

# Navigating Manure Regulations— California, Idaho and Texas Dairy Producers

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The information superhighway has arrived and right now, you're right in the middle of a 105 car pile-up. Where do you turn for reliable information? At the Federal level, policy is changing. The methodology for doing business as an animal operation will be vastly different within the next two years. A producer recently said to me "the reason I'm involved in so many committees and groups is that I want to keep the dots connected". In order to connect the dots it is imperative that a minimum amount of time is invested to attempt to navigate the mine field associated with environmental compliance issues. Many people don't realize how important it is to be involved and understand how policy is created.

Herd owners of large dairies manage people and information. The critical impact on a dairy is how owners and managers allocate time. Where is information obtained? How do people receive information? Who is viewed as a reliable source of information? Where does a person turn to find the correct information? The answers to these questions may make or break a facility in the area of environmental compliance.

For some producers connecting the dots requires keeping an eye on the Federal government. For other producers, this means watching the Federal government and their State Capitol. And then we have the ever growing group of people that need to watch the Federal and State levels, but must get involved at the local level in development of County policy.

The objectives of this session are to provide a brief insight into the regulatory process at the Federal level and encourage producers to take time and become involved in establishing policy at Federal, State and local levels.

## What jurisdiction does the US EPA have over dairy facilities?

NPDES permit: The US EPA can require a discharge permit for industries. This is the National Pollutant Discharge Elimination System Permit (NPDES). The rules of the permit are found in Effluent Limitation Guidelines (ELG). Enforcement actions as a result of violations are based on the ELG. Many industries are obligated to obtain NPDES permits. The permit spells out what is allowed to be discharged (volume and chemical composition). For the dairy and livestock industries, the NPDES permit has associated Effluent Limitation Guidelines (ELG) that firmly

PROHIBIT discharge from permitted facilities. The ELG is the regulatory tool used to enforce NPDES permits. Concentrated Animal Feeding Operations (CAFO) are identified as point sources by the Federal Clean Water Act. As a point source, such facilities are required to obtain NPDES permits and comply with associated ELG.

The criteria for determining a CAFO are defined in Appendix B to Part 122.3 of the Clean Water Act. An animal feeding operation is a concentrated animal feeding operation for purposes "...if either of the following criteria are met.

700 mature dairy cattle (whether milked or dry cows);  
or

200 mature dairy cattle (whether milked or dry cows) and either one of the following conditions are met: pollutants are discharged into navigable waters through a man-made ditch, flushing system or other similar manmade device; or pollutants are discharged directly into waters of the United States which originate outside of and pass over, across, or through the facility or otherwise come into direct contact with the animals confined in the operation." This is followed by the statement "Provided, however, that no animal feeding operation is a concentrated animal feeding operation as defined above if such animal feeding operation discharges only in the event of a 25 year, 24-hour storm event."

The US EPA functions through 10 regional offices. Most State Regulatory Agencies that have enforcement responsibilities for the Clean Water Act oversee NPDES permits. In a few States the Regional EPA office is responsible for issuing the NPDES permit. A State Compendium report is available through <http://www.epa.gov/owm/stcpdfin.pdf>. This document continues to be updated and may serve as an excellent starting point for individuals unfamiliar with their State's program.

The permit requires that the facility NOT discharge, except during a 25 year, 24-hour storm event. Land application of manure, resulting in runoff to surface waters, has resulted in prosecution. The findings set precedence that the land application component of manure management was linked to the point source operation (the CAFO) and associated discharges therefore VIOLATED the NPDES permit.

Environmental groups have focused attention on CAFO. Additionally, bills were introduced in the US Senate

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(Harkin, 1997), and the US House of Representatives (Miller in 1998 and 1999) to amend the Clean Water Act and modify the requirements for the NPDES Permit. The Miller bill submitted to the House of Representatives has a few points that are worth noting (Table 1). During this process, groups and government agencies asked US EPA how many CAFO are in compliance with existing regulations? Unfortunately, there was insufficient information for the regulatory community to respond. The US EPA developed a Strategy to improve compliance of CAFO. The Strategy was released in March 1998. It was quietly rescinded and resurfaced in September 1998 as a Joint Unified Animal Feeding Operation Strategy with the USDA Natural Resources Conservation Service (NRCS). There were 11 listening sessions held throughout the United States. More than 2,100 comment letters were received by the January 19, 1999, deadline. On March 3, 1999, the Final AFO Strategy was released.

During the last 20 months, the Strategy has served as a roadmap for where US EPA may travel with respect to the NPDES permit. Comprehensive Nutrient Management Plans (CNMP) were introduced as a management tool to assist in tracking nutrients through a facility (managed, stored, and utilized in a proper fashion). In one respect, the Strategy identified CNMP as a great opportunity for all animal facility managers to assist in managing their facilities. A CNMP as presented in the Strategy would in fact be a tremendous amount of documentation. Utilization of the information in a CNMP would require management skills and should improve the efficiency and reduce the liability at CAFO. It was identified that less than 5% of the facilities would be required to do CNMP. The CNMP would be voluntary for most of the operations in the United States. See Table 1 for a comparison of the Strategy and Miller's bill.

In July 2000 US EPA published an outreach document to announce that draft Effluent Limitation Guidelines would be released by mid-December. On December 15, 2000, Carol Browner, Secretary of US EPA signed the draft Effluent Limitation Guidelines. A prepublication copy can be found at <http://www.epa.gov/owm/afos/proposedrule.html>. The final proposed rule appeared in the Federal Register on January 12, 2001. You can access it through the Federal Register by going to their website <http://www.gpo.ucop.edu/search/fedfld.html> and selecting 2001, and entering national pollutant discharge as the word or phrase. Select after in the issue date box and type in 1/11/01 in the box to the right of the issue date. In the Sections

box, click proposed rules. Click run search. It will print a list of results. The particular item you are interested in is National Pollutant Discharge Elimination System Permit Regulation proposed rule dated January 12, 2001. There are 4 files that combine to make this document. Three of the files are 50 pages and the last file is 37 pages. It's a much more concise version due to the size font used in the Federal Register. The important part of the document is near the end beginning on page 3135 of the Federal Register version. From there you can open a PDF file to print. It's not a brief document. There is a 120 day comment period. There will be no listening sessions and there are no formal presentations planned by US EPA on this draft document.

Table 1 attempts to compare differences between Miller's proposed bill, the AFO Strategy, NRCS CNMP guidance, and the draft ELG. Keep in mind that the current Federal requirement (the NPDES permit) requires that dairy operators that are defined as point source not discharge to surface waters of the United States. It does not have detailed requirements to prohibit discharge, nor does it have detailed requirements for monitoring and reporting. All of the proposed alternatives require extensive amounts of record keeping.

It is imperative that livestock producers provide comment on this document. It is a bit lengthy. The pre-proposed rule document was over 900 pages long. If you actually single space the document and eliminate the footnote indicating it's a pre-document, it's markedly shorted (around 300 pages). There is an excellent table of contents and lots of appendix material. Producers should be encouraged to work in small or medium sized groups to provide thoughtful comment on the content of the draft ELG.

TMDL: The ELG review and revision (technology-based effluent limits) is just one part of the Clean Water Act. The Total Maximum Daily Loading (TMDL) component in the Clean Water Act will require attention in some parts of the United States. This is a quantitative water quality-based approach to pollution control. A TMDL defines how much of a pollutant a water body can tolerate on a daily basis and still meet the relevant water quality standards. The total of all the sources of the pollutant in the watershed must not exceed the TMDL. Areas that have impaired water bodies are obligated to prepare TMDL to identify standards for the daily loading of specific nutrients. This section of the Clean Water Act was not enforced for years. Rulings of lawsuits have resulted in the US EPA being responsible for development of TMDL when States fail to develop TMDL for impaired water bodies. US EPA is under court order in many States to produce TMDLs. Environmental groups continue to file additional complaints.

Much about TMDL requirements is unclear, confusing, and unpredictable. US EPA spells out how the States should prepare the list of impaired water bodies and prioritize the water bodies on the list. Once prioritized, States are obligated to establish TMDL for the priority water bodies. Levels should be set "at levels necessary to attain and maintain the applicable narrative and numerical water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." Most States do not have policies or regulations guiding TMDL development. Additionally, State regulatory agencies do not typically have staff or funding for program development, enforcement, and review. It should not be ignored that many States lack sufficient data to adequately determine if water bodies are impaired or not. There is a large variation in how individuals or groups define polluted water bodies. Regulatory staff have tremendous flexibility and opportunity in the absence of Federal or State policy clearly defining methodology for TMDL development.

The US EPA has issued guidance documents that further clarify TMDL. These are guidance documents and lack the force of regulation. Their purpose is to assist states with program implementation prior to issuing formal regulations.

For many parts of the United States, phosphorus is a critical nutrient. The development and implementation of standards will require monitoring for individual land owners and groups of individuals within a water shed. Violations of standards are subject to fines and potentially jail time. If your area is going through the TMDL process, you will want to be involved. It is critical to understand what the responsibilities of the regulatory agencies are and what you can do to best manage your animals and land.

Coastal Zone Act Reauthorization Amendments: The Coastal Zone Act was amended in 1990. The basic objective of the amendment was to require coastal states to develop and have approved a non-point source plan. Coastal states include all states within 10 miles of high tide and states that contribute to waters that have coastal outlets. The coastal zone consists of states bordering the Pacific, Atlantic, and Gulf of Mexico, those bordering the Great Lakes and states with rivers that go to any of these water bodies. Most of the United States falls under Coastal Zone Act jurisdiction. The US EPA issued a guidance document to present management measures for agricultural sources. This included erosion and sediment control, facility wastewater and runoff from confined animal facility (facilities were identified down to 20 cows), nutrient

management, pesticide management, grazing management, and irrigation water management. Non-agricultural sources identified were forestry, urban areas, marinas and recreational boating, hydromodification (channelization and channel modification, dams, streambank and shoreline erosion), and wetlands, riparian areas, and vegetated treatment systems.

The timeline for implementation of the Coastal Zone Act Reauthorization amendments was for states to develop technical advisory committees to address the management measures and then submit a state plan to US EPA and the National Oceanic and Air Administration for coastal non-point plan. Originally, states were scheduled to begin implementation by January 1996, and be completed by January 1999.

Clean Air Act: The Clean Air Act was passed in 1954. It established ambient air quality standards for six compounds. When the ambient standards are exceeded in a local air basin, the state is required to develop and implement plans to reduce concentrations of the compound. In the absence of the state developing a plan, or if the plan is not deemed acceptable to citizens or groups, law suits can be filed. The end result is that US EPA is obligated to develop a federal implementation plan to reduce emissions of the compound.

Once compounds exceed the maximum standards, the regulatory agency will conduct an inventory process. Typically, they identify the categories and associated activity factors (how many are in this category) that contribute to the emissions. Then they determine the emission rate for each category. Lastly, they multiply the activity factor by the emissions rate to estimate the total emissions for each category. The numbers are summed over all categories and the total emissions are estimated. Each category can determine its contribution to emissions by dividing its rate by the total rate. In air sheds where there are considerable numbers of dairy animals, the dairy may well have the highest contribution to ammonia emissions.

Although the process for the regulatory agency to follow is straight forward, there are some potential areas for problems (mis-calculations) to occur. It is important to be sure that someone knowledgeable with livestock is involved in estimating emissions. At a minimum, producers need to be involved in the review process after calculations are made. You need to be sure that the numbers make sense. A common mistake is for data to be obtained from an Ag Commissioner's office. There's nothing wrong with the data as long as you understand what they mean. If the Ag Commissioner has data for numbers of bulls and this

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number includes bull calves sold, one should use caution before applying the number directly to an emission rate. Depending on the destination of the bull calves, they may not be contributing to air emissions (sold out of county for veal, feedlot, etc.). You don't need to be an air chemist to study population numbers and identify if they make sense for your geographic area. You can't expect the staff from the regulatory agency to fully understand the subtle differences in how data are collected and what they mean. You have the ability to take control of your destiny and get involved in the emissions calculations.

The two compounds of interest to dairy operators are particulate matter of less than 10 microns in aerodynamic diameter ( $PM_{10}$ ) and ozone. Both compounds are associated with human health problems. The  $PM_{10}$  is from primary sources (dust particles in the atmosphere) and secondary sources. Dust from animal and farming activities can add to the  $PM_{10}$ . Ammonia emitted from decomposition of manure (the crude protein that doesn't end up in milk is excreted and can be volatilized into the atmosphere as ammonia) can react with oxides of nitrogen in the atmosphere (exhaust from gas engines) and form ammonium nitrate. This particle is less than 10 microns in aerodynamic diameter.

The other compounds of interest are reactive organic compounds. These are carbon based compounds that are reactive and serve as catalysts in the formation of ozone. Elevated ozone in the air we breath (not the hole in the upper atmosphere) is undesirable. It a component in smog and is the compound measured in most air sheds that is used to determine the air quality index. The same academic exercise is accomplished for reactive organic compound formation that is done for ammonia emissions. Unfortunately, the data to estimate emissions are sketchy at best. If you live in an air shed where reactive organic compound emissions are being estimated, be sure you speak with someone that is familiar with the scientific data so you are best informed.

The other air issue (other than odor) is methane. It is not associated with the Clean Air Act. However, it does make the radar screen when folks discuss global warming. The biological fact of manure decomposition is that methane will be formed when manure is in an anaerobic system. Standard retention ponds without aeration technology result in anaerobic conditions and methane generation. The larger the herd, the higher the potential for methane generation. Also, the greater the target if the regulatory agency needs to reduce methane emissions.

As an emitter, life may not be all bad. There are some good things that can come from conserving nitrogen (reducing ammonia volatilization). The more nitrogen that is conserved in the system, the better the nitrogen to phosphorus ratio for land application. Many parts of the United States are in areas where phosphorus standards will be applied for land applied nutrients. As a result, standard manure management will result in the need to increase use of commercial fertilizer to meet plant nitrogen requirements. With nitrogen conservation, it is possible to reduce the reliance on commercial fertilizer. Commonly used technologies may need to be revisited and evaluated for additional criteria to consider environmental ramifications.

In the category of "here we go again," the methane emissions may not be a bad thing either. There are plenty of companies willing to turn manure into electricity. Given the electrical problems associated with this winter, it is a given more producers will look to additional technologies. There are simple and complex systems. Be wise in making decisions if you chose to collect methane and generate electricity. Gather information. Understand your options. Understand your obligations. Critically evaluate the additional resources needed to adequately operate the system. Read beyond the testimonials. Do your homework ahead of time. Check to see if you can get someone else to pay for the system. Electric companies will want to increase electric output. To build additional plants will require a need to offset additional methane emissions. Maybe an electric provider will pay for part or all of the technology.

## State or local regulations

Each of the states and territories in the United States has the potential for additional requirements. And, counties have the opportunity to have even more stringent requirements. Ask any California dairy producer about the California Environmental Quality Act (CEQA). If there is not immediate reaction, the odds are fairly good that the individual has not gone through a county permitting process in the last few years to either expand their current dairy or relocate. Like many of the previously mentioned regulations, enforcement of CEQA on agriculture and animal facilities has been almost non-existent during its first 25+ years. More recent attention from environmental groups has resulted in stronger enforcement of CEQA. The end result is a much extended and highly public process associated with obtaining a permit. Once the permit is issued, the groups then file suit against the issuing agency for not adequately addressing CEQA. Many producers have been in the land of unknown territory as they try to get permitted. Other producers, who have expanded their

facilities and neglected to update use permits may end up in the same place.

What do you do when you find yourself in an unknown area? First, get information. Be sure it is from a reliable source. There are numerous consultants and companies willing to sell their services to fix your problem. Interview them to determine if they have the qualifications you are looking for. Be sure your team has someone knowledgeable in environmental law (or whatever the law of concern is) and be sure they have a minimum understanding of how dairies operate.

## Conclusions

Knowledge is gold! Yes, it takes time away from the animals and from making other decisions. Consider this time an investment in your future. As we have all learned from Alice In Wonderland, if you don't know where you want to go, any road will take you there. Be decisive. Know what you need. Realize that if you call different individuals with different regulatory responsibilities you may well get correct and conflicting information. Do your best to identify what puts you at risk for contaminating the environment and then make sound management decisions to minimize your risk.

There will be more emphasis on environmental compliance. There will be a bit more equity in the existence of regulations with the additional proposed Federal regulations. Dairy producers of the year 2020 will be keen managers of information and personnel. Start preparing now for your future. Be sure when you purchase equipment or expand your herd that you consider the ramifications on manure management and its associated record keeping requirements.

In an era of being bombarded by information on all sides, be sure you know who provides reliable and sound information. Work with your County Agent or Dairy Advisor. These individuals have direct links to others in the Land Grant College system. They can get reliable information for you and potentially assist in conducting research. Research scientists at the Land Grant College are also potential resources for assisting in research projects. Work with your trade associations. They provide information and lobby when necessary. This may be an important avenue to consider. Read trade magazines. Be sure that when you read articles you understand the differences between products and technologies that have been tested and testimonials. Be highly skeptical and critical of claims to reduce manure problems, odors... It can be done. Buyer beware! Remember that the internet is a place to find information. You need to be informed enough about a subject to decipher if what you read off the internet is

valuable information or just a bunch of words.

Your future as a dairy producer will depend on how you address and manage numerous issues. Environmental stewardship is just one of the many "new" subjects that producers will need to address to continue to be successful in the dairy industry. Animal health and welfare issues and food safety issues are equally as important.

## References:

### USDA NRCS websites of interest:

- NRCS website with links to CNMP guidance, interdepartmental site for Clean Water Action Plan, public comment letters on the AFO Strategy, text of the final Unified National Strategy for Animal Feeding Operations (in English and Spanish). <http://www.nhq.nrcs.usda.gov/PROGRAMS/ahcwpd/AFO.html>
- USDA Agricultural Waste Management Field Handbook <http://www.ftw.nrcs.usda.gov/awmfh.html>
- USDA NRCS National Planning Procedures Handbook (NPPH). <http://policy.nrcs.usda.gov/scripts/lpsis.dll/EDS/RTFList.html>
- USDA NRCS Conservation Planning Course <http://www.ncg.nrcs.usda.gov/start.htm>
- USDA NRCS Core4 Conservation Practices Training Guide <http://www.nhq.nrcs.usda.gov/BCS/agro/CORE4.PDF>
- USDA NRCS Agronomy Technical Notes. [http://www.ncg.nrcs.usda.gov/tech\\_notes.html](http://www.ncg.nrcs.usda.gov/tech_notes.html)
- USDA NRCS National Agronomy Manual establishes policy for agronomy activities and provides technical procedures for uniform implementation of agronomy tools and applications. Release due fall 2000.
- General Manual Technical Guides <http://policy.nrcs.usda.gov/national/gm/title450/part401/index.htm>
- Nutrient Management homepage <http://www.nhq.nrcs.usda.gov/BCS/nutri/manage.html#nm>

### US EPA websites

- Home page for TMDL <http://www.epa.gov/OWOW/tmdl/>
- There are four factsheets available on the TMDL process. <http://www.epa.gov/OWOW/tmdl/cleanfs4.html> (Type in 1 through 4)
- Compendium of state programs <http://www.epa.gov/owm/stcpln.pdf>

### Additional websites:

- To access the Federal Register <http://www.gpo.ucop.edu/cgi-bin/gpogate>
- Copeland, C. and J. Zinn. 1998. Congressional Research Service Report for Congress. Animal waste management and the environment: background for current issues. The Committee for the National Institute for the Environment, Washington, D.C. Updated May 12. <http://www.cnie.org/nle/ag-48.html>
- National Resources Defense Council, Inc. 1998. Reports America's animal factories how states fail to prevent pollution from livestock waste. <http://www.nrdc.org/water/pollution/factor/aafinx.asp>
- US EPA. 1997. Animal waste disposal issues. EPA office of Inspector General #7100142. <http://www.epa.gov/oigearth/hogexsm.htm> April 21.
- Public Law 80-845. 1948. Water Pollution Control Act. 80th Congress. June 30, 1948.

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Table 1. Comparison of proposed legislation, the AFO Strategy and draft ELG.				
Parameter	H.R. 684 Miller	Unified National AFO Strategy	NRCS CNMP guidance	US EPA draft ELG
CAFO definition	350 mature animals	Identified effluent limitation guidelines (ELG) would be reviewed and revised.	N/A	2-tier structure 350 milk cows; 3-tier unchanged from current definition.
Permit required	Required for CAFO within performance standards.	If a facility is defined as a CAFO. Public access to Notice of Intent, CNMP and associated reports.	N/A	NPDES for CAFO. Permit Nutrient Plan (PNP) required.
Documents required	Yes	CNMP (Feed management, manure handling and storage, land application of manure, land management, record keeping, other utilization options.)	Identifies management and conservation actions that will be followed to meet clearly defined soil and water conservation goals. Documentation of management and implementation activities associated with CNMP.	Notice of Intent (to seek coverage for NPDES permit), and Notice Plan Development (to identify PNP is being developed) must be submitted to regulatory agency and will be made publicly available (WEB and in office). PNP will be available to public upon request. Identification of nearest water body.
Monitoring requirements	Excessive application of nutrients identified as a discharge.	Record keeping to identify amount and destination of manure. Soil and manure testing should be incorporated into the record keeping system.	Documentation required: number and type of each category of animals present; estimated manure and wastewater volume produced; manure storage type, volume and duration (how they function and limitations); existing transfer equipment; operation and maintenance activities that address collection, storage, treatment and transfer of manure and wastewater; nutrient content and volume of manure.	Maintain records for 5 yr. Visual monitoring: daily-drinking water lines; weekly- stormwater diversion and collection devices; also monitor: seepage, erosion, vegetation, animal access, decreased freeboard, rain gauges, irrigation equipment. Depth marker in ponds to determine liquid level. Mortality management.
Feed management	N/A	Identified component of CNMP.	Can be an effective tool to address excess nutrient production. A professional animal nutritionist should be consulted.	Not discussed.

**Additional websites:**

Public Law 84-159. 1955. An act to provide research and technical assistance relating to air pollution control. 84th Congress. July 14, 1955.

Public Law 92-500. 1972. Federal Water Pollution Control Act Amendments of 1972 (Clean Water Act). 92nd Congress. October 18, 1972.

Public Law 93-205. 1973. Endangered Species Act of 1973. 93rd Congress. December 28, 1973.

Public Law 100-4. 1987. Amendments to Federal Water Pollution Control Act (Water Quality Act of 1987). 100th Congress. February 4, 1987).

Public Law 101-508. 1990. Subtitle C. Amendments to Coastal Zone Management Act of 1972. 101st Congress. November 5, 1990.

Table 1, continued

Parameter	H.R. 684 Miller	Unified National AFO Strategy	NRCS CNMP guidance	US EPA draft ELG
Manure handling and storage	Design for liquid storage structures must be identified and approved. Prohibit use of unlined containment structures or the use of other structures that pose significant risk of pollution to surface or ground water. Eliminate within 10 years, open-air lagoons for the storage of animal waste.	Divert clean water, prevent leakage, provide adequate storage, minimize atmospheric deposition when treatments are used; appropriately handle mortality.	Provide adequate collection, storage, and/or treatment of manure to allow for application during favorable weather conditions and at times compatible with crop management. Additional considerations include air quality, pathogens.	Identify manure collection, handling, storage and treatment practices; record amount of manure generated annually, amount of manure transported offsite, repairs to manure storage and treatment facilities, estimates of wastewater generated, rainfall events (duration, quantity, overflow if catastrophic or chronic); method used to estimate nitrogen losses; record.
Land application limitations	Application of animal manures based on nitrogen and phosphorus to not exceed the reasonably anticipated agronomic nutrient uptake of the vegetative cover growing. USDA NRCS shall establish maximum permitted levels for other nutrients, minerals metals, or other substances found... that would pose a significant threat of pollution to surface or ground water.	Balance nutrients applied with those that are already present in the soil and that are applied from other sources (commercial fertilizer, biosolids, manure). Prevent over-application of nutrients beyond the capacity of the soil and planned crops to assimilate nutrients and prevent pollution. Soils and manure should be tested to determine nutrient content.	Meet NRCS Nutrient Management policy contained in NRCS General Manual Title 190, Part 402; Nutrient Management Code 590; Irrigation water management Code 449 (restrict land application based on phosphorus). Nutrient budgets developed with nitrogen, phosphorus, and potassium to include all nutrient sources. Test soil, manure, organic by-products; document form, source, amount, timing and method of application and equipment calibration.	Identify crop rotation and yield goals, field condition as determined by phosphorus index, soil test phosphorus, or phosphorus threshold, number of acres to receive manure, application rate (and pounds of nitrogen, phosphorus, and potassium). Record maintenance of berms and diversions, test methods used for nutrient analysis. Setback application 100' from surface water, tile line intake structure, sink hole, or agricultural well head.
Method of application	Aerial spraying—establish minimum distances (to prohibit spraying) from residences and environmentally sensitive locations.	Calibrate equipment to ensure application rate is desirable.	Must be consistent with NRCS Field Office Technical Guide.	Annual calibration of application equipment (solid and liquid). Identification of rate limiting parameter (nitrogen, phosphorus or potassium). Applicator must attend USDA sanctioned training.
Application timing	Prohibited on ice, snow, frozen soil, saturated soil.	Apply manure to prevent it from entering streams, other water bodies, or environmentally sensitive areas.		Record date of manure application, weather conditions at time of application and for 24 hr before and after and results from manure and soil sampling.
Waste agreements	Written agreement to include terms and conditions necessary to ensure waste is applied acceptably.		Notation should be available to describe manure sources and destinations.	Must sample manure sources and provide nitrogen, phosphorus, and potassium content to receiver.

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Table 1, continued				
Parameter	H.R. 684 Miller	Unified National AFO Strategy	NRCS CNMP guidance	US EPA draft ELG
Emergency (contingency) plans	Mandatory		Address spills and catastrophic events.	Must have on file at facility as part of PNP.
Agency to approve plan	Administrator (USDA NRCS ?)		NRCS to approve plans.	Illegal discharge or insufficient documentation violates NPDES permit.
Penalties	Animal owner liable under §309 Clean Water Act.	The ultimate responsibility for developing and implementing CNMPs resides with the CAFO owner and/or operator.	Will be done for producers participating in NRCS programs and voluntary for producers seeking assistance.	Subject to civil and criminal enforcement actions depending on violation.
Address air quality, odor, nuisance issues	Eliminate atmospheric deposition of nutrients, minimize odors and pests.		Air quality impacts of associated conservation practices should be considered.	Discussed at length in text prior to proposed rule. Not mentioned in the proposed rule.
Other	Significantly reduce liquid content of wastes; promote technologies and production practices that minimize the need for largescale storage of animal waste. Remove and dispose of animal waste within 180 days after facility ceases production.	Certified specialists to develop plans. Consideration for contribution to total maximum daily loading rate (TMDL). Increase inspections and compliance assistance. Eliminate agricultural stormwater exemption for land receiving manure nutrients.		Emphasis on no discharge to surface waters (directly or via hydrologic connection). No specification in proposed rule that NRCS will need to approve plan. 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.
<p>Abbreviations: Concentrated Animal Feeding Operation (CAFO), Comprehensive Nutrient Management Plan (CNMP), Permit Nutrient Plan (PNP), Total Maximum Daily Loading (TMDL), United States Department of Agriculture, Natural Resources Conservation Service (USDA NRCS),  Miller, G. 1998. H.R. 3232 &amp; 1999 H.R. 684. Farm Sustainability and Animal Feedlot Enforcement Act introduced in the House of Representatives February 12 (105<sup>th</sup> Congress) and February 10<sup>th</sup> (106<sup>th</sup> Congress).  USDA-US EPA. 1999. Unified National Strategy for Animal Feeding Operations. <a href="http://www.epa.gov/owm/finafost.htm">http://www.epa.gov/owm/finafost.htm</a> March 9.  USDA NRCS. 2000. Comprehensive nutrient management plan technical guidance. <a href="http://www.nhq.nrcs.usda.gov/PROGRAMS/ahcwpd/ahCNMP.html">http://www.nhq.nrcs.usda.gov/PROGRAMS/ahcwpd/ahCNMP.html</a> December 1.  US EPA. 2001. 40 CFR Parts 122 and 412. National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitations Guidelines and Standards for Concentrated Animal Feeding Operations. Proposed Rule January 12. Will be available through <a href="http://www.epa.gov/owm/afos/rule.htm">Http://www.epa.gov/owm/afos/rule.htm</a>.</p>				