



**COMPREHENSIVE LIVESTOCK AND ENVIRONMENTAL
ASSESSMENT AND NUTRIENT MANAGEMENT PLAN
WEST (CLEANmp)**

**ENVIRONMENTAL ASSESSMENTS
General Interpretive Guide**

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GLOSSARY

Animal Feeding Operation (AFO)	Any facility where animals have been, are or will be stabled or confined and fed or maintained for 45 days or more per year, and where crops, vegetation, forage, growth or post-harvest residues are not sustained in the normal growing season over any portion of the facility.
Application Logs	Written records that document the time and date of a manure application event, the amount of manure applied to each field, identification of the fields receiving manure, temperature, wind speed and direction, relative humidity, and the identity of the application method and person conducting the application.
Bedding/Litter	Material (e.g., corn stalks, straw, rice hulls, sand, sawdust, wood chips, paper, and peanut shells) placed on the floor of an animal living area to provide bedding and to absorb animal waste.
Buffer Strip	See “Grass Filter.”
Bulking Agents	Material added to compost to decrease the bulk density, promote aeration, and/or serve as a carbon source. Material with high carbon contents, such as straw, sawdust, peanut hulls, etc., may be used as bulking agents.
Clean Out	Access point to a transfer line between temporary and long-term storage to enable removal of settled solids or other blockages.
Commodity Storage Unit	An area where feed ingredients, including brewer’s grain, silage, cottonseed, hay or other ration ingredients, are stored. These materials can be stored in barns, sheds, vertical silos, bunker silos or other structures. The commodity storage area includes any mobile equipment used to prepare the feed ingredients into an edible ration.
Composting Amendments	See Bulking Agents.
Earthen Dike/ Embankment	An elevated mound or dam constructed of compacted soil and used to contain water or manure.

Earthen Storage	Earthen storage unit intended for the long-term storage of liquid.
Basin	Stores manure until it can be field applied, or utilized in some other manner. Earthen storages may be constructed entirely below grade, or part inground and part aboveground using earthen dikes or embankments.
Facility	The physical location where livestock is housed, fed, and bred. The facility also includes the following: any storage or processing areas or buildings tied to the livestock production operations; all mortality storage and/or disposal areas; and all manure handling, storage and/or treatment areas.
Feed Storage Areas	Areas where complete feed rations can be stored, usually in metal bins or containments adjacent to animal living areas. Feed will be delivered directly to livestock from this area.
Flushing System	A system that collects and transports or moves manure by using fresh water or recycled water, such as flushing of manure from shallow manure collection gutters located under slotted-floor animal pens.
Good Environmental Livestock Practice (GELPP)	A compilation of environmental best management practice (BMP) obtained from various sources, including USDA NRCS publications, university publications and other livestock industry experts.
Grass Filter	An area with grass cover where runoff is treated by settling and filtering of solids, by attachment to the vegetation, and by bacteria residing at the soil-water interface. Runoff also may be reduced by infiltration into the soil.
Ground Water	Water found below surface grade, underground water situated in the zone of saturation.
Holding Pond	An earthen facility constructed to store runoff water and other waste water or semi-solid slurry or liquid manure until the contents are recycled, land applied or evaporated. Sometimes called waste storage ponds or earthen storage basins.
Leachate	A solution containing dissolved or suspended materials in water that has percolated through solids, such as soils, solid waste, rock layers or stored vegetation (i.e., silage).
Liquid Manure	This is manure that by nature, or after being diluted by water,

(Slurry)	can be pumped easily. Normally fibrous material, such as chopped straw or waste hay, is not present. The total solids content typically varies from around 2 percent to 10 percent. Liquid manure can be handled with vacuum or centrifugal manure pumps and other liquid handling equipment.
Manure	The fecal and urinary excretion of livestock. This material also may contain bedding, spilled feed, water or soil. In addition, it may include wastes not associated with livestock excreta, such as hair, skin or other debris.
Manure Storage	A storage facility used to contain manure for some time prior to its ultimate use, usually classified by type and form of manure stored and/or construction of the storage; for example, aboveground or below-ground liquid manure tank, earthen storage basin, or solid manure storage.
Manure Storage Pits	Engineered storage structures generally situated under an animal living area (under building pits). Generally, fresh manure enters these structures passively, by animal activity or by gravity. Manure pits are considered shallow pits if they are equal to or less than 4 feet deep. Manure pits are considered deep pits if they are greater than 4 feet deep.
Minimum Treatment Volume	The minimum volume is the volume or depth of liquid in an anaerobic treatment lagoon that will sustain optimal bacterial activity/growth.
Nutrient Banking	The process of storing nutrients in the soil profile for use beyond the current growing season.
Odor	Odor is the perception of smell, referring to the sensation.
Pasture	An area of land that is covered with grasses or other plants, used for grazing livestock.
Percolation Rate	The rate of downward movement of water by gravity, through the small cracks or openings within rock, soil or filtering media.

Production Site	The physical area and associated structures directly involved with animal living areas, feed storage, commodity storage, and other aspects of livestock production and livestock products (i.e., eggs and milk). These areas and structures must be served by a common access road and electrical service.
Pull-Plug	The mechanism or system that is used to periodically drain water and accumulated manure from temporary storage pits under a production building.
Recycle Water	Water that has been used before, such as effluent from a treatment lagoon, for flush water.
Runoff	The portion of precipitation, snowmelt, or irrigation (water or manure) that flows over the ground surface.
Sedimentation Basin	A concrete or earthen structure in which a liquid's flow velocity is reduced to permit suspended solids to settle by gravity. The basin may be designed either to overflow, or for influent wastewater to slowly flow away, leaving behind much of its solids.
Seepage	The slow movement or percolation of water through small cracks, pores, interstices, etc., from an embankment, abutment, foundation or container.
Settling Basin	See "Sedimentation Basin."
Slug Loading	The act of periodically discharging manure loads (volatile solids), into an anaerobic treatment lagoon, at rates or quantities greater than the design specifications of the lagoon.
Slumping	The rotational movement of saturated soil.
Solid Manure	Manure that has had sufficient bedding or soil added, or has received sufficient air-drying, to raise the solids content to where it will stack with little or no seepage. It is best handled with a front-end loader. Solid manure generally has more than 20 percent solids.

Solid Manure Storage

An area or structure that is used to store accumulations of solid manure before subsequent handling and field spreading. These areas are not designed or managed as composting areas. Some natural composting may occur during temporary storage; however, the complete composting of the stored material is not the intent of the storage. Manure is generally stacked on a concrete slab (“stacking slab”), but also may be stacked directly on the soil for short-term storage. Liquids, including urine and precipitation, may or may not drain away to a collection unit.

Subsidence

A decrease in surface elevation of the ground as soil settling occurs.

Surface Water

Water on the surface of the earth not intended to contain or come in contact with manure. An open body of water, such as a river, stream, or lake. All water naturally open to the atmosphere (rivers, lakes, reservoirs, streams, impoundments, seas, estuaries, etc.) and all springs, wells or other collectors, which are directly influenced by surface water.

INTRODUCTION

This document has been prepared to assist with the implementation of a Comprehensive Livestock Environmental Assessment and Nutrient Management Plan West (CLEANmp) Program Environmental Assessment (EA). The CLEANmp EA is based on the Good Environmental Livestock Production Practices (GELPP). The GELPPs have been approved by the American National Standards Institute (ANSI).

This document was prepared by SES, Inc., the organization that developed the technical content and submitted the GELPPs for approval. This document provides interpretative guidance for assessors conducting CLEANmp assessments. The guidance is provided in a format following the GELPPs, and does not follow the order of questions presented in the CLEANmp assessment form. This guidance does not supersede the Annexes attached to each of the GELPPs; rather, this document acts as a supplement to the Annexes. The guidance in this document is in the form of either explaining the CLEANmp's interpretation of the intent of specific GELPP standards or providing explicit guidance on what could represent adherence to the standard, relative to the criteria of the CLEANmp Program. In addition to the guidance, a complete glossary is presented in this document to provide further clarification of the standards.

In some cases, a producer may employ engineering controls at a production site or land application area, to address management practices being assessed under the CLEANmp Program. If the engineering control makes a given standard or standards “not applicable,” then “N/A” should be marked on the assessment form, with an appropriate comment placed in the comment field. If the engineering control mechanically addresses conformance issues, an assessor should answer the applicable question(s) as “YES,” indicating that the operation is in conformance with the standard, even when the verbatim standard is not in conformance. An example of this is would an operation sited within a 25-year flood plain that has adequate levees separating the operation from surface water. In this example, the operation is technically not in conformance with GELPP standard

GELPP 0001-2002, 3.1.g; however, the engineering control meets the intent of the standard so this question would be answered “YES.”

Additional interpretation and guidance assistance may be obtained by contacting SES, Inc., the entity charged with implementing the CLEANmp Program for the Environmental Resources Coalition.

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PART 1: GENERAL SITE CONDITIONS

ANSI GELPP 0001-2002

Section 1 What are the areas of the site that are covered through the general site standard?

The general site includes but, is not limited to, the entrance into the operation, the open areas surrounding production facilities, and the areas for both foot and/or vehicle travel throughout the site.

Section 3.1 How can public perception impact a livestock production operation?

Both positive and negative perceptions can have a potential impact on livestock production. Positive perception through general aesthetics and site maintenance can tend to reduce potential concerns regarding odor and environmental impact. Conversely, negative public perception can contribute to complaints, law suits, decreased operational flexibility, and ultimately the passage of more stringent environmental laws. Many of the nuisance-related complaints are based on emotional reactions, and proper attention to aesthetics can/may prevent or temper these reactions.

Section 3.1 (a) What factors go into determining adequate separation distances?

The general site must be setback far enough that it does not have a negative impact (i.e., adverse odor, or excessive noise) on neighbors. This can be influenced by surrounding topography; physical barriers, such as tree lines; and prevailing wind direction. In addition, if the facility is regulated, local, state or federal setback requirements can be used as guidance in evaluating this question.

Section 3.1 (b) What affects air movement?

Air movement is affected by factors including, but not limited to, topography; physical barriers, such as trees; wind direction; temperature; and humidity. Topography can contribute to air drainage. Just like a liquid, an air mass will tend to move downhill unless winds prevent or accelerate this movement. Physical barriers can disrupt airflow, causing an air mass to move up higher in elevation, or undergo turbulent mixing, which can dilute an odor. Winds will drive air masses in the direction they are blowing. Temperature can cause an air mass to rise in elevation (warm air), or to hug the ground (cold air) and move with the wind or topography. Humid conditions tend to slow the movement of an odorous air mass, keeping it close to the ground.

Section 3.1 (b) How do you control air movement on the farm?

Air movement can be controlled by establishing physical barriers on or around the operation and proper siting of the facility to take advantage of natural topography and dominant wind direction.

Section 3.1 (c) How can a production site be maintained to minimize erosion?

Lack of ground cover and topography are conditions that will often contribute to erosion. Ground cover reduces the impact energy of rain drops and slows the velocity of overland flow. Topography influences erosion by impacting the potential flow velocity of overland flow. Soil type (texture) will also impact erosion. Less cohesive soils, such as loams, are more susceptible to erosion than cohesive soils (i.e., clays). Finer-textured soils, such as silt loams, are more susceptible to water erosion than sandy soils.

Establishing permanent ground cover, such as vegetation or gravel, and grading the site to eliminate steep slopes and create a preferential flow pattern for storm water are common ways to mitigate erosion.

The absence of sheet, rill or gully erosion is also an indicator that the production site is maintained to minimize erosion.

Section 3.1 (d) How can storm water be controlled or stored on a site?

The first line of storm water control is to collect roof water and prevent it from contacting manure, animals, feed or any other raw ingredients. Once storm water is on the ground, its flow can be controlled by diversions, proper site grading, and/or subsurface drainage. Storm water can be stored in constructed earthen containments, settling basins, metal tanks, and/or concrete storage structures. In most cases, storm water that has the potential to contact manure, feed, animals and other raw products must be contained.

The purpose of storm water control related to this standard is to keep storm water away from manure. Storm water control must keep clean water away from manure to be effective, unless all of the storm water is collected and managed as a nutrient source. These aspects are addressed in additional standards.

Section 3.1 (d & e) What are some potential exposure pathways of storm water?

Storm water becomes an environmental concern when it crosses open animal lots, when it comes into contact with spilled or stored manure on site, or when it comes into contact with manure laden animals. The nutrients and bacteria this storm water carries can directly impact surface water, and in some cases ground water. Impacts to ground water are generally not direct and occur by percolation through the soil. In the case of a water well with a poor annular seal, drainage wells, or tile inlets, storm water can directly enter ground water.

Section 3.1 (f) What are some indicators of livestock having direct access to surface water?

Typical indicators that livestock have access to surface water are worn trails that lead to the waters edge, erosion along banks, lack of vegetation along banks, increased sediment load in the water and visually observing animals in the water.

Section 3.1 (g) What are examples of flood prevention controls?

The primary means of flood control is the use of berms, dikes or levees.

Section 3.1 (h) What are characteristics of adequate separation distances between the general site and drinking water sources (ground water and surface water)?

Adequate distance is based on topography and risk to contaminate drinking water sources. The site should be graded such that runoff from the general site does not move toward drinking water sources. Adequate separation also depends on the potential for contaminants from the site to enter the runoff and subsequently enter the drinking water source. In addition, if the facility is regulated, local, state or federal setback requirements can be used as guidance in evaluating this question.

Section 3.1 (h) What are some management or structural ways to circumvent inadequate separation distances between the general site and drinking water sources (ground water or surface water)?

Manners in which the potential for runoff to enter drinking water sources can be avoided include, physical diversions to direct runoff away from the source, a build-up of soil, or a casing or some type of housing directly surrounding the water source to prevent runoff from entering it.

Section 3.2 When and where should surface water be sampled on the general site?

Surface water should be sampled where it enters the site boundaries and where it leaves the site boundaries. This should be done a minimum of once per year. This sampling will allow the quantitative determination of the general site's impact on water quality.

Section 3.3 (a) What is the environmental significance of vegetation?

Vegetation prevents erosion and can act as a filter by trapping solids carried by storm water. Uncontrolled vegetation (too long) can create a habitat for pests making pest control more difficult and can trap dust, which, when wet, can release odors. Uncontrolled vegetation (too long, weedy, stressed, or spotty) can create a negative perception of the site, drawing more scrutiny on the operation from neighbors or passers by.

Section 3.3 (a) What constitutes an adequate filter strip for discharging storm water over, which has or may have come in contact with manure?

An adequate filter strip is comprised of appropriate, uniform vegetation. Channeling should not exist in the filter strip. There should not be an overabundance of solids in the filter strip. It should be sized and graded appropriately to remove enough solids and nutrients that the outflow will meet required standards.

Section 3.3 (b) What constitutes adequate available storage capacity for a storm water holding tank?

A storm water holding tank should be able to contain the entire amount of water introduced during a major precipitation event. This will depend somewhat on the management of the water level by the producer.

Section 3.4 Why is a written Emergency Action Plan important?

The written Emergency Action Plan will provide guidance in the event of an emergency to some one who is either not familiar with the operation, or who is mentally distraught because of the emergency.

Section 3.4 What are indicators of worker training relative to an emergency action plan?

Some indicators of training include workers' knowledge of its existence or where it is located, knowledge of its contents, knowledge of procedures, location of the emergency numbers and telephone, the availability of it in the languages spoken by the workers and documentation of training sessions.

Section 3.4 (a) What are the elements of an Emergency Action Plan?

The Emergency Action Plan must include the following items: accurate description of all operations, including a facility map; plan for mitigating an uncontrolled manure release; plans for dealing with personnel injuries; contingency plans addressing critical system failures; contingency plans for alternative mortality disposal under normal and catastrophic loss conditions; driving directions to the farm; and provisions for assuring that any off-site (non-producer controlled) transfer of manure is covered by an Emergency Action Plan.

Section 3.4 (a) What are critical systems?

Critical systems are the systems that if shut down could harm the health of the animals being produced. Examples of critical systems include ventilation, water supply, manure handling and feed delivery.

Section 3.5 (a) What is meant by cleaning up manure and feed spills in a timely fashion?

Timely cleaning of feed and manure spills occurs before they become a rodent problem, or start to rot creating an insect-breeding habitat or odor source. Signs of non-timely feed spill cleanup would be discolored, weathered, or rotting feed. Timely cleaning of manure spills occurs before storm water comes into contact with it, it is physically spread by vehicle tires, it becomes a breeding habitat for insects, creates a dust source, or it creates an odor source. Signs of non-timely manure clean-up are maggots in the manure, dried manure, weathered manure, and manure smashed into the ground or road.

Section 3.5 (c) What areas should be mowed and trimmed to a uniform height?

This standard refers to the lawn areas surrounding the production area. These areas are generally for domestic use and not grazed or used for the production of hay. Since this is a visual appearance standard, indicators of conformance would include vegetation being maintained at a uniform height and vegetation being maintained at a height that would not create rodent habitat.

Section 3.5 (d) What are the indicators that buildings are clean and in good repair?

The building structures are sound and in good repair. The paint is complete and not peeling or rust is not staining the paint. Windows and doors are functional and the roof is in good repair. Any outside air inlet should be cleaned to the point that it is likely functioning as designed.

Section 3.5 (e) What constitutes an all-weather access road?

An all-weather access road should be constructed of gravel, crushed rock, asphalt, cement, or other similar material. It should be graded for proper drainage during rainfall events, and be maintained free of potholes, ruts, etc. An all-weather access road should not have its drivability impacted by weather, or should sustain damage from vehicular traffic under any common weather conditions.

Section 3.5 (f) What are the indicators of excessive water ponding around the general site?

Visually observing ponded water, dead areas of vegetation, waterlogged soil, increased fly populations, and areas of rutting or erosion can be indicative of areas where water ponding has been excessive.

Section 3.5 (g) What are signs of inadequate pest control and how pests can be controlled?

Rodent damage to production structures and equipment, as well as rodent holes around the general site and in earthen containments can indicate inadequate pest control. Pest

control can usually be accomplished through a combination of baiting throughout the site, and good housekeeping measures, such as promptly cleaning up spilled feed, keeping site vegetation mowed, and keeping trash picked up.

Section 3.5 (h) What are indicators that the general site is not managed to minimize dust generation?

Indicators that a general site is not managed to minimize dust generation may include access roads not covered in gravel or other dust suppressing materials, poor vegetation maintenance in areas that are supposed to be vegetated, excessive manure accumulations on traffic areas, and the generation of excessive dust while walking or driving around the site.

Section 3.6 What constitutes adequate control of surface water drainage?

Runoff on a site is adequately controlled if clean water is kept separate from dirty water, if all of the water is contained in the drainage ways, and if the drainage ways are well maintained.

Section 3.6 (a) What are indicators of a drainage way that is prone to or is eroding excessively?

Drainage ways that are prone to erosion typically exhibit areas of bare soil, erosion patterns, movement of the channel, and sediment loads in the water.

Section 3.6 (d) What observations of subsurface drain outflows would necessitate more frequent sampling than once per year?

If a subsurface outflow is delivering “dirty” water, has algal blooms in the line, has sediment-laden effluent, if a manure spill has recently occurred, if runoff has been in contact with manure or if the system has a diminished capacity to deliver water to the outlet, it should be checked and monitoring should be more frequent.

Section 3.6 (e) What are indicators that a subsurface drain system is not in operational condition?

Typical indicators are poorly drained soils, ponding water at inlet, observed damage to the system and lack of drain outflow from wet or saturated soils.

Section 3.7 (a) What are proper ways to dispose of waste feed and ingredients from a commodity storage area and what are indicators that this is done regularly?

Waste feed should be disposed of in the trash or compost pile as an additional carbon source. It should not enter under-floor manure pits or outdoor manure storage, or be swept onto the grounds from a feed pads.

The regular or timely removal of waste feed and ingredient can be inferred by the lack of weathered, spoiled or moldy spilled feed or feed ingredients in the area and the lack of staining that was likely due to the extended presence of spilled feed or feed ingredients.

Section 3.7 (c) What are signs of inadequate pest control and how pests can be controlled?

Rodent damage to production structures and equipment, as well as rodent holes around the general site and in earthen containments, can indicate inadequate pest control. Pest control can usually be accomplished through a combination of baiting throughout the site, and good housekeeping measures, such as promptly cleaning up spilled feed, keeping site vegetation mowed, and keeping trash picked up.

Section 3.7 (c) What are some indicators that pest (rodent, bird and insect) control is properly maintained?

The first critical indicator of conformance with this standard is the lack of visual evidence of pest activity, such as scat, tracks or pests themselves, is one indicator that pests may be controlled in an area. The second critical indicator is the presence of baits, bait stations (with bait), traps or other mechanisms used to control pests. If both of these critical indicators are observed, then the area is in conformance with this standard.

Section 3.7 (f) What are appropriate warning signs for commodity storage?

Signs should reflect the dangers that are present in the commodity storage area. Commodity storage areas use fork lifts, front-end loaders, trucks, mixing and grinding equipment, or heated ingredient storage. All of these items can create a worker hazard. For example, if there is large mixing equipment present, the sign could read: CAUTION, Dangerous Equipment Present.

Section 3.8.3 What are the elements of the general site that need periodic inspection?

The general site should be inspected for: erosion, spilled manure, spilled feed, trash accumulation, appearance of structures, odors, rodent activity, conditions of fencing and screening, uniform vegetation, excessive weed growth, and surface waters potentially impacted by storm water runoff.

Section 3.8.3 What are the types of records needed relative to general site conditions?

All facility design records should be kept on site for the life of the facility. Checklists should be developed for the inspection targets listed in Section 3.8.3 above. All inspection checklists should be signed, dated, and kept for at least five years. The inspection schedule should be kept, results of all percolation tests conducted on on-site leach fields should be kept on site for the life of the facility. Results of all groundwater and surface water samples taken, and all plans regarding facility alterations should be kept as well.

PART 2: PRODUCTION AREAS

ANSI GELPP 0002-2002

Section 3.1 Describe some management practices used to minimize odor relative to animal production areas?

Management practices including, but not limited to frequent cleaning of production facilities, frequent manure removal from production facility, maintaining clean, properly functioning ventilation equipment, and using sufficient water quantity and good water quality, will all help minimize odors.

Section 3.1 How can the following be manipulated to minimize odor release from animal production areas?

a. Flush water and frequency

By increasing flush water quantity, more solids can be removed. Increasing flush water quality decreases the amount of solids (and odor) imported into the flush lanes, and increasing flushing frequency can also increase the amount of solids removed. All of these effects will decrease odor within the production areas.

b. Frequency of manure removal

Frequently removing manure from production areas will decrease the amount of time the manure is present, thereby reducing the production of odors or dust, in some situations.

c. Bedding, replacement, cleaning, or supplements

Periodically replacing or cleaning manure-laden bedding will remove odor-generating manure from the production site. Clean bedding reduces the amount of manure that will be present on the surface of the animals, which also reduces odor generation. Adding supplements (fresh bedding) to the bedding may also decrease the amount of odor produced.

d. Open lot grooming and cleaning

Frequently cleaning and grooming open lots will decrease the amount of time the manure is present to produce odors, reduce the potential for manure dust generation, and should facilitate maintaining the desired storm water drainage patterns. Grooming lots more frequently can reduce the occurrence of areas where storm water and manure can accumulate.

Section 3.1.1.1 (a) What are indicators that a pull plug does not fit properly or that it is leaking?

After recharging with water, the liquid level in the pit decreases instead of increases in between pulls. Liquid can be seen exiting the discharge pipe into the outdoor manure storage even when the plugs are not pulled. If the pull plugs have overflow protection and are discharging liquid, it is time to pull the plugs. The producer complains that the pull plugs do not fit properly.

Section 3.1.1.1 (c) What are indicators that inadequate volumes of, or poor quality recharge water, is being used in manure storage in or under an animal living area?

Poor air quality (e.g. increased ammonia-like odor, difficulty breathing, or irritated eyes) within the building could indicate inadequate volumes or poor quality recharge water. In addition, solid accumulation within the manure storage would indicate inadequate volumes. Recharge water should come from a properly working lagoon and not be taken near the discharge pipe within the lagoon. Ideally, the recharge water should be pinkish in color.

Section 3.1.1.1 (b) and (c) How does water quality and quantity affect the following:

a. Solids accumulation?

Insufficient water quantity will reduce the fluidity of the manure, reducing the amount of solids that can be removed from the production structure. For example, in a shallow pit flush system, X gallons of flush water will not remove as much solid accumulation as 2X gallons up to a given point. Poor water quality will import additional solids, therefore adding to the amount that needs to be removed. Adding water to a shallow pit after the plug is pulled will prevent solids from adhering to the pit floor, facilitating their movement when the plug is pulled, and the extra water will help fluidity of the manure, increasing its ability to drain when the plug is pulled.

b. Animal comfort?

Insufficient water quantity and poor water quality will reduce the amount of solids that can be removed from the production structure; this in turn can increase insect-breeding habitat and odor/gas production. Increased insect populations and reduced air quality will decrease animal comfort.

c. Air quality?

Insufficient water quantity will reduce the amount of manure removed from the under-floor manure storage structure. Poor water quality will import additional solids. In both cases, when these solids are broken down under anaerobic conditions, there are

increased concentrations of odors and potentially harmful gases are released within the production structure.

Section 3.1.1.1 (b) What are the indicators of excessive solids accumulation in temporary or long-term manure storage in an animal production area?

Excessive solids accumulation can result in increased fly populations, increased ammonia production, improper pit drainage, and decreased pit capacity. In addition, excessive solids accumulations can be seen as mounded (above the liquid surface) manure piles in a pit, and manure exhibiting channeling or erosion from past pit emptying events.

Section 3.1.1.1 (b) How does solids accumulation affect environmental stewardship relative to animal production areas?

Solids accumulation, particularly in open lots, poses the threat of storm water contamination, an odor source from dust emissions, and a cause of dirtying the animals. In open lots and production buildings, solids accumulation increases odor production and insect breeding.

Section 3.1.1.1 (d) What are indicators that a manure pit has overflow protection?

In a shallow pit with pull plugs, the pull plugs will be designed such that the liquid can flow over the tops of the wells of the plug and down into the discharge pipe (the pull plugs are hollow down the middle). When this condition occurs, the plugs should be pulled to empty the pit.

Section 3.1.1.1 (f) What is appropriate safety signage for animal production areas, including under-building manure storage?

Safety signage should reflect possible dangers within the animal production areas and potential measures to take to avoid these dangers. The dangers will primarily focus on access issues relative to confined space entry (deep pits) or restricted space entry (high-rise pits).

Section 3.1.1.1 (g) What constitutes uncontrolled air entry?

Uncontrolled air entry is any location that was not specifically designed to provide the building with airflow. Examples of uncontrolled air entry include tears or holes in the curtains, holes in the structure of the building, or lead-way doors left ajar.

Section 3.1.1.1 (h) What are the characteristics of recharge water for a shallow pit that would allow manure storage longer than once per week?

Recharging a shallow pit using high quality recharge water (e.g., fresh water or water from a second cell of a lagoon) will increase the storage length of a manure storage pit.

Section 3.1.1.1 (h) What would indicate that the manure loading in a pit would allow it to drain less frequently than every week?

Stocking a building with animals younger (lighter in weight) in age than the building was designed for, not stocking to capacity, or using high quality recharge water (see Section 3.1.1.1 (h)) could lengthen the storage length of a manure storage pit.

Section 3.1.1.1 (l) What are signs that mechanical ventilation is not being maintained in working order?

Signs of poor maintenance include; broken or missing fan louvers; loose, slipping, or broken belts; missing fan guards; bearing noises; or fans that are not operational. Good ventilation indicators include, but are not limited to, dry pen floors, good air quality/low odors, proper temperature ranges, lack of negative pressures, evenly distributed animal dunging patterns, dry manure (high-rise only), and good animal health. The presence of numerous cobwebs is an indicator of stagnant air pockets. Sometimes streamers are suspended from building ceilings and are a visual indicator of air movement.

Section 3.1.1.2 (a) What are some signs that scrapers and belts are not being adequately maintained?

Broken belts or blades, uneven scraping, increased electrical requirements, or inadequate scraping (accumulation of manure) could indicate that scrapers and belts are not properly maintained.

Section 3.1.1.2 (b) What are signs that manure scrapers or belts are not being cycled frequently enough?

Poor air quality or increased fly activity would indicate that a manure scraper or belt should be cycled more frequently. In addition, excessive manure accumulation or areas of dry manure would also indicate infrequent scraping.

Section 3.1.1.3 (a) What are indicators that a flush tank has overflow protection?

The flush tank would have flow control floats and overflow pipes. Timers are not considered overflow protection because they can be set improperly or fail.

Section 3.1.1.3 (b) What are some indicators that manure flushing frequency or volume is inadequate?

Solids accumulation, high fly population, poor air quality (see Section 3.1), and channeling within the storage indicate that flushing frequency or volume are inadequate.

Section 3.1.1.3 (c) What are signs that the flush water quality is negatively impacting the animal living area?

Flush water could negatively impact an animal living area by decreasing air quality (see Section 3.1).

Section 3.1.1.3 (f) What are some indicators that manure flushing frequency or volume is inadequate?

Solids accumulation, high fly population, poor air quality (see Section 3.1), and channeling within the storage indicate that flushing frequency or volume are inadequate.

Section 3.1.1.4 (a) What is the intent of having an impermeable floor in a high-rise manure pit?

An impermeable floor decreases the ground water contamination risk of a manure pit. In addition, it provides convenience when scraping or cleaning the facility.

Section 3.1.1.4 (b) What are indicators that a ventilation system is maintained?

Indicators of ventilation maintenance include equipment (i.e., fans, louvers, curtains) that are free of damage and appear to be functioning as designed. In addition, ventilation equipment should not have excessive accumulation of dirt, litter, debris or dust. These accumulations can reduce the efficiency of a ventilation system relative to the velocity and volume of air moved. A sign of excessive dust would be a visible trail, with obvious depth, left behind from running a finger over the surface of the equipment.

Section 3.1.1.4 (d) What are some indicators of uncontrolled run-on and release from a manure-handling system in an animal production area?

Indicators of uncontrolled release may include, but are not limited to, a longer time period needed to fill the production area's manure-handling system compared to the past use of the system, a decrease in ground water or nearby surface water quality, and/or the presence of manure around the production area handling system. Indicators of uncontrolled run-on into a production area manure-handling system may include, but are not limited to shortened filling time for the production area's manure-handling system, noticeable water channels into a production area's manure-handling system, and/or abnormally excessive amounts of water present in the production area manure-handling system.

Section 3.1.1.5 (a) What are some indicators of an unclean or excessively wet animal living area?

An animal living area that is unclean or excessively wet can result in increased odors, animals with excessive manure coverage, unhealthy animals, increased insect and rodent populations, and excessive dust generation.

Section 3.1.1.5 (a) What are indicators that bedding or litter is not “reasonably” clean?

Presence of caking of the litter; animals wearing the manure; bedding or litter indistinguishable from manure; odors, such as ammonia; increased insect populations; and liquid running out (draining) from building..

Section 3.2 (a) What are signs that animal living areas have excessive manure accumulations?

Indicators of excessive manure accumulation are animals covered with large amounts of manure, large fly populations or visible maggot activity, poor air quality, or manure accumulations with depth in the animal living area.

Section 3.2 (b) What are signs that drinking water is not adequately supplied to animals?

Increased disease or mortality rates, increased stress, decreased feed consumption, or decreased weight gain would indicate water is not adequately supplied to animals.

Section 3.2 (c) What are some indicators that an animal cooling or watering system is or has been leaking?

Decreased length in storage of a liquid manure pit, increased wetness of bedding, increased water usage, or visible leakage or wet spots may indicate the animal cooling system is leaking.

Section 3.2 (d) What are some signs of excessive feed wastage and chronic feed spillage in buildings?

Excessive feed wastage and chronic feed spillage will often result in increased rodent populations, increased odors and insect populations if the feed is allowed to get wet, solids build up in production area manure handling systems, excessive dust accumulation inside the production areas, piles of spilled feed, and/or increased feed usage without increased animal performance.

Section 3.2 (f) What are some signs of inadequate pest control?

Inadequate pest control can usually be identified by evidence of rodent damage to production equipment, such as ventilation curtains, siding, and damage to the building structure (e.g., wood posts in high-rise pit, holes in the ceiling, or torn insulation). Inadequate rodent control can also be identified by increased disease, the presence of rodent dung throughout production structures, the physical presence of rodents, and by the presence of rodent burrows around buildings and in open lots, and increased feed usage (rodents consuming feed). Also, high insect populations in production areas that are distracting to observers or animals, visible maggots, the presence holes in the bird netting and wild birds, or wild bird droppings will indicate poor pest control in buildings.

Insect pest control can be accomplished by using granular or solid insecticides, traps, insecticide sprays, and competitive or predatory insects. Keeping insect breeding habitat (i.e., wet feed, wet or dry manure, standing water, etc.) at a minimum is also important in insect control. Rodent control is accomplished by consistent, uniform baiting, as well as keeping rodent food sources (i.e., spilled feed) cleaned up promptly, and reducing rodent shelter areas by keeping trash and debris picked up. Bird control can usually be accomplished in buildings through bird netting and proper maintenance of the structure's walls and roof.

Section 3.2 (f) What are indicators of an adequate beneficial insect (beetle) population in a high-rise production area?

Adequate levels of beneficial insects will be indicated by dry composting manure and reduced fly populations. In addition, adequate populations of beneficial beetles (hyster) should be visible when the manure crust is disturbed.

Section 3.2 (g) What are the symptoms of a chronic problem with birthing waste, trash, or animal health consumables entering manure storages?

Chronic or periodic blockage of transfer pipes, excessive visible debris along the side or within the manure storage, or difficulty when land applying manure would be symptoms of a chronic problem.

Section 3.2 (g) What are indicators of excessive feathers or trash in a poultry-related manure storage system?

The guards or louvers on fans are covered with feathers or the feathers are impacting the fan functionality (ventilation).

Section 3.2 (i) 1(a) and (b) What are indicators of excessive manure accumulation in cattle or dairy operation travel lanes, living areas, service aisles, or feed alleys?

Indicators of excessive manure accumulation are animals covered with large amounts of manure, large fly populations or visible maggot activity, poor air quality, deep manure within the lot, or manure buildup along the edges or curbing of travel lanes, service aisles, or feed alleys.

Section 3.2 (i) 2 (a) What are indicators of improperly controlled silage leachate?

Uncontrolled silage leachate can result in the creation of insect breeding habitat, increased insect populations, increased odors, areas of stressed or dead vegetation, and areas of ponded silage leachate (usually reddish-brown in color).

Section 3.3 (b) What are indicators of excessive dust accumulation or generation?

a. Open system

Bare ground, especially during dry conditions, will contribute greatly to dust generation in an open system. Manure accumulation in an open system can result in increased dust generation. In addition, animals excessively covered in manure will generate dust.

b. Confined production area

Many factors can contribute to dust production in a confined production area. These factors include, but are not limited to the use of dry/dusty feed (crumble vs. pelleted), poor feeding equipment design (i.e., no feed tube extensions), poor building cleaning procedures, excessive manure accumulations, dirty animals, and dirty ventilation fans. If you can run your finger along a surface and it leaves a track with noticeable depth; this indicates excessive dust accumulation.

Section 3.3 (c) What are indicators of poor air quality in animal living areas?

Indicators of poor air quality include high ammonia-like odor, watery or irritated eyes, excessive coughing of observers or animals, increased respiratory diseases of animals, decreased weight gain, or areas of stagnant, humid air.

Section 3.3.1 (c) What are signs of chronic feed spillage/wastage around the outside of the animal living areas?

Rotten or spoiled (caked and/or discolored) feed under the feed bins or around the site, increased rodent activity, insect breeding habitat, or poor air quality could indicate a chronic feed spillage/wastage.

Section 3.4 (a) What are some signs that open lots are not being managed to minimize dust generation?

Dried manure accumulations or infrequent scraping/grooming of lots can lead to additional dust generation.

Section 3.4 (b), (e) and (n) What are signs that stocking densities in pastures are excessive (not overgrazing)?

Excessive stocking densities can lead to erosion and areas devoid of vegetation, as well as not allowing for proper vegetation (forage) growth (see Section 3.4 (d)) and cattle would require additional feed to maintain growth. In addition, excessive manure accumulation would be noted on the surface of the pasture.

Section 3.4 (c) What are signs that animal access to surface water is not adequately controlled?

Animal access to surface water can be controlled by fencing off the surface water, and providing other sources of drinking water. If this is not practical other options, such as constructing permanent crossings that result in low stream bed impact, can be implemented, or surface water bodies can be partially fenced. The uncontrolled animal access can degrade water quality by the direct introduction of urine and manure, as well as through the increased sedimentation of surface water, and through increasing bank erosion. Uncontrolled animal access to surface water equates to unrestricted access to surface water. Animals washing in the water are a sign that their access is not controlled.

Section 3.4 (d) What are signs that a pasture is not maintained to prevent erosion?

Vegetation is denuded; bare spots are noted; or visible channeling or erosion is occurring.

Section 3.4 (h) What constitutes a “wet period,” a “drought” and an “extremely hot” period?

This question is not applicable if there are engineering controls, such as fencing, to isolate surface water from livestock.

Conditions constituting a “wet period” would result in vegetation and stream bank damage from livestock traffic because the soil moisture content is high enough to reduce the inherent cohesiveness of the soil. Generally, soil moistures between field capacity and saturation would meet these criteria; however, this is somewhat soil texture dependant. These conditions would be tied to recent or long-term precipitation events or a spring thaw.

The criteria for a “drought” or “extremely hot weather” would be any combination of heat and dry weather that would encourage livestock to lounge in the stream.

Section 3.4 (i) What are indicators that a controlled animal access point to surface water has not been adequately stabilized?

Slumping soil or stream bank erosion would indicate that an access point has not been properly stabilized. In addition, bare soil should not be present at an access point (the access point should be graveled).

Section 3.4 (j) What are indicators of excessive manure accumulations around feeding stations?

Indicators of excessive manure accumulation are animals covered with large amounts of manure, large fly populations or visible maggot activity, poor air quality and manure piles around the feeding station.

Section 3.4 (k) What are things to consider when determining adequate separation distance between an animal production area and:

a. Surface water

The ability for manure or manure-contaminated water to reach the surface water should be considered when determining adequate separation distance. The ability to contaminate the water can be influenced by the gradient of the land, the presence of any diversions or secondary containments, and the presence of grass filter strips between the production area and the surface water. In addition, if the facility is regulated, local, state or federal setback requirements can be used as guidance in evaluating this question.

b. Public use areas or neighbors

Production areas should be set back far enough so as not to have a negative impact (i.e., adverse odors or sounds) on public use areas or neighbors. This can be influenced by surrounding topography; physical barriers; such as tree lines; and prevailing wind direction.

Section 3.4 (k) What are some signs that a pasture is not being maintained to minimize the presence of woody or non-edible plants?

The presence of woody or non-edible plants would indicate that they are not properly maintained. In addition, vegetation that does not appear to be mowed or burned to control unwanted vegetation or pastures that are not regularly seeded may also indicate pastures are not maintained for woody plants. (This does not include trees left for shade or used for visual screening.)

Section 3.4 (l) Describe indicators of adequate or proper vegetation in an animal production area.

Proper vegetation should evenly cover the animal production area resulting in minimized areas of bare ground and erosion, and decreased dust production. The vegetation should be maintained in a way that keeps it short thus reducing the potential for dust collection and rodent habitat. The presence of weeds and shrubs should be controlled.

Section 3.4 (m) What are the indicators that manure is or is about to create an odor or pest breeding challenge?

Wet manure present in large quantities around the production areas could result in the creation of an odor source. Manure with maggots visible is close to creating an insect problem. Numerous flies are an indication that manure is creating a pest problem.

Section 3.4.1 (a) What are some indicators of excessive water ponding around animal living areas?

Signs of excessive water ponding may include areas of increased rutting and erosion in traffic areas, areas of dead or stressed vegetation, increased insect populations, mud wallows, increased odor production and increased insect populations.

Section 3.4.1 (c) What are signs that overland flow is not controlled relative to animal living areas?

Erosion or channeling in the animal living area, ponding water, and areas of stressed vegetation would indicate that overland flow is not properly controlled.

Section 3.4.1 (d) What are signs that livestock are prevented access to storm water or manure storage structures?

This question is intended to deal with access related to earthen containments. Indications that livestock access is not controlled may include, livestock being present on containment embankments or grazing nearby the containment, with no physical barriers restricting access to the containment area. In lieu of seeing livestock in these areas or grazing nearby, tracks in mud or manure present on embankments or around containments where there is no physical barrier between the manure and the containment are indications of a lack of access control.

Section 3.4.1 (e) What are some signs that watering or feeding stations, on soils, are not placed on well-drained locations?

Erosion, ponding water, or excessive mud could indicate that watering and feeding stations are not in well-drained locations.

Section 3.4.2 (a) What are signs that animal access to surface water is not adequately controlled?

Animal access to surface water can be controlled by fencing off the surface water, and providing other sources of drinking water. If this is not practical other options, such as constructing permanent crossings that result in low stream bed impact can be implemented, or surface water bodies can be partially fenced. The uncontrolled animal access can degrade water quality by the direct introduction of urine and manure, as well as through the increased sedimentation of surface water, and through increasing bank erosion. Uncontrolled animal access to surface water equates to unrestricted access to surface water. Animals washing in the water are a sign that their access is not controlled.

Section 3.4.2 (b) What are some signs that open lots are not being managed to minimize dust generation?

Dried manure accumulations or infrequent scraping/grooming of lots can lead to additional dust generation.

Section 3.4.2 (c) Describe indicators of adequate or proper vegetation in an animal production area.

Proper vegetation should evenly cover the animal production area resulting in minimized areas of bare ground and erosion, and decreased dust production. The vegetation should be maintained in a way that keeps it short thus reducing the potential for dust collection and rodent habitat. The presence of weeds and shrubs should be controlled.

Section 3.4.2 (c) What constitutes the areas adjacent to sheds or lots being free of tall weeds or other undesirable vegetation?

For this standard, undesirable vegetation consists of plants that do not provide forage or that pose a physical or chemical hazard to livestock. Tall weeds are any plants, except desirable trees or shrubs, that are taller than the overall height of the pasture or surrounding maintained vegetations and that provide habitat for rodents, reduces airflow and trap dust. Tall weeds that trap dust from animal living areas and release it on windy days may become an odor source themselves. To be in conformance with this standard, the areas adjacent to sheds and lots should have no tall weeds or undesirable vegetation.

Section 3.4.2 (d) What are the indicators that manure is or is about to create an odor or pest breeding challenge?

Wet manure present in large quantities around the production areas could result in the creation of an odor source. Manure with maggots visible is close to creating an insect problem. Numerous flies are an indication that manure is creating a pest problem.

Section 3.4.2 (d) What are indicators that bedding or litter is not “reasonably” clean?

Presence of caking of the litter; animals wearing the manure; bedding or litter indistinguishable from manure; odors, such as ammonia; increased insect populations; and liquid running out (draining) from building.

Section 3.4.2 (d) What indicates that bedding is maintained in acceptable condition?

The following conditions indicate that bedding is not maintained in an acceptable manner: if it generates a noticeable manure or urine odor, if it is saturated, if it dirties the animals using it, if it had become matted or caked due to manure accumulation, and if it has become an insect breeding ground.

Section 3.4.2 (e) What are signs of chronic feed spillage/wastage around the outside of the animal living areas?

Rotten or spoiled (caked and/or discolored) feed under the feed bins or around the site, increased rodent activity, insect breeding habitat, or poor air quality could indicate a chronic feed spillage/wastage.

Section 3.4.2 (e) What are the signs that waste or spilled feed is removed from pastures in a timely fashion?

The regular or timely removal of waste feed and ingredient can be inferred by the lack of weathered, spoiled or moldy spilled feed or feed ingredients in the area. Piles of feed that have become insect breeding grounds is also a sign of feed or feed ingredients that are not removed in a timely manner.

Section 3.4.2 (f) How often is “periodically,” related to inspecting sheds and lots for excessive manure accumulation?

The frequency of inspection will be dependent on the stocking density of a particular area. As the stocking density increase so does the generation of manure. The intent of this standard is not to allow manure accumulation in quantities sufficient to create and maintain insect breeding and to generate odor that could impact off-site areas. Regardless of the size of the area, producers should inspect all occupied shed and lot areas at least weekly for excessive manure accumulation.

Section 3.4.2 (g) What are some indicators of an unclean or excessively wet animal living area?

An animal living area that is unclean or excessively wet can result in increased odors, animals with excessive manure coverage, unhealthy animals, increased insect and rodent populations, and excessive dust generation.

Section 3.4.2 (g) What are some indicators of excessive manure accumulation in sheds and lots?

The following conditions indicate excessive manure accumulation: if an area generates a noticeable manure or urine odor, if the manure accumulation dirties the animals in the shed or lot, and manure that is an active insect breeding area.

Section 3.4.2 (k) What are signs that the locations of mobile shade structures, feeding stations, waterers, or mineral stations are not being adequately rotated?

Lack of proper vegetation (see Section 3.4 (c)), low spots, ponded water areas, or manure accumulations, and erosion would indicate that mobile locations are not being adequately rotated. Pest locations may be overgrown with non-desirable (non-edible) vegetation.

Section 3.4.2 (h) What are the general attributes of an environmentally sensitive area?

An environmentally sensitive area is easily impacted by manure or other pollutants. These areas include, but are not limited to sinkholes, surface waters, tile systems that drain into surface water, well heads, public use areas, and private dwellings.

Section 3.4.2 (h) What constitutes an area that does not directly drain into a sensitive environment?

For an area not to drain (storm water runoff or liquid generated at the location) directly into a sensitive area, the drainage must either travel through a vegetated filter strip that can capture solids suspended in the runoff and slow flow to maximize runoff infiltration into the soil, or be captured and channeled into a storage structure for treatment, evaporation or subsequent release according to a nutrient management plan.

Section 3.4.2 (j) What constitutes excessive manure accumulation and how often is “periodic?”

The following conditions indicate excessive manure accumulation: if an area generates a noticeable manure or urine odor, if the manure accumulation dirties the animals in the shed or lot, and manure that is an active insect breeding area.

The frequency of inspection will be dependent on the stocking density of a particular area. As the stocking density increases so does the generation of manure. The intent of this standard is not to allow manure accumulation in quantities sufficient to create and maintain insect breeding and to generate odor that could impact off-site areas. Regardless of the size of the area, producers should inspect all occupied pastures at least weekly for excessive manure accumulation.

Section 4.3 What are the types of records you need?

All structural design drawings and specifications should remain on site for the life of the facility. Checklists should be developed to document the inspections described in Section 3.4.2 (h) above. All inspection checklists should be signed and dated upon completion and maintained on site for five years along with the inspection schedule.

PART 3: OUTDOOR MANURE AND STORM WATER STORAGE

ANSI GELPP 0003-2002

Section 3.1 (a) What are the characteristics of acceptable, effective, and safe screening for manure and storm water storages?

Manure and storm water storage screening should block the storage from the view of individuals who are passing by the operation. This screening could be: natural topography, such as a hill; a natural screening, such as a tree line (caution, trees should not be too close to the storage structures where they could cause damages to the structures); or a manmade screening, such as a building, between the storage structure and the public road.

Section 3.1 (b) What are signs of excessive ponding of water around manure and storm water storages?

Clearly, existing standing water would be the first sign. Other indicators of past ponding events would be areas with dead vegetation, or devoid of vegetation or rutted areas from mowers and other traffic.

Section 3.1 (c) Describe indicators of excessive erosion on manure or storm water storage systems?

Excessive erosion can be indicated by deep channels on the storage berms, lack of vegetation on the berms, and/or decreased capacity of the storage structure due to the accumulation of silt brought in by erosion.

Section 3.1 (d) What are conditions that could result in soil erosion by water, wind, or waves?

Any portion of the inside of the berm on the manure storage could have wind, water or wave erosion. When the inside of the berms is not protected by vegetation, rip-rap or a synthetic liner, erosion occurs more commonly. On the outside of the berms, wind and water erosion occur most commonly when the berms are not constructed with the correct slope, when vegetation is not well mowed or not present or when the berms are poorly shaped.

Section 3.1 (d) What are indicators of excessive wind, water, and wave erosion?

a. Drainage-ways

The drainage-way will have barren areas that exhibit channeling or rutting or areas that have vegetation, but still exhibit channeling or excessive slopes (drop-offs) from past erosive events.

b. Berms/dikes

Indicators of erosion on berms and dikes will be wave marks on the interior of the berms, rill erosion from water movement on either side of the berms, channeling from intense storm events, bare areas or areas where the berm shape has changed due to movement of the soil.

Section 3.1 (e) What are some indicators of manure or storm water storage impact on subsurface drainage systems?

Indicators of impact on subsurface drainage systems can include ponding of water due to obstructions at the entrance of the piping, solids accumulation at the tile inlet, algal growth in the system or outlet, or discoloration or odor of the liquid at the outlet.

Section 3.1 (f) What are the attributes of spilled manure that would cause a non-conformance with this GELPP?

Spilled manure will create increased odors, provide a habitat for insect breeding, and could possibly contaminate ground water and nearby surface water.

Section 3.1 (h) What are indicators that the inlets and outlets are designed to prevent blockage?

Inlet and outlet pipes must be constructed to prevent blockage by debris or ice. Some indicators of this characteristic may include screens or other structures placed at the outlet or inlet entry into the containment or discharge pipes that end above the fluid surface (only in climates where freezing conditions may be encountered).

Section 3.1 (j) What are the characteristics of restricted access for human and livestock, relative to this GELPP?

Neither livestock nor unauthorized humans should be allowed to enter restricted access areas. This may be achieved with fencing and locked gates.

Section 3.1 (l) What indicates a producer adequately maintains permeability records?

Permeability records must be kept by a producer for the lifetime of the containment. To meet the intent of this standard, the records must be kept on-site or under the producer's direct control and they must be accessible within the timeframe of the assessment.

Section 3.1 (l) What are adequate methods and frequency for solids accumulation monitoring for outdoor manure or storm water storages?

The accumulation of solids in outdoor manure storages should be measured annually at a minimum. Solids can be measured with any form of instrument that can penetrate the solids and reach the bottom of the storage. The instrument should be lowered vertically through the liquid and solid column. The instrument, typically a rigid pipe or pole should show a distinctive point of staining from the solids at the bottom of the storage. For storage greater than one acre in surface area, multiple measurements should be collected to derive an average depth of the solids.

Section 3.1 (o) What indicates that access to liquid transfer equipment is controlled?

The intent of this standard is to determine if a person could cause a release or other unplanned application of liquid using the liquid transfer equipment without the knowledge of the producer. Adequate access controls would include power lock-outs, physical locks on the system, a keyed ignition with the key being stored in a secure location, transfer controls in a locked room, locked transfer valves or other similar systems to prevent the unauthorized transfer of liquid.

Section 3.1 (p) What are the characteristics of restricted access for human and livestock, relative to this GELPP?

Neither livestock nor unauthorized humans should be allowed to enter restricted access areas. This may be achieved with fencing and locked gates.

Section 3.1 (p) When is safety signage appropriate around manure or storm water storages?

If unauthorized human access to the storages is likely to occur, appropriate warning safety signs must be present.

Section 3.1 (q) What are signs of improperly maintained or environmentally threatening vegetation around manure and storm water storage units?

Vegetation that is overgrown, has not been mowed, and/or spotty vegetation are all signs of improperly maintained vegetation. This type of unmaintained vegetation can hide damage to the berm, such as erosion channels or rodent burrows. Trees, shrubs, and other deep rooted plants around the structures can compromise the integrity of the structure and therefore are environmentally threatening.

Section 3.1 (r) What is the minimum treatment volume for an anaerobic treatment lagoon?

The minimum treatment volume is an engineered level in the lagoon that allows anaerobic bacterial activity to continue. It is usually detailed in as-built drawings, and should be clearly marked on a staff gauge.

Section 3.1 (s) What factors should be considered when determining if recycle or recharge water inlets are adequately separated from the manure inflow to the containment?

The factors that determine if the recycle or recharge inlets are too close to the containment inlet are clogging of pumping equipment and lines, the color of the recycle water, visible solids in the recycle waters and increased levels of odors or ammonia during flushing.

Section 3.1 (u) What are indicators of overloading or slug-loading a manure containment?

Overloading and slug-loading in manure containments often results in a lack of bubbling activity, lack of a red/pink color in lagoons, a dark brown or black color of manure, or heavy crusting on the surface, or the producer indicates he empties all his building pits at once.

This standard should only be applied to treatment lagoons, not to simple manure containments.

Section 3.1 (w) How is it determined that the proximity of a manure or storm water storage unit would require the installation of secondary containment, relative to this GELPP?

These structures require secondary containments when a sensitive area is within a reasonable distance from the storage, a pathway is present, and the manure storage is situated topographically upgradient from the sensitive area.

Section 3.1 (x) What are indicators of excessive manure or liquid accumulation on a manure or storm water containment cover?

When a cover is sagging to a point where treatment or holding volume are affected or damage is occurring, the accumulation is excessive.

Section 3.1 (y) What constitutes adequate available storage capacity in a manure or storm water storage structure?

Adequate storage space suggests that manure production would be able to be stored in the structure until it can be applied per the NMP and not overflow for anything less than a catastrophic rain event (25-year, 24-hour rainfall event).

Adequate available storage capacity for a storm water containment would be capacity to hold runoff from a catastrophic rain event (1 in 25-years/ 2- hour precipitation event).

Section 3.2 (a) and (b) What are the conformance issues relative to solids storage and the collection or containment of runoff/on?

Run-on should be prevented from entering the structure, and any runoff from the structure should be collected and contained. The structure must protect the solids from precipitation.

Run-on must be prevented from entering the structure, and no run-off should occur.

Section 3.2 (c) What are the characteristics of an all-weather access to a solid manure storage area?

An all-weather access is typically a cement, asphalt, gravel, or crushed-rock access road and pumping platform that allow the manure structure to be accessed by vehicular traffic or pumped out during/following all precipitation events. An indicator that it is not all-weather access is ponded water, rutting, or pot holes.

Section 3.2 (d) What is the intent of requiring a solid manure storage unit's floor to be constructed to "minimize" permeability?

Minimizing the permeability of the floor is required to minimize the potential impact of percolation of manure leakage to ground water. Decreasing the permeability reduces the movement of liquids through the soil column. An impermeable surface also allows for easier manure removal by equipment.

Section 4 Under what conditions can mortalities be disposed of in solid manure storages?

Mortalities can be composted in solid manure storages when there is adequate retention time and carbon source for the carcasses to be fully decomposed and when the NMP allows mortalities to be land applied.

Section 6 What are the types of records that should be kept relative to outdoor manure and storm water storages?

All structural design drawings and specifications must be maintained on site for the life of the facility. All inspection checklists should be signed and dated, and should be kept on site for five years, along with the inspection schedule.

Section 5 What are the elements of manure or storm water storages that need periodic inspection?

Manure loading and transfer areas, water diversion ditches, subsurface drain outlets that originate from near storage structures, the area surrounding the storage structures, the level of the contents being stored, and the condition of the earthen dikes, should all be periodically inspected.

PART 4: MANURE UTILIZATION

ANSI GELPP 0004-2002

Sections 3.1 and 3.2 What is the difference in producer responsibility between brokered, sold, supplied to neighbors, and contract-hauled manure arrangements?

Brokered manure becomes the responsibility of the broker after it is transferred to the broker on the basis of a legally binding contract. The responsibilities include sampling and analyzing manure for nutrient content (total solids, TKN, ammonia nitrogen and total phosphorous). When manure is sold, supplied to neighbors or contract hauled, it still must be applied according to the producer's nutrient management plan. This requires written manure spreading agreements with individuals that control the land application areas, including use of the producer's Emergency Action Plan and NMP.

Section 3.1 (a) What constitutes an adequate historical record for manure sample data

Adequate historical data is a representative sample of an operation's manure stream, which is collected and analyzed annually and after any production changes that could significantly alter the nutrient content of the manure. If an operation has multiple manure containments, only one containment needs to be sampled every year if each containment receives manure from animals under the same feed and management regime.

Section 3.1 (d) What defines manure that is outside the control of the producer?

Manure that is outside of the producer's control is any manure that is being transported and applied by an external agent, with or without a signed agreement, where the producer no longer remains responsible for the rates or methods of transportation or application.

Section 3.3 (a) What is the difference between an uncontrolled and a controlled manure release?

An uncontrolled manure release is any event in which manure is released to the environment, when it is not carried out in a manner that corresponds to the details in the nutrient management plan or an engineered discharge like a filter strip or an engineered wetland. A controlled manure release is a discharge that is consistent with the nutrient management plan or through engineered discharges.

Section 3.4 (a) What are some production characteristics that could change the nutrient content of manure, and what conditions would warrant a change in the NMP?

Manure composition can be affected by the age of the animals, gender of the animals, feed composition, use of bedding, manure storage and treatment and use of solid and wet systems. The NMP would require a change if the production method would alter manure nutrient content to a point where the nutrient rates would be exceeded by applying at the planned application rate.

Section 3.4 (a) How much data constitutes sufficient historical data, relative to determining the representative nutrient content of manure?

Manure should be sampled at a minimum of once annually. These records should be kept for the lifetime of the production unit. Three years of nutrient analyses will provide a reliable estimate of average manure nutrient content.

Section 3.4 (a), (b) and (g) What are the considerations for sampling the following in a representative manner?

a. Soil

Soil should be sampled based on soil types in the application areas, topography (i.e., crest of slope, mid slope and toe of slope) and application depth. Each combination of these factors can contribute to different existing nutrient composition and future nutrient requirements.

b. Manure

Manure should be sampled in a composite manner taking into consideration, manure from different phases of production, different moisture contents and different areal locations and depths in a manure storage structure.

Section 3.4 (j) What factors relative to the previous growing season must the producer review to quantify the past growing season's impact on the residual nutrient content of application areas?

Factors that can affect residual nutrient content include manure nutrient application rate, additional commercial fertilizer application rate, green manures, crop type, and crop yield (amount harvested). Collection of soil samples for nutrient analyses prior to applying additional fertilizer is a method to quantify residual nutrient content.

Section 3.4 (k) What constitutes verifying the calibration on manure application equipment?

Verifying the calibration of application equipment requires a measured rate of nutrient application per unit area based either on duration and/or speed of application, or settings of application equipment.

Section 3.4 (l) What constitutes good working condition as it relates to manure utilization equipment?

Good operating conditions require that the equipment be safe and reliable for land application personnel. The equipment must contain all of the manure with all moving parts remaining operational. Part of maintenance that contributes to keeping the equipment in good working condition is a regularly scheduled maintenance inspection and cleaning plan.

Section 3.4 (l) What defines clean manure utilization equipment?

Clean manure application equipment should not have dry, crusted manure or manure staining on its structure and should also have the wheels free of mud.

Section 3.4 (m) What aspects of highly erodible land can a producer impact or control?

The producer can utilize conservation methods, including terracing, grassed waterways, diversions, contour tillage, strip cropping, cover crops, and residue management through no till, minimum tillage, or reduced tillage, to reduce runoff and soil loss from highly erodible lands.

Section 3.4 (n) What aspects of manure application, within the control of a producer, can be controlled to reduce odor emissions from fields receiving manure applications?

The producer can dictate time of application relative to activities, weather and method of application (i.e., injection or broadcast).

Section 3.4 (o) How do you quantify acceptable spray drift?

In all cases, spray drift should be minimized. This requires consideration of method of application, weather conditions and time of year. Spray drift should not come in contact with nearby residences, public use areas or sensitive areas.

Section 3.4 (p) What are the indicators of a fully functional or adequate filter or buffer strip?

A functional filter strip will reduce the solids and nutrient content of the runoff to levels that do not cause water quality impairment. A functioning filter strip will exhibit healthy vegetation with no barren spots or concentrated flow channels and will not be overloaded with solids. A buffer strip will have an adequate distance to provide the same reduction in the levels of solids and nutrients.

Section 3.4 (r) Is 1,000 feet from occupied residence the distance from the field border to the actual living structure or the property line of the residential land?

The 1,000 feet should be considered from the land application area to the closest point of probable human activity or perception. This may in some cases be the residence but in many cases it could be an area that is used regularly for outdoor activities.

Section 3.4 (s) How do you quantify acceptable spray drift?

In all cases, spray drift should be minimized. This requires consideration of method of application, weather conditions and time of year. Spray drift should not come in contact with nearby residences, public use areas or sensitive areas.

Section 3.4 (u) What types of things should be monitored relative to a land application event?

For low pressure systems: underground piping daily, aboveground piping every four hours, and pumps and the application device daily.

For high pressure systems: all components except underground piping hourly and underground piping daily.

Section 3.4 (v) What indicates protected surface inlets?

Protected tile inlets will function as designed, freely draining water when not land applying. During land application events, properly protected tile inlets will either be surrounded by buffer strips that are observed during application or physical barriers, such as a sleeve or cap. Both techniques prevent applied manure from entering the tile system. Another indicator of a properly protected tile is the absence of “dirty” discharge or algae growth at the outlet into surface water.

Section 3.4 (w) What characteristics define a direct conveyance to surface water?

A direct conveyance to surface water does not have an intended or designed obstruction to regulate the movement of manure to surface water. Mitigation measures can include buffer strips, set backs, filter strips and engineered wetlands.

Section 3.4 (x) What are the characteristics of a well-protected sensitive area, relative to manure impact?

Well-protected sensitive areas will have buffer strips, filter strips, set backs, or other engineered runoff controls surrounding them. When these areas are surface or ground water, the water quality in the system will not be adversely impacted in terms of nutrient content.

Section 3.5 (a) What are some indicators of manure impact on subsurface drainage, i.e., tile outlet discharge?

Some indicators of impact on subsurface drainage include water ponding in application fields due to restrictions in subsurface tiles or inlets, areas of exposed tile, “dirty” discharge into surface water from the tile outlet, or algae growth at the outlet.

Section 3.5 (b) What indicates protected surface inlets?

Protected tile inlets will function as designed, freely draining water when not land applying. During land application events, properly protected tile inlets will either be surrounded by buffer strips that are observed during application or physical barriers, such as a sleeve or cap. Both techniques prevent applied manure from entering the tile system. Another indicator of a properly protected tile is the absence of “dirty” discharge or algae growth at the outlet into surface water.

Section 3.6 What are the indicators of a well-managed land application area that minimizes or prevents run-off?

The presence of buffers strips, set-backs, filter strips and conservation practices all contribute to a well-managed land application area with adequate runoff protection.

Section 4 (a) What defines a significant rainfall event?

A significant rainfall event is any rain event that causes soil saturation. Soils in this condition would not be suitable for supporting land application equipment, such as tractors and manure tanks, or runoff or ponding would occur if irrigation manure occurred.

Section 4 (b) How do you measure the degree of frozen or partially frozen ground?

Any ground that has an impenetrable layer at the surface that would not allow infiltration of liquid would be considered unsuitable for land application.

Section 5 What are the elements of manure application that need periodic inspection?

Throughout all application events, application equipment, pumps and piping must be visually inspected. Automatic shut-off systems need to be inspected annually.

Section 6 What are the types of records should be kept relative to manure utilization?

The producer should maintain soil and manure analytical results, transfer documents, signed manure transfer agreements, signed manure-spreading agreements, application logs, inspection checklists, land application equipment testing and land application equipment maintenance records.

PART 5: MORTALITY MANAGEMENT

ANSI GELPP 0005-2002

Section 3 What are the different types of mortality disposal addressed by this GELPP?

The GELPP addresses off-site rendering, composting, burial and incineration.

Section 3.1 What elements must be included in a mortality management plan for it to conform to this GELPP?

The mortality management plan must address, but is not limited to, the collection, storage and disposal scheduling, a description of on-site storage, a description and standard operating procedure for final disposal, a contingency plan for mass mortality and records of mortality disposal.

Section 3.2 (a) What is the difference between a mortality storage/disposal area (e.g., burial trench) and a mortality collection area (e.g., rendering pick up)?

The primary difference between these two types of structures is that a storage/disposal area is the final area for decomposition of the carcasses; whereas, the collection area is a temporary area where carcasses are stored before they are transported to a final area for decomposition.

Section 3.2 (b) What constitutes proper disposal?

Proper disposal of a mortality isolates the mortality from other livestock, scavengers, insects and humans. Isolation addresses both view and contact issues. Common forms of disposal include burial, rendering, incineration and composting. If mortalities are refrigerated, the disposal target of “within 24 hours” does not apply.

Section 3.2 (d) What constitutes adequate screening for mortality storage/collection areas?

Adequate screening of a mortality storage/collection area provides a visual barrier between this area and a public roadway or the property line. The barrier can also function to disperse odor produced at the site.

Section 3.2 (e) What are indicators that mortality storage/collection areas have adequate access controls for scavengers or unauthorized humans?

Lack of fencing, signage, or other physical barriers indicates inadequate access control. Controls are adequate when the contents are undisturbed. Evidence of a disturbed area can include exposed portions of carcasses, access holes around the structure, and remains of animals that have been eaten, or carcass parts scattered about the location.

Section 3.2 (f) What are indicators of inadequate insect and rodent control at mortality storage/disposal and collection areas?

Evidence can include droppings, holes, fur, and observation of rodents, flies or maggots. The lack of bait stations and other pest control devices, lures or baits are more signs that pests are not adequately controlled. In addition, bait stations that are not maintained (empty of bait) are signs that pests are not controlled in these areas.

Section 3.2 (g) What is the intent of placing mortality storage or collection areas on impermeable surfaces?

Placing the storage on an impermeable surface reduces the probability of leachate or runoff from the area entering the groundwater. It provides a physical barrier to the movement of these liquids that can be potentially harmful to the environment.

Section 3.2 (h) What are the characteristics of all-weather access to a mortality storage/collection areas or compost supply storage areas?

All-weather access is typically a cemented or gravel roadway that allows the structure to be accessed and mortalities to be transported during/following any precipitation event.

Section 3.3.2 (b) and g) How must a mortality storage or disposal area deal with storm water in order to conform to this standard?

Section 3.2 (g) What are signs of an impermeable base at a mortality storage?

Compacted clay or concrete are signs of an impermeable base for a mortality storage. If the impermeable base has no runoff controls, e.g., curbing, and there is evidence or the potential for mortality leachate flowing off the base and onto soil; then this questions should be answered "NO." If the mortalities are stored in a container; then this question would only be answered "YES" if there was no evidence of current or past leakage from the container.

The area should be designed to prevent both run-on and runoff from the storage or disposal area. This reduces potential impacts to water from leachate from the mortality site.

Section 3.3.2 (d) What is the intent of allowing 6 inches of spacing between carcasses and the sidewalls or top surface (edge) of a compost structure?

This spacing serves a number of purposes, namely to provide adequate cover for adequate composting of the carcasses, to reduce scavenger and insect activity, to reduce odor production and to allow compost to be turned without increasing the chances of damage to the structure with turning equipment. It also allows for adequate air movement and controls moisture/leachate.

Section 3.3.2 (e) Why does the standard that requires 12 inches of cover over carcasses and carcass parts not contradict the standard requiring 6 inches of space between the sidewalls and top surface of a composter?

The standard relating to the 6-inch separation distances refers to the sides, bottom, and top edge of the compost structure itself. By not placing carcasses within 6 inches of the top edge of the compost structure, there is little chance for a carcass or carcass parts from falling out of the structure. The 12-inch cover standard refers to the cover over the top-most carcass or carcass part.

Section 3.3.2 (f) What are some indicators of leachate run-off handling that would not conform to the intent of this GELPP?

Indicators of improper leachate runoff handling would include ponded leachate, stressed or dead vegetation, barren spots, odor production, and increased insect populations. No measures to absorb or physically control leachate movement would indicate improper handling.

Section 3.3.3 (a) What are environmental characteristics that would preclude the siting of a burial trench in a given area?

The mortality burial area must be sited to reduce the impact on surface water and groundwater. The trench must be deep enough to ensure adequate cover but shallow enough to provide a physical barrier between the water table, and sited in areas avoiding floodplains, sandy soils, nearby surface water and nearby ground water wells, and not sited in depressions where surface water can enter the trench. The burial trench should also be sited out of public view.

If a local, state or federal jurisdiction has made it illegal to bury mortalities on an operation and the producer is burying animals, this would constitute a “legally” sensitive area. In this case an assessor should point out the prohibition and provide recommendations for proper mortality disposal.

Section 3.3.3 (c) What are the characteristics of a burial trench cover that restricts human and scavenger access, confines decomposition gases, and does not present a worker safety hazard?

The cover can be constructed of wood, metal or soil and should fit tightly enough to reduce odor movement out of the trench or scavengers to access the pit and needs to be rigid enough to support a human. The cover should also prevent run-on from entering the trench. Another potential option is to have fencing that prevents humans and scavengers from entering the trench.

Section 3.3.4 (a) What are indicators of an improperly functioning incinerator?

Improperly functioning incinerators are difficult to clean out, produce incomplete combustion of the carcasses, produce a very moist/wet ash and produce excess amounts of smoke.

Section 3.3.4 (b) What are indicators of an undersized incinerator?

If an incinerator is undersized, it does not have the capacity to incinerate the largest animals housed on site, it will often have surplus carcasses in the near vicinity until they can be incinerated, ash is overflowing from the incinerator or carcasses are not completely combusted.

Section 3.3.4 (c) What constitutes an adequate fuel supply for an incinerator?

An adequate fuel supply will allow the incinerator to fully combust a typical number of mortalities that occur at the site.

Section 3.3.4 (e) What are indicators of excessive or chronic fuel leakage from an incinerator or its fuel supply?

Excessive and chronic leaking will result in staining of the soil or pad that the incinerator or storage is located on, loss of vegetation in the vicinity of the spill or can be detected by its odor.

Section 4 (a) What constitutes acceptable disposal of mortalities in solid manure storage?

Mortalities can be disposed of in solid manure storage when the storage has been designed as a composter and is managed as a composter, and when the carcasses can be fully decomposed, when an adequate carbon source is available and when the NMP allows mortalities to be land applied.

Section 5 What are the elements of mortality management area that need periodic inspection?

On a daily basis, all carcass storage areas must be inspected for access controls, leachate, contaminated runoff, pest controls and screening. Compost areas should also be inspected for cover thickness and pile temperature. Open burial areas should also be inspected for clean water diversion and closed burial areas should be inspected monthly. Incineration facilities should also be inspected for fuel leakage and contaminated runoff.

Section 6 What are the types of records should be kept relative to mortality management areas?

The producer needs to maintain records of inspections, hauling and rendering facility agreements, and locations and dates of completed burial areas. These records need to be kept at the production operation and should be held for five years.