonstrates to the Director's satisfaction that there is no direct hydrologic connection from the production area to waters of the United States.

(k) *What additional terms and conditions must be required in NPDES permits issued to CAFOs that are not subject to part 412, Subparts C and D?*

(1) *All CAFOs not subject to part 412.*

In cases where a CAFO has fewer than the number of animals necessary to make it subject to the requirements 40 CFR Part 412, and the Director is establishing effluent limitations on a case-by-case basis based on best professional judgment under section 402(a)(1)(B) of the Act, the Director shall consider the need for the following effluent limitations:

(i) Limits on the discharge of process wastewater pollutants from the production area, including limits based on the minimum duration and intensity of rainfall events for which the CAFO can design and construct a system to contain all process-generated wastewaters from such event;

(ii) Limits on discharges resulting from the application of manure to land, including restrictions on the rates of application of nitrogen and phosphorous;

(iii) Requirements to implement best management practices to ensure the CAFO achieves limitations under paragraphs (k)(1)(i) and (k)(1)(ii) of this section;

(iv) Requirements to develop and implement a Permit Nutrient Plan that addresses requirements developed under paragraphs (k)(1)(i), (ii), and (iii) of this section; and

(v) If the CAFO is in an area with topographic characteristics that indicate a likelihood that ground water has a direct hydrologic connection to waters of the United States, requirements necessary to comply with § 122.44, unless the permittee submits a hydrologist's statement that the production area is not connected to surface waters through a direct hydrologic connection.

(2) *CAFOs subject to part 412, Subparts A and B.* In addition to the applicable effluent limitations, when developing permits to be issued to CAFOs with horses, sheep or ducks subject to Subparts A and B of 40 CFR 412, the Director shall consider the need for effluent limitations for wastestreams not covered by Subparts A and B, including the need for the requirements described in paragraphs (k)(1)(ii) through (v) of this section.

(l) *How will the public know if a CAFO is implementing an adequate permit nutrient plan?*

(1) The Director shall make publicly available via the worldwide web or other publicly available source, and update every 90 days:

(i) A list of all CAFOs that have submitted a notice of intent for coverage under a general permit, and

(ii) A list of all CAFOs that have submitted a notice that their permit nutrient plan has been developed or revised.

(2) The Director shall make publicly available the notices of intent, notice of plan development, and the cover sheet and executive summary of the permittee's Permit Nutrient Plan. If the Director does not have a copy of the cover sheet and executive summary of the permittee's current Permit Nutrient Plan and the cover sheet and executive summary are not publicly available at the CAFO or other location, the Director shall, upon request from the public, obtain a copy of the cover sheet and executive summary. Until required by the Director, the CAFO operator is not required to submit cover sheet or executive summary to the Director.

(3) *Confidential business information.* The information required to be in Permit Nutrient Plan cover sheet and executive summary, and required soil sampling data, may not be claimed as confidential. Any claim of confidentiality by a CAFO in connection with the remaining information in the Permit Nutrient Plan will be subject to the procedure in 40 CFR Part 2.

4. Section 122.28 is amended by:

a. Removing the word "or" at the end of paragraph (a)(2)(i) and adding the word "or" at the end of paragraph (a)(2)(ii)(D).

b. Adding paragraph (a)(2)(iii).

c. Adding two sentences to the end of paragraph (b)(2)(ii)

d. Redesignating paragraph (b)(3)(i)(G) as paragraph (b)(3)(i)(H) and adding a new paragraph (b)(3)(i)(G).

e. Adding paragraph (b)(3)(vi).

The additions read as follows:

§ 122.28 General permits (applicable to State NPDES programs, see § 123.25).

(a) * * *

(2) * * *

(iii) Concentrated animal feeding operations.

* * * * *

(b) * * *

(2) * * *

(ii) * * * Notices of intent for coverage under a general permit for confined animal feeding operations must include: a topographic map as described in § 122.21(f)(7); name and address of any other entity with substantial operational control; a statement whether the owner or operator has developed and is implementing its Permit Nutrient Plan and, if not, the status of the development of its Permit Nutrient Plan. New sources subject to 40 CFR Part 412

shall also provide a copy of a draft plan that, at a minimum, demonstrates that there is adequate land available to the CAFO operator to comply with the land application provisions of 40 CFR Part 412 or describes an alternative to land application that the operator intends to implement.

* * * * *

(3) * * *

(i) * * *

(G) The discharge is from a CAFO. In addition to the other criteria in paragraph (b)(3) of this section, the Director shall consider whether general permits are appropriate for the following CAFOs:

(1) CAFOs located in an environmentally or ecologically sensitive area;

(2) CAFOs with a history of operational or compliance problems;

(3) CAFOs that are exceptionally large operation as determined by the Director; or

(4) Significantly expanding CAFOs.

* * * * *

(vi) Prior to issuing any general permits for CAFOs, the Director, after considering input from the public, shall issue a written statement of its policy on which CAFOs will be eligible for general permits, including a statement of how it will apply the criteria in paragraph (b)(3)(i)(G) of this section.

Appendix B to Part 122 [Removed and Reserved]

6. Remove and reserve Appendix B to part 122.

9. Part 412 is revised to read as follows:

PART 412—CONCENTRATED ANIMAL FEEDING OPERATIONS (CAFOs) POINT SOURCE CATEGORY

Sec.

412.0 General applicability.

412.1 General definitions.

412.2 General pretreatment standards.

Subpart A—Horses and Sheep

412.10 Applicability.

412.11 Special definitions.

412.12 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

412.13 Effluent limitations attainable by the application of the best available control technology economically achievable (BAT).

412.15 New source performance standards (NSPS).

Subpart B—Ducks

412.20 Applicability.

412.21 Special definitions.

412.22 Effluent limitations attainable by the application of the best practicable

control technology currently available (BPT).

412.25 New source performance standards (NSPS).

412.26 Pretreatment standards for new sources (PSNS).

Subpart C—Beef and Dairy

412.30 Applicability.

412.31 Effluent limitations attainable by the application of best practicable control technology currently available (BPT).

412.32 Effluent limitations attainable by the application of the best control technology for conventional pollutants (BCT).

412.33 Effluent limitations attainable by the application of the best available control technology economically achievable (BAT).

412.35 New source performance standards (NSPS).

412.37 Additional measures.

Subpart D—Swine, Veal and Poultry

412.40 Applicability.

412.41 Effluent limitations attainable by the application of best practicable control technology currently available (BPT).

412.42 Effluent limitations attainable by the application of the best control technology for conventional pollutants (BCT).

412.43 Effluent limitations attainable by the application of the best available control technology economically achievable (BAT).

412.45 New source performance standards (NSPS).

Authority: 33 U.S.C. 1311, 1314, 1316, 1317, 1318, 1342 and 1361.

§ 412.0 General applicability.

This part applies to process wastewater discharges resulting from concentrated animal feeding operations (CAFOs). Manufacturing activities which may be subject to this part are generally reported under one or more of the following Standard Industrial Classification (SIC) codes: SIC 0211, SIC 0213, SIC 0241, SIC 0259, or SIC 3523 (1987 SIC Manual).

§ 412.1 General Definitions.

As used in this part:

(a) The general definitions and abbreviations at 40 CFR part 401 shall apply.

(b) *Concentrated Animal Feeding Operation (CAFO)* is defined at 40 CFR 122.23(a)(3).

(c) *Fecal coliform* means the bacterial count (Parameter 1) at 40 CFR 136.3 in Table 1A, which also cites the approved methods of analysis.

(d) *Process wastewater* means water directly or indirectly used in the operation of the CAFO for any or all of the following: spillage or overflow from animal or poultry watering systems; washing, cleaning, or flushing pens, barns, manure pits, or other CAFO

facilities; direct contact swimming, washing or spray cooling of animals; litter or bedding; dust control; and stormwater which comes into contact with any raw materials, products or by-products of the operation.

(e) *Certified specialist* shall mean someone who has been certified to prepare Comprehensive Nutrient Management Plans (CNMPs) by USDA or a USDA sanctioned organization.

(f) *Land application area* means any land under the control of the CAFO operator, whether it is owned, rented, or leased, to which manure and process wastewater is or may be applied.

(g) *New source* means a source that is subject to subparts C or D of this part and, not withstanding the criteria codified at 40 CFR 122.29(b)(1): Is constructed at a site at which no other source is located; or replaces the housing including animal holding areas, exercise yards, and feedlot, waste handling system, production process, or production equipment that causes the discharge or potential to discharge pollutants at an existing source; or constructs a production area that is substantially independent of an existing source at the same site. Whether processes are substantially independent of an existing source, depends on factors such as the extent to which the new facility is integrated with the existing facility; and the extent to which the new facility is engaged in the same general type of activity as the existing source.

(h) *Overflow* means the process wastewater discharge resulting from the filling of wastewater or liquid manure storage structures to the point at which no more liquid can be contained by the structure.

(i) *Production area* means that part of the CAFO that includes the animal confinement area, the manure storage area, the raw materials storage area, and the waste containment areas. The animal confinement area includes but is not limited to open lots, housed lots, feedlots, confinement houses, stall barns, free stall barns, milkrooms, milking centers, cowyards, barnyard, exercise yards, animal walkways, and stables. The manure storage area includes but is not limited to lagoons, sheds, under house or pit storage, liquid impoundments, static piles, and composting piles. The raw materials storage area includes but is not limited to feed silos, silage bunkers, and

bedding materials. The waste containment area includes but is not limited to settling basins, and areas within berms, and diversions which separate uncontaminated stormwater. Also included in the definition of production area is any egg washing or egg processing facility.

(j) *Setback* means a specified distance from surface waters or potential conduits to surface waters where manure and wastewater may not be land applied. Examples of conduits to surface waters include, but are not limited to, tile line intake structures, sinkholes, and agricultural well heads.

(k) *Soil test phosphorus* is the measure of the phosphorus content in soil as reported by approved soil testing laboratories using a specified analytical method.

(l) *Phosphorus threshold or TH level* is a specific soil test concentration of phosphorus established by states. The concentration defines the point at which soluble phosphorus may pose a surface runoff risk.

(m) *Phosphorus index* means a system of weighing a number of measures that relate the potential for phosphorus loss due to site and transport characteristics. The phosphorus index must at a minimum include the following factors when evaluating the risk for phosphorus runoff from a given field or site:

- (1) Soil erosion.
- (2) Irrigation erosion.
- (3) Run-off class.
- (4) Soil phosphorus test.
- (5) Phosphorus fertilizer application rate.
- (6) Phosphorus fertilizer application method.
- (7) Organic phosphorus application rate.
- (8) Method of applying organic phosphorus.

(n) *Permit Nutrient Plan* means a plan developed in accordance with § 412.33 (b) and § 412.37. This plan shall define the appropriate rate for applying manure or wastewater to crop or pasture land. The plan accounts for soil conditions, concentration of nutrients in manure, crop requirements and realistic crop yields when determining the appropriate application rate.

(o) *Crop removal rate* is the application rate for manure or wastewater which is determined by the amount of phosphorus which will be taken up by the crop during the growing

season and subsequently removed from the field through crop harvest. Field residues do not count towards the amount of phosphorus removed at harvest.

(p) *Ten(10)-year, 24-hour rainfall event and 25-year, 24-hour rainfall event* mean precipitation events with a probable recurrence interval of once in ten years, or twenty five years, respectively, as defined by the National Weather Service in Technical Paper No. 40, "Rainfall Frequency Atlas of the United States," May, 1961, or equivalent regional or State rainfall probability information developed from this source. The technical paper is available at <http://www.nws.noaa.gov/er/hq/Tp40s.html>.

(q) The parameters that are regulated or referenced in this part and listed with approved methods of analysis in Table 1B at 40 CFR 136.3 are defined as follows:

- (1) *Ammonia (as N)* means ammonia reported as nitrogen.
- (2) *BOD₅* means 5-day biochemical oxygen demand.
- (3) *Chloride* means total chloride.
- (4) *Nitrate (as N)* means nitrate reported as nitrogen.
- (5) *Total dissolved solids* means non-filterable residue.

(r) The parameters that are regulated or referenced in this part and listed with approved methods of analysis in Table 1A at 40 CFR 136.3 are defined as follows:

- (1) *Fecal coliform* means fecal coliform bacteria.
- (2) *Total coliform* means all coliform bacteria.

§ 412.3 General pretreatment standards.

Any source subject to this part that introduces process wastewater pollutants into a publicly owned treatment works (POTW) must comply with 40 CFR part 403.

Subpart A—Horses and Sheep

§ 412.10 Applicability.

This subpart applies to discharges resulting from the production areas at CAFOs where sheep are confined in open or housed lots; and horses are confined in stables such as at racetracks. This subpart does not apply to such CAFOs with less than the following capacities:

APPLICABLE CAFOS

Livestock	Minimum capacity
Sheep	10,000
Horses	500

§ 412.11 Special definitions.

For the purpose of this subpart:
 (a) *Housed lot* means totally roofed buildings, which may be open or completely enclosed on the sides, wherein animals are housed over floors of solid concrete or dirt and slotted (partially open) floors over pits or manure collection areas, in pens, stalls or cages, with or without bedding materials and mechanical ventilation.
 (b) *Open lot* means pens or similar confinement areas with dirt, concrete paved or hard surfaces, wherein animals are substantially or entirely exposed to the outside environment, except where some protection is afforded by windbreaks or small shed-type shaded areas.

§ 412.12 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

(a) Except as provided in 40 CFR 125.30 through 125.32 and when the provisions of paragraph (b) of this section apply, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT: There must be no discharge of process wastewater pollutants into U.S. waters.
 (b) Whenever rainfall events cause an overflow of process wastewater from a facility designed, constructed and operated to contain all process-generated wastewaters plus the runoff from a 10-year, 24-hour rainfall event at

the location of the point source, any process wastewater pollutants in the overflow may be allowed to be discharged into U.S. waters.

§ 412.13 Effluent limitations attainable by the application of the best available technology economically achievable (BAT).

(a) Except as provided in 40 CFR 125.30 through 125.32 and when the provisions of paragraph (b) of this section apply, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BAT: There must be no discharge of process wastewater pollutants into U.S. waters.
 (b) Whenever rainfall events cause an overflow of process wastewater from a facility designed, constructed and operated to contain all process-generated wastewaters plus the runoff from a 25-year, 24-hour rainfall event at the location of the point source, any process wastewater pollutants in the overflow may be allowed to be discharged into U.S. waters.

§ 412.15 New source performance standards (NSPS).

(a) Except as provided in paragraph (b) of this section, any new point source subject to this subpart must achieve the following performance standards: There must be no discharge of process wastewater pollutants into U.S. waters.
 (b) Whenever rainfall events cause an overflow of process wastewater from a facility designed, constructed and

operated to contain all process-generated wastewaters plus the runoff from a 25-year, 24-hour rainfall event at the location of the point source, any process wastewater pollutants in the overflow may be allowed to be discharged into U.S. waters.

Subpart B—Ducks

§ 412.20 Applicability.

This subpart applies to discharges resulting from dry and wet duck feedlots with a capacity of at least 5000 ducks.

§ 412.21 Special definitions.

For the purpose of this subpart:
 (a) *Dry lot* means a facility for growing ducks in confinement with a dry litter floor cover and no access to swimming areas.
 (b) *Wet lot* means a confinement facility for raising ducks which is open to the environment, has a small number of sheltered areas, and with open water runs and swimming areas to which ducks have free access.

§ 412.22 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the application of BPT:

EFFLUENT LIMITATIONS

Regulated parameter	Maximum daily ¹	Maximum monthly avg. ¹	Maximum daily ²	Maximum monthly avg. ²
BOD ₅	3.66	2.0	1.66	0.91
Fecal coliform	(³)	(³)	(³)	(³)

¹ Pounds per 1000 ducks.
² Kilograms per 1000 ducks.
³ Not to exceed MPN of 400 per 100 ml at any time.

§ 412.25 New source performance standards (NSPS).

Any new source subject to this subpart must achieve the following standards:
 (a) Except as provided in paragraph (b) of this section, there must be no discharge of process wastewater pollutants into U.S. waters.
 (b) Whenever rainfall events cause an overflow of process wastewater from a facility designed, constructed and operated to contain all process-generated wastewaters plus the runoff from a 25-year, 24-hour rainfall event at the location of the point source, any process wastewater pollutants in the

overflow may be allowed to be discharged into U.S. waters.

§ 412.26 Pretreatment standards for new sources (PSNS).

(a) Except as provided in 40 CFR § 403.7 and in paragraph (b) of this section, any new source subject to this subpart must achieve the following pretreatment standards: There must be no discharge of process wastewater pollutants into a POTW.
 (b) Whenever rainfall events cause an overflow of process wastewater from a facility designed, constructed and operated to contain all process-generated wastewaters plus the runoff from a 25-year, 24-hour rainfall event at

the location of the new source, the discharge of any process wastewater pollutants in the overflow may be allowed.

Subpart C—Beef and Dairy

§ 412.30 Applicability.

This subpart applies to concentrated animal feeding operations (CAFOs), as defined in 40 CFR § 122.23, and includes the following types of animals: Mature dairy cows, either milking or dry; and cattle other than mature dairy or veal.

§ 412.31 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR § 125.30 through § 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT:

- (a) For CAFO production areas:
 - (1) Except as provided in paragraph (a)(2) of this section, there must be no discharge of process wastewater pollutants into U.S. waters.
 - (2) Whenever rainfall causes an overflow of process wastewater, pollutants in the overflow may be discharged into U.S. waters during those periods subject to following conditions:
 - (i) The production area is designed and constructed to contain all process

wastewaters including the runoff from a 25 year, 24 hour rainfall event; and
 (ii) The production area is operated in accordance with the requirements of § 412.37(a)(1) through (3).

- (b) For CAFO land application areas:
 - (1) Discharges resulting from the application of manure or process wastewater to land owned or under the control of the CAFO must achieve the following:
 - (i) Develop and implement a Permit Nutrient Plan (PNP) that includes the requirements specified at § 412.37; and establishes land application rates for manure in accordance with § 412.31 (b)(1)(iv).
 - (ii) The PNP must be developed or approved by a certified specialist.
 - (iii) The PNP must be written taking into account realistic yield goals based

on historic yields from the CAFO, or county average data when historic yields are not appropriate. County average data may be used when a facility plants a crop that no yield data for that CAFO land application area has been obtained within the previous 10 years. CAFOs shall review the PNP annually and revise as necessary, and must rewrite the PNP at least once every five years.

(iv) Apply manure and process wastewater at a rate established in accordance with one of the three methods defined in tables 1 through 3 of this section. State approved indices, thresholds, and soil test limits shall be utilized such that application does not exceed the crop and soil requirements for nutrients:

TABLE 1.—PHOSPHORUS INDEX

Phosphorus index rating	Manure and wastewater application rate
Low Risk	Application of manure and wastewater may not exceed the nitrogen requirements of the crop.
Medium Risk	Application of manure and wastewater may not exceed the nitrogen requirements of the crop.
High Risk	Application of phosphorus in manure and wastewater may not exceed the amount of phosphorus removed from the field with crop harvest.
Very High Risk	No land application of manure or wastewater.

TABLE 2.—PHOSPHORUS THRESHOLD

Soil phosphorus threshold level	Manure and wastewater application rate
< ¾ TH application	Manure and wastewater may not exceed the nitrogen requirements of the crop.
> ¾ TH, < 2 TH application	Phosphorus in manure and wastewater may not exceed the amount of phosphorus removed from the field with crop harvest.
> 2 TH application	No land application of manure or wastewater.

TABLE 3.—SOIL TEST PHOSPHORUS

Soil test phosphorus level	Manure and wastewater application rate
Low	Application of manure and wastewater may not exceed the nitrogen requirements of the crop.
Medium	Application of manure and wastewater may not exceed the nitrogen requirements of the crop.
High	Application of phosphorus in manure and wastewater may not exceed the amount of phosphorus removed from the field with crop harvest.
Very High	No land application of manure and wastewater.

(2) Multi-year phosphorus applications are prohibited when either the P-Index is rated high, the soil phosphorus threshold is between ¾ and 2 times the TH value, or the soil test phosphorus level is high as determined in paragraph (b)(1) (iv) of this section unless:

- (i) Manure application equipment designed for dry poultry manure or litter cannot obtain an application rate low enough to meet a phosphorus based application rate as determined by the PNP In the event a phosphorus application occurs during one given year which exceeds the crop removal rate for that given year, no additional

manure or process wastewater shall be applied to the same land in subsequent years until all applied phosphorus has been removed from the field via harvest and crop removal.

- (ii) [Reserved]

§ 412.32 Effluent limitations attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32 and 412.41(2), any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BCT:

- (a) For CAFO production areas: Discharges must achieve the same requirements as specified in § 412.31(a).

(b) For CAFO land application areas: Discharges resulting from the application of manure or process wastewater to crop or pasture land owned or under the control of the CAFO must achieve the same requirements as specified in § 412.31(b) and § 412.37.

§ 412.33 Effluent limitations attainable by the application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32 and 412.33(a)(2), any existing point source subject to this

subpart must achieve the following effluent limitations representing the application of BAT:

(a) For CAFO production areas:

(1) There must be no discharge of process wastewater pollutants into U.S. waters, including any pollutants discharged to ground water which has a direct hydrologic connection to surface waters.

(2) Whenever rainfall causes an overflow of process wastewater, pollutants in the overflow may be discharged into U.S. waters during those periods when the following conditions are met:

(i) The production area is designed and constructed to contain all process wastewaters including the runoff from a 25 year, 24 hour rainfall event; and

(ii) The production area is operated in accordance with the requirements of § 412.37(a).

(3)(i) The ground water beneath the production area must be sampled twice annually to demonstrate compliance with the no discharge requirement unless the CAFO has determined to the satisfaction of the permitting authority that the ground water beneath the production area is not connected to surface waters through a direct hydrologic connection.

(ii) Ground water samples shall be collected up-gradient and down-gradient of the production area and analyzed for:

- (A) Total coliforms.
- (B) Fecal coliform.
- (C) Total dissolved solids.
- (D) Nitrates.
- (E) Ammonia.
- (F) Chloride

(b) For CAFO land application areas:

Discharges resulting from the application of manure or process wastewater to crop or pasture land owned or under the control of the CAFO must achieve the same requirements as specified in § 412.31(b) and § 412.37.

§ 412.35 New source performance standards (NSPS).

Any new source subject to this subpart must achieve the following standards:

(a) For CAFO production areas:

Subject to the provisions of paragraph (c) of this section, discharges must achieve the same requirements as specified in § 412.33(a).

(b) For CAFO land application areas:

Subject to the provisions of paragraph (c) of this section, discharges resulting from the application of manure or process wastewater to crop or pasture land owned or under the control of the CAFO must achieve the same requirements as specified in § 412.31(b) and § 412.37.

(c) Any new source subject to the provisions of this section that commenced discharging after [insert date 10 years prior to the date that is 60 days from the publication date of the final rule] and before [insert date that is 60 days from the publication date of the final rule] must continue to achieve the standards specified in the 2000 version of § 412.15, provided that the new source was constructed to meet those standards. For toxic and nonconventional pollutants, those standards shall not apply after the expiration of the applicable time period specified in 40 CFR 122.29(d)(1); thereafter, the source must achieve the standards specified in paragraphs (a) and (b) of this section.

§ 412.37 Additional measures.

(a) Each CAFO subject to this subpart must implement the following requirements:

(1) There must be routine visual inspections of the CAFO production area to check the following:

(i) Weekly inspections of all stormwater diversion devices, such as roof gutters, to ensure they are free of debris that could interfere with the diversion of clean stormwater;

(ii) Weekly inspections of all stormwater diversion devices which channel contaminated stormwater to the wastewater and manure storage and containment structure, to ensure that they are free of debris that could interfere with ensuring this contaminated stormwater reaches the storage or containment structure;

(iii) Daily inspections of all water lines providing drinking water to the animals to ensure there are no leaks in these lines that could contribute unnecessary volume to liquid storage systems or cause dry manure to become too wet;

(iv) Runoff diversion structures and animal waste storage structures must be visually inspected for: seepage, erosion, vegetation, animal access, reduced freeboard, and functioning rain gauges and irrigation equipment, on a weekly basis manure storage area to ensure integrity of the structure. All surface impoundments must have a depth marker which indicates the design volume and clearly indicates the minimum freeboard necessary to allow for the 25 year 24 hour rainfall event. The inspection shall also note the depth of the manure and process wastewater in the impoundment as indicated by this depth marker.

(2) Any deficiencies found as a result of these inspections shall be corrected as soon as possible. Deficiencies and

corrective action taken shall be documented.

(3) Mortalities may not be disposed of in any liquid manure or stormwater storage or treatment system, and must be handled in such a way as to prevent discharge of pollutants to surface water.

(4) Land application of manure generated by the CAFO to land owned or controlled by the CAFO must be done in accordance with the following practices:

(i) Manure may not be applied closer than 100 feet to any surface water, tile line intake structure, sinkhole or agricultural well head.

(ii) The CAFO must take manure samples at least once per year and analyzed for nitrogen, phosphorus and potassium. Samples must be collected from all manure storage areas, both liquid and dry storage, as well as any wastewater or storm water storage. The CAFO must take soil samples once every three years if they apply manure to crop or pasture land under their control, and analyze the soil sample for phosphorus. Samples shall be collected in accordance with accepted Extension protocols and the analyses must be conducted in accordance with the state nutrient management standard. These protocols shall be documented in the PNP.

(iii) Manure that is transported off-site must be sampled at least once a year for nitrogen, phosphorus and potassium. The results of these analyses must be provided to the recipient of the manure.

(iv) Manure application equipment must be calibrated prior to land application of manure and/or process wastewaters at a minimum of once per year.

(b) Record keeping requirements:

Each CAFO must maintain on its premises a complete copy of the current PNP and the records specified in paragraphs (b)(1) through (12) of this section. The CAFO must make the PNP available to the permitting authority and the Regional Administrator, or his or her designee, for review upon request. Records must be maintained for 5 years from the date they are created.

(1) Cover Sheet which includes the following information:

(i) the name and location of the CAFO,

(ii) name and title of the owner or operator

(iii) name and title of the person who prepared the plan,

(iv) date the plan was prepared,

(v) date the plan was amended

(2) Executive Summary which includes the following information:

(i) Total average herd or flock size

(ii) Identification of manure collection, handling, storage, and treatment practices

(iii) Amount of manure generated annually

(iv) Identification of planned crops (rotation)

(v) Realistic yield goal as described in § 412.31(b)(1)(iii)

(vi) Field condition as determined by the phosphorus index, soil test phosphorus, or phosphorus threshold (for each field unit that will receive manure)

(vii) number of acres that will receive manure

(viii) amount of manure transported off-site

(ix) animal waste application rate (gallons or tons/acre)

(x) identification of watershed or nearest surface water body

(3) Records documenting the inspections required under paragraph (a)(1) of this section.

(4) Records tracking the repairs performed on drinking water lines, automated feeding equipment, feed storage and silos, manure storage, manure treatment facilities, as well as maintenance of berms and diversions that direct clean stormwater away from any manure and other process wastewater.

(5) Records documenting the following information about manure application and crop production.

(i) Expected crop yield based on historical data for the CAFO for its land application area, or county average yield data when the CAFO does not have a prior history of crop yields

(ii) The date(s) manure is applied,

(iii) Weather conditions at time of application and for 24 hours prior to and following application,

(iv) Results from manure and soil sampling,

(v) Test methods used to sample and analyze manure and soil,

(vi) Whether the manure application rate is limited to nitrogen, phosphorus, or some other parameter,

(vii) The amount of manure and manure nutrients applied,

(viii) The amount of any other nutrients applied to the field reported in terms of nitrogen, phosphorus and potassium (including commercial fertilizer, legume credits, and biosolids),

(ix) Calculations showing the total nutrients applied to land,

(x) Calibration of manure application equipment,

(xi) The rate of application of manure,

(xii) The method used to apply the manure, estimated nitrogen losses based on application method used, and the route of nitrogen loss,

(xiii) The field(s) to which manure was applied and total acreage receiving manure,

(xiv) What crop(s) was planted,

(xv) The date that crops were planted in the field, and

(xvi) The crop yields obtained.

(6) Records of the total volume or amount of manure and process wastewater generated by all animals at the facility during each 12 month period. This must include milk parlor washwater and egg washwater. The volume or amount may be determined through direct measurements or an estimated value provided all factors are documented.

(7) Records of rainfall duration, amount of rainfall, and the estimated volume of any overflow that occurs as the result of any catastrophic or chronic rainfall event.

(8) A copy of the emergency response plan for the CAFO.

(9) Records of how mortalities are handled by the CAFO.

(10) Name of state approved specialist that prepared or approved the PNP, or record and documentation of training and certification for owners or operator writing their own PNP.

Subpart D—Swine, Poultry and Veal

§ 412.40 Applicability.

This subpart applies to operations defined as concentrated animal feeding operations (CAFOs) under 40 CFR 122.23 and includes the following animals: Swine, each weighing 55 lbs. or more; swine, each weighing less than 55 lbs.; veal; cattle; chickens; and turkeys.

§ 412.41 Effluent limitation attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT:

- (a) For CAFO production areas: Discharges must achieve the same requirements as specified in § 412.31(a).
- (b) For CAFO land application areas: Discharges resulting from the application of manure or process wastewater to crop or pasture land owned or under the control of the CAFO must achieve the same requirements as specified in § 412.31(b) and § 412.37.

§ 412.42 Effluent limitations attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point

source subject to this subpart must achieve the following effluent limitations representing the application of BCT:

- (a) For CAFO production areas: The limitations are the same as specified in § 412.41(a).
- (b) For CAFO land application areas: The limitations are the same as specified in § 412.41(b).

§ 412.43 Effluent limitations attainable by the application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BAT:

- (a) For CAFO production areas:
- (1) There must be no discharge of process wastewater pollutants into U.S. waters.
- (2) Any CAFO subject to this subpart must also comply with the requirements specified in § 412.37(a)(1) through (3).
- (b) For CAFO land application areas: The limitations are the same as specified in § 412.41(b).

§ 412.45 New source performance standards (NSPS).

Any new source subject to this subpart must achieve the following standards:

- (a) For CAFO production areas:
- (1) There must be no discharge of process wastewater pollutants into U.S. waters, including any pollutants discharged to ground water which have a direct hydrologic connection to surface waters.
- (2) The ground water beneath the production area must be sampled twice annually to demonstrate compliance with the provisions of paragraph (a)(1) of this section, unless the CAFO has determined to the satisfaction of the permitting authority that the ground water beneath the production area is not connected to surface waters through a direct hydrologic connection. Ground water samples must be collected up-gradient and down-gradient of the production area, and analyzed for:
- (i) Total coliforms
- (ii) Fecal coliform
- (iii) Total dissolved solids
- (iv) Nitrates
- (v) Ammonia
- (vi) Chloride
- (3) Any CAFO subject to this subpart must also comply with the requirements specified in § 412.37(a)(1) through (3).
- (b) For CAFO land application areas: Discharges resulting from the application of manure or process wastewater to crop or pasture land

owned or under the control of the CAFO must achieve the same requirements as specified in § 412.31(b) and § 412.37.

(c) Any new source subject to the provisions of this section that commenced discharging after [insert date 10 years prior to the date that is 60 days from the publication date of the

final rule] and before [insert date that is 60 days from the publication date of the final rule] must continue to achieve the standards specified in § 412.15, provided that the new source was constructed to meet those standards. For "toxic" and nonconventional pollutants, those standards shall not apply after the

expiration of the applicable time period specified in 40 CFR § 122.29(d)(1); thereafter, the source must achieve the standards specified in paragraphs (a) and (b) of this section.

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