Michigan Department of Agriculture & Rural Development

Michigan Department of AGRICULTURE & Rural Development

Generally Accepted Agricultural and Management Practices for Site Selection and Odor Control for New and Expanding Livestock Facilities

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Michigan Commission of Agriculture
& Rural Development
PO Box 30017
Lansing, MI 48909

PH: (877) 632-1783
www.michigan.gov/MDARD

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Michigan Department of Agriculture & Rural Development (MDARD)
Right to Farm Program (RTF)
P.O. Box 30017
Lansing, Michigan 48909
(517) 284-5619
(517) 335-3329 FAX
(Toll Free)
(877) 632-1783

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PREFACE

The Michigan legislature passed into law the Michigan Right to Farm Act (Act 93 of 1981) which requires the establishment of Generally Accepted Agricultural and Management Practices (GAAMPs). GAAMPs for Site Selection and Odor Control for New and Expanding Livestock Facilities are written to fulfill that purpose and to provide uniform, statewide standards and acceptable management practices based on sound science. These practices can serve producers in the various sectors of the industry to compare or improve their own managerial routines. New scientific discoveries and changing economic conditions may require necessary revision of these GAAMPs.

The Generally Accepted Agricultural and Management Practices that have been developed are the following:

1) 1988 Manure Management and Utilization
2) 1991 Pesticide Utilization and Pest Control
3) 1993 Nutrient Utilization
4) 1995 Care of Farm Animals
5) 1996 Cranberry Production
6) 2000 Site Selection and Odor Control for New and Expanding Livestock Facilities
7) 2003 Irrigation Water Use
8) 2010 Farm Markets

These practices were developed with industry, university, and multi-governmental agency input. As agricultural operations continue to change, new practices may be developed to address the concerns of the neighboring community. Agricultural producers who voluntarily follow these practices are provided protection from public or private nuisance litigation under the Right to Farm Act.

This GAAMP does not apply in municipalities with a population of 100,000 or more in which a zoning ordinance has been enacted to allow for agriculture provided that the ordinance designates existing agricultural operations present prior to the ordinance's adoption as legal nonconforming uses as identified by the Right to Farm Act for purposes of scale and type of agricultural use.

The website for the GAAMPs is http://www.michigan.gov/gaamps.

I. INTRODUCTION

Generally Accepted Agricultural and Management Practices for Site Selection and Odor Control for New and Expanding Livestock Facilities will help determine the suitability of sites for livestock production facilities and livestock facilities and the suitability of sites to place or keep farm animals. These GAAMPs provide a planning process that can be used to properly plan new and expanding facilities and to increase the suitability of a particular site and enhance neighbor relations.

These GAAMPs for Site Selection and Odor Control for New and Expanding Livestock Facilities are written to provide uniform, statewide standards and acceptable management practices based on sound science. They are intended to provide guidance for the construction of new and expanding livestock facilities and livestock production facilities and/or the associated manure storage facilities for the placement and keeping of any number of farm animals.

FARM PLANNING AND SITE DEVELOPMENT

The GAAMPs for site selection and odor control for new and expanding livestock facilities are intended to fulfill three primary objectives:

1) Environmental Protection
2) Social Considerations (neighbor relations)
3) Economic Viability

When all three of these objectives are met, the ability of a farm operation to achieve agricultural sustainability is greatly increased.

Farm planning involves three broad phases: Collection and analysis (understanding the problems and opportunities); decision making; and implementation. Collection and analysis includes: determining objectives, inventorying resources, and analyzing data. Decision support includes formulating alternatives, evaluating alternatives, and making decisions. The final step is implementation.

Producers should utilize recognized industry and university professionals in the evaluation of the economic viability and sustainability of constructing new or expanding existing livestock production facilities and livestock facilities. This evaluation should be comprehensive enough to consider all aspects of livestock production including economics, resources, operation, waste management, and longevity.

The decision to site a livestock production facility or livestock facility can be based on several objectives including: preserving water quality, minimizing odor, working with existing land ownership constraints, future land development patterns, maximizing convenience for the operator, maintaining esthetic character, minimizing conflicts with adjacent land uses, and complying with other applicable local ordinances. The environmental objectives of these GAAMPs focus specifically on water quality protection and odor control, and how environmental and management factors affect the

suitability of sites for livestock production. The suitability of a particular site for a livestock production facility or livestock facility depends upon a number of factors; such as the number of animal units (size); the species of animals; wind directions; land base for use; topography of the surrounding land; adjacent land uses; the availability of Class A roads for feed and product movement; soil types; hydrology; and many others.

Site selection is a complex process, and each site should be assessed individually in terms of its proposed use. These GAAMPs are written in recognition of the importance of site-specificity in siting decisions. While general guidelines apply to all siting decisions, specific criteria are not equally applicable to all types of operations and all locations. In addition to the guidelines provided in these GAAMPs, the United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS) technical references, including the Agricultural Waste Management Field Handbook (AWMFH) and the Field Office Technical Guide (FOTG), are excellent sources for information and standards related to the siting of livestock facilities.

It is recognized that there is potential risk for surface or groundwater pollution, or conflict over excessive odors from a livestock facility. However, the appropriate use of technologies and management practices can minimize these risks, thus allowing the livestock facility to operate with minimal potential for excessive odor or environmental degradation. These measures should be incorporated into a Site Plan and a Manure Management System Plan, both as defined in Section IV, which are required for all new and expanding livestock facilities.

Groundwater and surface water quality issues regarding animal agriculture production are addressed in the current "Generally Accepted Agricultural and Management Practices for Manure Management and Utilization" Michigan Commission of Agriculture & Rural Development (MCARD) and are not duplicated here. The GAAMPs for Manure Management and Utilization cover runoff control and wastewater management, construction design and management for manure storage and treatment facilities, and manure application to land. In addition, the GAAMPs for Manure Management and Utilization stress the importance of each livestock production facility developing a manure management system plan that focuses on management of manure nutrients and management of manure and odors.

These GAAMPs are referenced in Michigan's Natural Resources and Environmental Protection Act (NREPA), PA 451 of 1994, as amended. NREPA protects the waters of the state from the release of pollutants in quantities and/or concentrations that violate established water quality standards. In addition, the GAAMPs utilize the nationally recognized construction and management standard to provide runoff control for a 25-year, 24-hour rainfall event.

There has been a significant increase in interest by individuals in more urban settings to grow their own food, and to grow food for sale. This includes a trend regarding producing protein sources from animals. The Michigan Department of Agriculture and Rural Development supports the expansion of urban agriculture and livestock production across the state. The expansion of agriculture, whether for personal consumption or for local sale/distribution, will provide an opportunity for people to be

closer to local food sources. It also creates an opportunity for the urban agriculture movement to be integrated with any local community's plan for food hubs and /or farm markets, and will be reflected in the differences between communities.
The Generally Accepted Agricultural and Management Practices for Site Selection and Odor Control for New and Expanding Livestock Facilities recognize this trend. It also allows for this to continue to grow based on the desires of the local urban community.

II. DEFINITIONS

AS REFERENCED IN THESE GAAMPs:

Adjacent Livestock Production Facilities - Any livestock production facility that is within 1,000 feet of a second livestock production facility and where the two facilities are under common ownership.

Adjacent Property – An adjacent property is land owned by someone other than the livestock facility owner that borders the property on which a proposed new or expanding livestock facility will be located.

Animal Units - Animal units are defined as listed in (Table 1) of these GAAMPs.

Distances between a Livestock Production Facility and Non-Farm Residences - The distance from a livestock production facility and a residence is measured from the nearest point of the livestock production facility to the nearest point of the residence.

Expanding Livestock Production Facility - An addition to a livestock production facility to increase the holding capacity where animals will be confined at a site that presently has livestock production facilities contiguous to the construction site. A new or expanded manure storage structure built to accommodate an expansion in animal units within three years from construction of the manure storage will also be considered an expanding livestock production facility.

Livestock Farm Residence - A residence on land owned/rented by the livestock farm operation and those residences on farms affiliated by contract or agreement with the livestock production facility.

Livestock Facility – Any facility where farm animals as defined in the Right to Farm Act are kept regardless of the number of animals.

Livestock Production Facilities - All facilities where farm animals as defined in the Right to Farm Act are kept with a capacity of 50 animal units or greater and/or the associated manure storage facilities. Sites such as loafing areas, confinement areas, or feedlots, which have livestock densities that preclude a predominance of desirable forage species are considered part of a livestock production facility. This does not include pastureland.

Migrant Labor Housing Camp – For purpose of this GAAMP, a migrant labor housing camp owned by a livestock producer applying for Site Selection GAAMP approval will be considered a farm residence.

New Livestock Production Facilities - All facilities where farm animals will be kept and/or manure storage structures that are built at new sites and are not part of another livestock production facility, including a site that is expanding greater than 100 percent of existing production within any three year time period and the resulting number of animal units will exceed 749.

Non-Farm Residence - A residence that is habitable for human occupation and is not affiliated with the specific livestock production system.

Offsite Manure Storage Facility - A manure storage facility constructed at a site that is not adjacent to a livestock production facility.

Pasture Land - Pasture land is land that is primarily used for the production of forage upon which livestock graze. Pasture land is characterized by a predominance of vegetation consisting of desirable forage.

Primarily Residential – Sites are primarily residential if there are more than 13 non-farm residences within 1/8 mile of the site or have any non-farm residence within 250 feet of the livestock facility.

Property Line Setback – Property line setback is the distance from the livestock production facility to the property line measured from the facility to the nearest point of the facility owner's property line. If a producer owns land across a road, the road or right of way does not constitute a property line. Right of way setbacks for public roads, utilities, and easements apply.

Table 1. Animal Units

Animal Units	50	250	500	750	1,000
Animal Type[1]	**Number of Animals**				
Slaughter and Feeder Cattle	50	250	500	750	1,000
Mature Dairy Cattle	35	175	350	525	700
Swine[2]	125	625	1,250	1,875	2,500
Sheep and Lambs	500	2,500	5,000	7,500	10,000
Horses	25	125	250	375	500
Turkeys	2,750	13,750	27,500	41,250	55,000
Laying Hens or Broilers	5,000	25,000	50,000	75,000	100,000

[1]All other animal classes, types or sizes (eg. Nursery pigs) not in this table, but defined in the Michigan Right to Farm Act or described in Michigan Commission of Agriculture and Rural Development Policy, are to be calculated as one thousand pounds live weight equals one animal unit.
[2] Weighing over 55 pounds.

III. - DETERMINING ACCEPTABLE LOCATIONS FOR LIVESTOCK FACILITIES

All potential sites for new and expanding livestock facilities can be identified by four general categories. These are:

Category 1. These are sites normally acceptable for livestock facilities and generally defined as areas that are highly agricultural with few non-farm residences.

Category 2. These are sites where special technologies and/or management practices could be needed to make new and expanding livestock facilities acceptable. These areas are predominantly agricultural but also have an increased number of non-farm residences.

Category 3. These are sites that are generally not acceptable for new and expanding livestock production facilities due to environmental concerns or other neighboring land uses.

Category 4. Sites not acceptable for New and Expanding Livestock Facilities and Livestock Production Facilities.

Livestock facilities in Categories 1 or 2 with less than 50 animal units are not required to go through the site review and verification process, and conform to the provisions of these GAAMPs. However, these operations are required to conform to all other applicable GAAMPs.

Category 1 Sites: Sites normally acceptable for livestock facilities.

Category 1 sites are those sites which have been traditionally used for agricultural purposes and are in an area with a relatively low residential housing density. These sites are located where there are five or fewer non-farm residences within ¼ mile from a new livestock facility with up to 749 animal units, and within ½ mile from a new livestock facility with 750 animal units or greater. New and expanding livestock facilities should only be constructed in areas where local zoning allows for agricultural uses.

If the proposed site is within Category 1, it is recognized that this is a site normally acceptable for livestock facilities. As shown in Table 2, if the proposed site is within Category 1 and has a capacity of 50 to 499 animal units, MDARD will review and verify the producer's plans at the producer's request. If the proposed site is within Category 1 and has a capacity of 500 or more animal units, the producer must follow the MDARD site selection review and verification process as described in Section V. Category 1 sites with less than 1000 animal units which are able to meet the property line setbacks as listed in Tables 2 and 3, as appropriate, and which meet the other requirements of these GAAMPs, are generally considered as acceptable for Site Selection Verification. An Odor Management Plan (OMP) will not be required for these sites in most circumstances. It is however, recommended that all producers develop and implement an OMP in order to reduce odor concerns for neighboring non-farm residents.

A request to reduce the property line setbacks, as listed in Tables 2 and 3, will require the development of an OMP for verification. All verification requests for Category 1 sites with 1000 animal units or greater will require the development and implementation of an OMP to specify odor management practices that will provide a 95 percent odor annoyance-free level of performance as determined by the Michigan OFFSET odor model. For new livestock facilities, a property line setback reduction shall only be considered for a proposed site in advance of MDARD site suitability approval. MDARD may grant a property line setback reduction of up to fifty percent of the setback distance in the following table when requested based upon the Odor Management Plan. The minimum setback will be 250 feet for new livestock facilities. Any reduction beyond this minimum will require a signed variance by the property owners within the original setback distance affected by the reduction. Factors not under direct control of the operator will be considered if an alternative mitigation plan is provided. Local land use zoning maps will be considered by MDARD in granting setback reductions.

Table 2. Category 1 Site Setbacks, Verification and Notification – New Operations

Total Animal Units [1]	New Operations Non-Farm Residences within Distance	Property Line Setback[2]	MDARD Site Review and Verification Process [3]
50-499	0-5 within ¼ mile	250 ft	Upon Producer Request [4]
500-749	0-5 within ¼ mile	400 ft	Yes
750-999	0-5 within ½ mile	400 ft	Yes
1000 or more	0-5 within ½ mile	600 ft	Yes

[1] Facilities in Category 1 with less than 50 animal units are not required to go through the site review and verification process to be considered in conformance with the provisions of these GAAMPs.

[2] May be reduced or increased based upon the Odor Management Plan.

[3] To achieve approval and MDARD verification, all livestock facilities must conform to these and all other applicable GAAMPs.

[4] For the construction of facilities housing less than 500 animal units, producers may self-assess to determine if the proposed livestock production facility meets the applicable standards in these GAAMPs. See the Verification checklist at: www.michigan.gov/gaamps to ensure your property meets these standards. More information on the verification process is provided on page 14.

For expanding livestock facilities, a variance for property line setback reduction shall only be considered for a proposed site in advance of MDARD site suitability approval. MDARD may grant a property line setback reduction of up to fifty percent of the setback distance in the following table when requested based upon the Odor Management Plan. The minimum setback will be 125 feet for expanding livestock facilities. Any reduction beyond this minimum will require a signed variance by the property owners that are

within the original setback distance affected by the reduction. Local land use zoning maps will be considered by MDARD in granting setback reductions. Expanding livestock facilities cannot utilize a property line setback less than the property line setback established by structures constructed before 2000 unless the established property line setback is greater than those distances identified in Table 3, in which case setbacks identified in Table 3 and the process detailed above will be used for determining conformance for new or expanding structures.

Table 3. Category 1 Site Setbacks, Verification and Notification – Expanding Operations

Total Animal Units [1]	Expanding Operations Non-Farm Residences within Distance	Property Line Setback [2]	MDARD Site Review and Verification Process [3]
50-249	0-7 within ¼ mile	125 ft	Upon Producer Request [4]
250-499	0-7 within ¼ mile	200 ft	Upon Producer Request [4]
500-749	0-7 within ¼ mile	200 ft	Yes
750-999	0-7 within ½ mile	200 ft	Yes
1000 or more	0-7 within ½ mile	300 ft	Yes

[1] Facilities in Category 1 with less than 50 animal units are not required to go through the site review and verification process to be considered in conformance with the provisions of these GAAMPs.

[2] May be reduced or increased based upon the Odor Management Plan.

[3] To achieve approval and MDARD verification, all livestock facilities must conform to these and all other applicable GAAMPs.

[4] For the construction of facilities housing less than 500 animal units, producers may self-assess to determine if the proposed livestock production facility meets the applicable standards in these GAAMPs. See the Verification checklist at: www.michigan.gov/gaamps to ensure your property meets these standards. More information on the verification process is provided on page 14.

Category 2 Sites: Sites where special technologies and/or management practices may be needed to make new and expanding livestock facilities acceptable.

Category 2 sites are those where site-specific factors may limit the environmental, social, or economic acceptability of the site for livestock facilities and where structural, vegetative, technological, and management measures may be necessary to address those limiting factors. These measures should be incorporated into a Site Plan and a Manure Management System Plan, both as defined in Section IV, which are required for all new and expanding livestock production facilities seeking verification. New and expanding livestock facilities should only be constructed in areas where local zoning

allows for agricultural uses. Due to the increased density of non-farm residences in Category 2 sites, an OMP is required for all proposed new and expanding livestock production facilities with 50 animal units or more.

Tables 4 and 5 show how Category 2 sites are defined and lists setbacks and verification requirements. As an example, a proposed site for an expanding livestock facility (Table 5) with 500 animal units and between eight and 20 residences within ¼ mile of the facility, would have a setback of 200 feet from the owner's property line, and would be required to have a site verification request approved by MDARD. For new livestock facilities, a property line setback reduction shall only be considered for a proposed site in advance of MDARD site suitability approval. MDARD may grant a property line setback reduction of up to fifty percent of the setback distance in the following table when requested based upon the Odor Management Plan. The minimum setback will be 250 feet for new livestock facilities. Any reduction beyond this minimum will require a signed variance by the property owners that are within the original setback distance affected by the reduction. Local land use zoning maps will be considered by MDARD in granting setback reductions.

Table 4. Category 2 Site Setbacks, Verification and Notification – New Operations

Total Animal Units[1]	For new Operations Non-Farm Residences Within Distance	Property Line Setback[2]	MDARD Site Review and Verification Process[3]
50-249	6-13 within ¼ mile	250 ft	Upon Producer Request[4]
250-499	6-13 within ¼ mile	300 ft	Yes
500-749	6-13 within ¼ mile	400 ft	Yes
750-999	6-13 within ½ mile	500 ft	Yes
1000 or more	6-13 within ½ mile	600 ft	Yes

[1] Facilities in Category 2 with less than 50 animal units are not required to go through the site review and verification process to be considered in conformance with the provisions of these GAAMPs.

[2] May be reduced or increased based upon the Odor Management Plan.

[3] To achieve approval and MDARD verification, all livestock facilities must conform to these and all other applicable GAAMPs.

[4] For the construction of facilities housing less than 250 animal units, producers may self-assess to determine if the proposed livestock production facility meets the applicable standards in these GAAMPs. See the Verification checklist at: www.michigan.gov/gaamps to ensure your property meets these standards. More information on the verification process is provided on page 14.

For expanding livestock facilities, a property line setback reduction shall only be considered for a proposed site in advance of MDARD site suitability approval. MDARD may grant a property line setback reduction of up to fifty percent of the setback distance in the following table when requested based upon the Odor Management Plan. The minimum setback will be 125 feet for expanding livestock facilities. Any reduction beyond this minimum will require a signed variance by the property owners that are within the original setback distance affected by the reduction. Local land use zoning maps will be considered by MDARD in granting setback reductions. Expanding livestock facilities cannot utilize a property line setback less than the property line setback established by structures constructed before 2000 unless the established property line setback is greater than those distances identified in Table 5, in which case setbacks identified in Table 5 and the process detailed above will be used for determining conformance for new or expanding structures.

Table 5. Category 2 Site Setbacks, Verification and Notification – Expanding Operations

Total Animal Units [1]	For Expanding Operations Non-Farm Residences within Distance	Property Line Setback [2]	MDARD Site Review and Verification Process [3]
50-249	8- 20 within ¼ mile	125 ft	Upon Producer Request [4]
250-499	8- 20 within ¼ mile	200 ft	Yes
500-749	8- 20 within ¼ mile	200 ft	Yes
750-999	8- 20 within ½ mile	250 ft	Yes
1000 or more	8- 20 within ½ mile	300 ft	Yes

[1] Facilities in Category 2 with less than 50 animal units are not required to go through the site review and verification process to be considered in conformance with the provisions of these GAAMPs.

[2] May be reduced or increased based upon the Odor Management Plan.

[3] To achieve approval and MDARD verification, all livestock facilities must conform to these and all other applicable GAAMPs.

[4] For the construction of facilities housing less than 250 animal units, producers may self-assess to determine if the proposed livestock production facility meets the applicable standards in these GAAMPs. See the Verification checklist at: www.michigan.gov/gaamps to ensure your property meets these standards. More information on the verification process is provided on page 14.

Category 3 Sites: Sites generally not acceptable for new and expanding livestock production facilities.

Category 3 sites may be zoned for agriculture, but are generally not suitable for livestock production facilities. They may be suitable for livestock facilities with less than 50 animal units. Any proposed site with more than the maximum number of non-farm residences specified in Table 4 for a new operation, and Table 5 for an expanding operation is a Category 3 or a Category 4 site. New livestock production facilities are not acceptable for that site. However, expanding livestock production facilities may be acceptable if the farm submits an Odor Management Plan and site verification approval is determined by MDARD. In some cases, additional odor reduction and control technologies, and management practices may be necessary to obtain site verification approval.

Additionally, the following land conditions or neighboring land uses constitute conditions that are consistent with Category 3 sites, and are considered unacceptable for construction of new and expanding livestock production facilities.

1. Wetlands - New and expanding livestock production facilities shall not be constructed within a wetland as defined under MCL 324.30301 (NREPA, PA 451 of 1994, as amended).

2. Floodplain - New and expanding livestock production facilities and manure storage facilities shall not be constructed in an area where the facilities would be inundated with surface water in a 25 year flood event.

The following categories require minimum setback distances in order to be considered acceptable for construction of new livestock production facilities. In addition, review and approval of expansion in these areas is required by the appropriate agency, as indicated.

1. Drinking Water Sources

   Groundwater protection - New livestock production facilities shall not be constructed within a ten year time-of-travel zone designated as a wellhead protection area as recognized by the Michigan Department of Environmental Quality (MDEQ), pursuant to programs established under the Michigan Safe Drinking Water Act, PA 399 of 1976, as amended. An expanding livestock production facility may be constructed with review and approval by the local unit of government administering the Wellhead Protection Program.

   Where no designated wellhead protection area has been established, construction of new and expanding livestock production facilities shall not be closer than 2000 feet to a Type I or Type IIa public water supply and shall not be closer than 800 feet to a Type IIb or Type III public water supply. A new or expanding livestock production facility may be located closer than these distances, upon obtaining a deviation from well isolation distance through MDEQ or the local health department. New and expanding livestock

production facilities should not be constructed within 75 feet of any known existing private domestic water supply (wellhead).

Surface water protection - New and expanding livestock production facilities shall not be constructed within the 100 year flood plain of a stream reach where a community surface water source is located, unless the livestock production facility is located downstream of the surface water intake.

2. High public use areas - Areas of high public use or where a high population density exists, are subject to setbacks to minimize the potential effects of a livestock production facility on the people that use these areas. New livestock production facilities should not be constructed within 1,500 feet of hospitals, churches, licensed commercial elder care facilities, licensed commercial childcare facilities, school buildings, commercial zones, parks, or campgrounds. Existing livestock production facilities may be expanded within 1,500 feet of high public use areas with appropriate MDARD review and verification. The review process will include input from the local unit of government and from people who utilize those high public use areas within the 1,500 foot setback.

3. Proximity to Residential zones – Agriculturally zoned areas in close proximity to areas that are primarily residential and do not allow agricultural uses by right will generally have housing at a density that necessitates setback distances for livestock production facilities to prevent conflicts. New livestock production facilities shall not be constructed within 1,500 feet of areas zoned for residential use where agricultural uses are excluded. Existing livestock production facilities may be expanded within 1,500 feet of areas zoned for residential use with approval from the local unit of government.

4. Migrant Labor Housing Camp – New and Expanding livestock production facilities shall be located a minimum of 500 feet from any existing migrant labor housing facilities, unless a variance is obtained from the United States Department of Labor.

Category 4 Sites: Sites not acceptable for New and Expanding Livestock Facilities and Livestock Production Facilities under the Siting GAAMPs.

Category 4 Sites are locations that are primarily residential and do not allow agricultural uses by right and are not acceptable under the Siting GAAMPs for livestock facilities or livestock production facilities regardless of the number of animal units. However, the possession and raising of animals may be authorized in such areas pursuant to a local ordinance designed for that purpose.

IV. - OFFSITE MANURE STORAGE FACILITIES

Table 6. Site Setbacks, Verification, and Notification – New or Expanding Operations

Storage Surface Area at Operational Volume Elevation, sq. ft.			Property Line Setback, ft.	MDARD Site Review and Verification Process
Liquid Manure		Solid Manure		
Pond-type storage	Fabricated structure-type storage, i.e. reinforced concrete or steel			
≤4,200	≤2,000	≤26,000	250[1]	Upon Producer Request
>4,200	>2,000	>26,000	TBD[2]	Yes

[1]May be reduced or increased based upon the Odor Management Plan.
[2]Distance to be determined based upon the Odor Management Plan.

V. DEVELOPING A SITE PLAN AND A MANURE MANAGEMENT SYSTEM PLAN

Site Plan

A Site Plan is a comprehensive layout for a livestock production facility, and includes:

- A site map, including the following features (to scale):
  - ~ Property lines, easements, rights-of-way, and any deed restrictions.
  - ~ Public utilities, overhead power lines, cable, pipelines, and legally established public drains.
  - ~ Positions of buildings, wells, septic systems, culverts, drains and waterways, walls, fences, roads, and other paved areas.
  - ~ Location, type, and size of existing utilities.
  - ~ Location of wetlands, streams, and other bodies of water.
- Existing land uses for contiguous land.
- Names and addresses of adjacent property owners.
- Basis of livestock production facility design.
- Size and location of structures.
- A soils map of the area where all livestock production facilities are located.
- Location and distance to the non-farm residences within ½ mile.
- Location and distance to the nearest residentially zoned area.
- Topographic map of site and surrounding area.
- Property deed restrictions.

Manure Management System Plan[1]

The Manure Management System Plan describes the system of structural, vegetative, and management practices that the owner/operator has chosen to implement on the site for all proposed new and existing facilities. Items to address in the Manure Management System Plan are described in the GAAMPs for Manure Management and Utilization. The Manure Management System Plan for a site verification request will include these additional components:

- Planning and installation of manure management system components to ensure proper function of the entire system.
- Operation and Maintenance Plan: This written plan identifies the major structural components of the manure management system, and includes inspection frequency, areas to address, and regular maintenance records.
- Odor Management: Odor management and control is a primary focus relating to the social consideration objectives of these GAAMPs. For new and expanding livestock production facilities, an Odor Management Plan may be required (refer to Category 1 and Category 2 to determine whether an OMP is required for your facility) as part of the Manure Management System Plan for conformance with these GAAMPs. Appendix A includes a detailed outline for development of an effective OMP.
- Manure Storage Facility Plan: Construction plans detailing the design of manure storage components must be submitted to MDARD for review and approval. Structures should be designed in accordance with appropriate design standards. Construction plans should include the design standards utilized, design storage volume, size, and layout of the structure, materials specifications, soil conditions in the structure area, site suitability, subsurface investigation, elevations, installation requirements, and appropriate safety features. The plans will be reviewed for conformance with appropriate specifications. Structures should be designed and constructed by competent individuals or companies utilizing generally accepted standards, guidelines, and specifications (e.g. NRCS, Midwest Plan Service.).

Other items that may accompany the Manure Management System Plan include the following:

- Emergency Action Plan - Through development of an Emergency Action Plan, identify the actions to take and contacts to be made in the event of a spill or discharge.
- Veterinary Waste Management Plan - Identify the processes and procedures used to safely dispose of livestock-related veterinary wastes produced on the farm.

[1] Due to your particular circumstances, a Comprehensive Nutrient Management Plan (CNMP) may be required, as referenced in Appendix C.

- Conservation Plan - Field-specific plan describing the structural, vegetative and management measures for the fields where manure and other by-products will be applied.
- Mortality Management Plan - Identify the processes and procedures used to safely dispose of the bodies of dead animals (Bodies of Dead Animals Act, PA 239 of 1994, as amended).

VI. SITE REVIEW AND VERIFICATION PROCESS

Producers with facilities that require MDARD verification in Categories 1, 2, or 3 should contact the MDARD and begin the site selection review and verification process prior to the construction of new livestock facilities or livestock production facilities, and expansion of existing livestock facilities or livestock production facilities. The references to local unit of government in this section are intended to notify the township and county in which the farm operation is located.

Producers with new and expanding livestock facilities that have a total capacity less than 50 animal units may request siting verification from MDARD. The MDARD site review and verification process will use criteria applicable to a 50 animal unit facility for these requests.

To begin the review and verification process, contact the Michigan Department of Agriculture & Rural Development, Right to Farm Program at (877) 632-1783. This toll free number is operational during normal business hours. The following steps outline this process:

1) Application for Siting Verification:
   A request to begin the site review and verification process can be made by submitting a letter from the responsible party to the MDARD, Right to Farm Program. This letter should outline the proposed new construction or expansion project, any areas of concern, agencies and individuals the producer is already working with, and the proposed timeline. The responsible party must also submit a complete site verification request. A request application and a checklist are available at www.michigan.gov/gaamps. The checklist will assist you in identifying environmental or social areas of concern. If special technologies or management practices are to be implemented for the successful operation of the livestock production facility, these must be included in the siting request package.

   Producers may also utilize recognized industry, university, and agency professionals in the development of their siting request, site plan, and manure management system plan.

   Upon submitting a site verification request to MDARD, the responsible party must individually notify all non-farm residences identified for determining category (see Tables 2-5) and listed in the checklist under "Location of Non-Farm Residences", that the responsible party has made application for site verification with MDARD.

2) Siting Request Review:
Upon receipt of the siting request package, MDARD will send an acknowledgement letter to the producer. This acknowledgement letter will also be sent to the local unit of government to inform them of the proposed livestock production facility siting request.

For purposes of the Siting GAAMPs, an environmental complaint or proactive request for a GAAMPs determination by a landowner will result in a program review of zoning for the location in question. If the site is primarily residential and zoning does not allow agricultural uses, then the site will be identified as Category 4 and not acceptable for a livestock facility under the Siting GAAMPs. However, if zoning identifies an agricultural use or a mixed use that includes agricultural use as its zoning designation (e.g., many locations use an agriculture/residential zoning designation), MDARD will evaluate whether the site complies with the other requirements of the Siting GAAMPs.

MDARD will review the completed siting requests upon receipt. The review will determine whether the siting request information submitted conforms to these GAAMPs. MDARD will conduct preliminary site visits to proposed new and expanding livestock production facilities. This site visit will take place upon receipt of the complete siting request package and will focus on addressing conformance with the plan components, identifying areas of concern, and verifying information submitted in the siting request. If deficiencies in the siting request are identified, MDARD will communicate those to the responsible party for further modification. At the request of the producer, a preliminary site visit could be conducted prior to submission of the complete siting request package.

3) Site Suitability Determination:
MDARD will determine if the siting request is in conformance with the GAAMPs for Site Selection and Odor Control for New and Expanding Livestock Production Facilities. This determination will be conveyed to the responsible party on MDARD letterhead and will be known as "Site Suitability Approval." This approval will also be copied to the local unit of government, and construction must begin within three years from the date of approval by MDARD. The start of construction is defined as the physical movement of soil or installation of permanent structures. An additional two year extension to begin construction after three years from the date of the initial approval may be requested in writing to MDARD.

4) Construction Plan Submittal and Review:
Design plans for the manure storage structures must be submitted to MDARD for review and approval and should be submitted prior to construction. If the plans are found to be in accordance with the required specifications, a letter indicating "Approval of Design Plans" will be sent to the owner. MDARD will conduct construction site inspections for quality assurance as needed to determine whether the structures are being built according to the accepted

plans. The owner should notify MDARD one month prior to beginning the installation of the manure storage facility.

5) Final Inspection:
MDARD will conduct a final inspection, preferably, prior to animal population. The completed project must be reviewed by MDARD to assure conformance with these GAAMPs. The facility must be completed in conformance with the verification request that has been approved by MDARD. Once the facility has been constructed and found in conformance with these GAAMPs, a final verification letter will be sent to the producer. This letter will be copied to the local unit of government.

Site Suitability Approval:
If either the owner of the proposed livestock production facility, any surrounding neighbor within one mile of the proposed facility, or the local unit of government in which the facility is located, disagrees with the site suitability determination, they may request MDARD's decision be reviewed by the Michigan Commission of Agriculture & Rural Development within 45 days of the date this determination is issued. The request shall be in writing and include supporting documentation. MDARD will review the supporting documentation and then will consult with at least three recognized professionals in the siting and management of livestock production facilities and odor control practices, as listed below, to further evaluate the proposed siting request. MDARD will notify the professionals of the request. The professionals shall review and report a recommendation for a response to the requested review, to the Commission of Agriculture & Rural Development, within 45 days of receipt of the written review request. An extension may be granted by the Commission of Agriculture & Rural Development. Upon receipt and review of the professional's recommendation, the Commission of Agriculture & Rural Development will recommend to the Director of the Michigan Department of Agriculture & Rural Development whether to affirm or re-evaluate the site suitability determination. The final decision rests with the Director. This review process is created solely for the purpose of this specific GAAMP, and the Administrative Procedures Act does not apply.

Recognized Professionals:
Recognized professionals in the siting and management of livestock production and odor control practices may include, but are not limited to, personnel from the following:

a. Conservation Districts,
b. Industry Representatives,
c. Michigan Department of Environmental Quality
d. Professional Consultants and Contractors,
e. Professional Engineers,
f. United States Department of Agriculture - Natural Resources Conservation Service,
g. University Agricultural Engineers, and other University Specialists

The site review and verification process will be conducted in accordance with MDARD procedures and protocol.

APPENDIX A

MICHIGAN ODOR MANAGEMENT PLAN

The goal of an effective Odor Management Plan is to identify opportunities and propose practices and actions to reduce the frequency, intensity, duration, and offensiveness of odors that neighbors may experience, in such a way that tends to minimize impact on neighbors and create a positive attitude toward the farm. Because of the subjective nature of human responses to certain odors, recommending appropriate technology and management practices is not an exact science. Resources to help identify appropriate management practices to minimize odors are available at: http://www.animalagteam.msu.edu

An Odor Management Plan shall include these six basic components:

1. Identification of potential sources of significant odors.
2. Evaluation of the potential magnitude of each odor source.
3. Application and evaluation of Michigan Odor from Feedlot Setback Estimation Tool (OFFSET – Michigan Odor Print September 2000 version) (i.e. Sept. 2000).
4. Identification of current, planned, and potential odor control practices.
5. A plan to monitor odor impacts and respond to odor complaints.
6. A strategy to develop and maintain good neighbor and community relations.

Note that items 1, 2, and 4 of the Odor Management Plan components may be addressed in tabular format as demonstrated in the example Odor Management Plan (Appendix B).

Component Details:

1. Identify and describe all potential significant sources of odor associated with the farm. Odor sources may include:

   - Animal housing
   - Manure and wastewater storage and treatment facilities
   - Feed storage and management
   - Manure transfer and agitation
   - Land application areas

2. Evaluate the magnitude of each odor source in relation to potential impact on neighbors and other community members.

Odor magnitude is a factor of both the type and size of the source.

Michigan OFFSET is one means of estimating odor source magnitudes and potential impacts from animal production facilities. Use the Michigan OFFSET odor emission values to rank each potential odor source on your farm. Note that some odor sources are not considered in this tool.

For odor sources not addressed by Michigan OFFSET, a subjective potential odor magnitude evaluation of high, medium, or low, relative to other odor sources on the farm should be conducted.

3. Analyze potential odor impact on neighboring residences and other non-farm areas with Michigan OFFSET, utilizing the 95 percent odor annoyance-free level, and evaluate the conclusions as follows:

    - Identify specific odor impact on neighboring residences, utilizing OFFSET results and other site-specific odor impact considerations.
    - Assess the magnitude of potential odor-based conflict.
    - Develop an appropriate conflict abatement strategy for each odor-sensitive area of concern which may include:
    - Signed letter from property owner consenting to approval of the new or expanded facility.
    - Description of intensified community relations practices for these homes or other odor sensitive areas.
    - Explanation of specific variables in Michigan OFFSET that may reduce the concern, such as, variables in terrain, wind velocity, facility layout, variation of facility from typical, and odor management practices not credited in Michigan OFFSET.

4. Identify management systems and practices for odor control including:

    - Practices currently being implemented.
    - New practices that are planned for implementation.
    - Practices that will be considered, if odor concerns arise.

There are numerous odor reduction practices available; however, not all have been proven equally effective. Some practices may reduce odor from one part of the system, but increase it in another. For example, long-term manure storage will reduce the frequency of agitation of the storage thus producing less frequent odor events, but will likely result in greater intensity and offensiveness of each odor event.

Each farm situation is unique and requires site-specific identification and implementation of odor reduction practices to suit the practical and economic limitations of a specific farm. MDARD will consider mitigating factors that are under the direct control of the operator. Factors not under direct control of the operator will be considered if an alternative mitigation plan is provided.

Simple changes in management, such as, but not limited to, improving farmstead drainage, collecting spilled feed, and regular fan maintenance will reduce overall farmstead odor.

"Practices that will be considered, if odor concerns increase" should include only those odor management practices that the producer would seriously consider implementing, if the need arose.

Improved management, as well as, the adoption of new technologies to control odor offer a means for reducing odor from livestock production facilities and manure storage facilities, thus broadening the potential area within which livestock production facilities may be appropriately sited. Odor reduction technologies continue to evolve. Current technologies include, but are not limited to, vent bio-filters, manure storage covers, and composting.

Each technology presents different challenges and opportunities. These should be considered during the planning process for a new or expanding animal livestock facility.

5. Describe the plan to track odor impact and the response to odor concerns as they arise.

    - Outline how significant odor events will be recognized and tracked including potential impact on neighbors and others. For example, one could record odor events noticed by those working on and/or cooperating with the farm. If odor is noticeable to you, your family, or employees, then it is likely noticeable to others.
    - Explain how an odor complaint will be addressed.
    - Indicate the point at which additional odor control measures will be pursued.

6. Identify the strategy to be implemented to establish and maintain a working relationship with neighbors and community members.

Elements of a community relations plan may include:

- Conducting farming practices that result in peak odor generation at times that will be least problematic for neighbors.
- Notifying neighbors of when there will be an increase in odors.
- Hosting an annual neighborhood farm tour to provide information about your farm operation.
- Sending a regular farm newsletter to potentially affected community members.
- Keeping the farmstead esthetically pleasing.
- Supporting community events and causes.

APPENDIX B

The Odor Management Plan includes the following text and tables and output from Michigan OFFSET, which is not shown here.

Example Dairy Odor Management Plan

Overview

The existing 1,200 cow facility is expanding to 1,700 cows. The proposed expansion involves the addition of another 500 cow freestall barn, expansion of the primary sand-laden manure storage, and the addition of another earthen storage for milking center wastewater. All of the additional facilities are located to the south and west of the existing facility.

Odor Source Identification & Assessment

Refer to attached Odor Source Assessment table.

Odor Management Practices

Refer to attached Odor Management Practices table.

Potential Odor Impact Analysis

Michigan OFFSET has identified two homes not associated with the farm that are definitely within the odor impact zone prior to the expansion and three additional homes that are likely impacted (see MI-OFFSET output). An additional five homes are added to the odor awareness zone as a result of the proposed expansion.

The potentially odor-impacted homes are at the following addresses:

(List addresses and homeowner names in order of proximity to odor source.)

All homeowners, with the exception of one, have signed a letter acknowledging the proposed expansion and indicating that they do not object to it proceeding. The lone exception is the residence at (*list address)*. This resident was reluctant to sign a letter, but has verbally accepted the expansion. He is also a livestock producer whose odor awareness zone from Michigan OFFSET would likely overlap the dairy farms. He also has a working relationship with the Example Dairy as a producer of corn grain for dairy feed.

Of the other homes in the odor awareness zone, three are currently or very recently have been active dairy farmers themselves. Another is a landlord of property that is rented and included in the farm CNMP/MMSP.

The three remaining homes are the most distant from the center of the odor awareness zone and furthest from the specific area of the facility expansion.

Odor Tracking and Response

Tracking of odor concerns includes two approaches:

1. All farm employees and some routine farm service providers will be asked to report noticeable offensive odor events as they come and go from the farm and travel the community.

2. The intent is to establish and maintain an effective, open line of communication with immediate neighbors so that they too will be comfortable reporting odor events to example dairy.

3. Response to odor complaints or events reported by neighbors will include investigation of the primary odor incident source on the farm. For example, is it associated with storage agitation, field application, or no specific farm activity? The farm will report back to the person reporting the odor event within 24 hours, or as soon as possible thereafter. Included in the response will be the reason for the odor event, an acknowledgement of the concern, steps – if any – to be taken to prevent it in the future, and a thank you for bringing it to the farm's attention.

   If a pattern is identified among odor event complaints by neighbors, an outside observer, such as MSU Extension or MDARD, will be asked to provide an objective analysis of the situation. If the concern is confirmed to be legitimate by a second objective observer, actions will be taken to further control odor per, or comparable to, odor management practices identified in the Odor Management Plan.

Community Relations

In order to develop and maintain a positive relationship with the entire community, the following steps are planned:

1. Keeping the farmstead area esthetically pleasing will continue to be a high priority.
2. Each spring, a farm newsletter will be sent to all appropriate community members describing farm activities, personnel, and management.
3. A community picnic and farm tour will be held at least semi-annually for all in the immediate community and manure application areas.
4. Example Dairy Farm will make itself available to local schools for farm visits as field trips or school projects as appropriate.
5. We will seek to participate in local community events and youth activities, such as the local town festival and youth athletic teams.
6. Additional opportunities to strengthen community relations will be considered whenever they arise.
7. Notify potentially impacted neighboring residences at least 24 hours in advance of manure application.

(The above list of community relations practices may be longer than most farms find necessary, but it provides several examples that farms might consider.)

Odor Source Assessment – proposed facility

Potential Odor Source	Description	Odor Emission Number[1]	Odor Control Factors[2]			Odor Emission Factors[1,3]		
			current	planned	potential	current	planned	potential
Large Manure Storage	Sand Land Manure storage for center-drive through barns (170 x 340)	13	0.5 + NV			168.9		
Freestall Barns	Freestall barns (187,104 sq. ft.)	6		NV		112.3		
Milking Center Wastewater	Earthen storages for milking center wastewater. Is recycled to flush holding and treatment areas (49,600 sq. ft.)	13	NV		0.1	50.4		5.0
Run Off Storage	Collects rain runoff from open lot and silage pads (90 x 120)	13	NV			14		
Outside Lots	Outside concrete housing lot (16,200 sq. ft.)	4			NV	6.5		
Settling Basins	Holding area flushed material settling area prior to pumping of liquid to milking center wastewater storage (30 x 60)	28	NV	NV	NV	5		
Bedded Open Housing Barns	Maternity & sick pens (22,620 sq. ft.)	2				4.5		
Open Lot Manure storage	Short-term manure storage (70 x 20)	13	0.5 + NV			.9		
Agitation	Agitation of manure storages	Medium				M	M	M
Land Application	Field application of liquid manure	High	NV			M	M	M
Silage & Feed Storage	Concrete pad and bunker silos (300 x 350)	Medium	NV			L	L	L

1. OFFSET value if available or High, Medium, Low for sources not addressed in OFFSET
2. NV = No Value available in OFFSET; however, a defendable odor control factor is applicable per Odor Management Practices table.
3. Odor Emission Factors are equal to the odor emission number, multiplied by the surface area (ft^2) and odor control factor, divided by 10,000.

Odor Management Practices

Odor Source	Odor Management Practices & Reduction Factor		
	Current	**Planned**	**Potential**
Large Manure Storage	1. Approximately eight months of potential storage results in agitation being required only 2-3 times per year. 2. The natural plant fiber in the manure results in a crusting of the manure. (OCF = 0.5)		
Freestall Barns		1. Plans include the planting of a tree shelterbelt the length of the freestall barns, parlor, and treatment area.	
Milking Center Wastewater	1. Fills from bottom 2. Long term storage facilitates minimal disturbance of only about two times per year.		3. Impermeable synthetic cover (OCF = 0.1)
Run Off Storage	1. Long-term storage, disturbed only 1-2 times per year		
Outside Lots			1. Lot could be reduced in size.
Settling Basins	1. Cleaned out frequently, about every ten days, minimizing anaerobic production of odors.	2. Plans include the planting of tree shelterbelt between the basins and the road/property line.	
Bedded Barns			
Open Lot Manure Storage	1. Storage is emptied frequently so that anaerobic activity is limited. 2. Storage crusts (OCF = 0.5)		
Agitation			
Land Application	1. Manure is injected or incorporated whenever field conditions permit. 2. Weekend and holiday application is avoided.		
Silage & Feed Storage	1. Silage piles are covered with plastic with clean water diverted off of the pile. 2. Forages harvested at recommended moisture. 3. Concrete pad is mechanically swept at least once per week.		

APPENDIX C

Comprehensive Nutrient Management Plan

A Comprehensive Nutrient Management Plan (CNMP) is the next step beyond a Manure Management System Plan (MMSP). All efforts put towards an MMSP may be utilized in the development of a CNMP as it is founded on the same eight components as the MMSP, with a few significant differences. Some of the "optional" sub-components of an MMSP are required in a CNMP. Examples include veterinary waste disposal and mortality management. In addition, the "production" component is more detailed regarding management of rainwater, plate cooler water, and milk house wastewater. Thorough calculations are also needed to document animal manure production.

Another difference between an MMSP and a CNMP is in the "Utilization" component. With an MMSP, nutrients need to be applied at agronomic rates and according to realistic yield goals. However, with a CNMP, a more extensive analysis of field application is conducted. This analysis includes the use of the Manure Application Risk Index (MARI) to determine suitability for winter spreading, and the Revised Universal Soil Loss Equation (RUSLE) to determine potential nutrient loss from erosive forces, and other farm specific conservation practices. More detail regarding the timing and method of manure applications and long term cropping system/plans must be documented in a CNMP.

Additional information on potential adverse impacts to surface and groundwater and preventative measures to protect these resources are identified in a CNMP. Although the CNMP provides the framework for consistent documentation of a number of practices, the CNMP is a planning tool not a documentation package.

Odor management is included in both the MMSP and CNMP.

Implementation of an MMSP is ongoing. A CNMP implementation schedule typically includes long-term changes. These often include installation of new structures and/or changes in farm management practices that are usually phased in over a longer period of time. Such changes are outlined in the CNMP implementation schedule, providing a reference to the producer for planning to implement changes within their own constraints.

As is described above, a producer with a sound MMSP is well on their way to developing a CNMP. Time spent developing and using a MMSP will help position the producer to ultimately develop a CNMP on their farm, if they decide to proceed to that level or when they are required to do so.

WHO NEEDS A CNMP?

1. Some livestock production facilities receiving technical and/or financial assistance through USDA-NRCS Farm Bill program contracts.
2. A livestock production facility that a) applies for coverage with the MDEQ's National Pollutant Discharge Elimination System (NPDES) permit, or b) is directed by MDEQ on a case by case basis.
3. A livestock farm that is required to have a CNMP as a result of NPDES permit coverage that desires third party verification in the MDARD's Michigan Agriculture Environmental Assurance Program (MAEAP) Livestock System verification.

For additional information regarding the permit, go to: www.michigan.gov/deq.

For additional information regarding MAEAP, go to: www.maeap.org or telephone 517-284-5609.

APPENDIX D

MANURE STORAGE FACILITY PLAN:

Construction plans detailing the design of manure storage components must be submitted to MDARD for review and approval. Structures must be designed and constructed in accordance with appropriate design standards (e.g. Michigan NRCS FOTG Waste Storage Facility (No.) 313 or Midwest Plan Service MWPS-36 Concrete Manure Storages Handbook), that are current at the time of approval of this GAAMP.

Plans must include the following information:

- Design Standards utilized.
- Design storage volume as justified by nutrient utilization plan, runoff volume, precipitation volume, and freeboard.
- Size of structure, including length, width, and depth.
- Materials to be utilized for the construction of the structure, this should include specifications for concrete mixes, flexible membranes, and soil data, as appropriate.
- Subsurface Investigation information to include an adequate representation of soil borings based upon the surface area of the structure. The borings must extend to a depth of at least two feet below the bottom of the structure, and must indicate the depth to high water and any seeps encountered. The soils must be classified according to the Unified Soil Classification System (ASTM D2487 or ASTM D2488).
- For a compacted earth-lined structure permeability test or Plasticity Index (PI) and Atterberg Limits must be submitted for the soil samples.
- Isolation distance from the structure to the drinking water well and isolation reduction criteria worksheet if applicable.
- Method of solids removal to be utilized.
- Elevation of structure relative to surrounding area must be included.
- Construction requirements.
- Appropriate safety features (e.g. fencing, safety signs, ladders, or ropes).
- If a treatment system (e.g. anaerobic digester or gasification) will be utilized, all associated design plans and specifications must be submitted.
- Where substantial changes to the original plans occurred during construction, as built plans must be submitted for review.

Structures should be designed and constructed by individuals or companies qualified in the appropriate area of expertise for that work.

VII. REFERENCES

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REVIEW COMMITTEE

Listed below are the committee members that developed these Generally Accepted Agricultural and Management Practices for Site Selection and Odor Control for New and Expanding Livestock Production Facilities.

Dr. Wendy Powers-Chair
MSU – Dept. of Animal Science
and Biosystems
and Agricultural Engineering
2209G Anthony Hall
East Lansing, MI 48824-1225
(517) 614-8207
wpowers@msu.edu

Judy Allen
Michigan Township's Association
512 Westshire Drive
Lansing, MI 48917
(517) 321-6467
(517) 321-8908 – FAX
Judy@michigantownships.org

James Clift
Michigan Environmental Council
602 West Ionia Street
Lansing, MI 48933
(517) 487-9539
(517) 487-9541 - FAX
james@environmentalcouncil.org

Michelle Crook, P.E.
Michigan Dept. of Agriculture and
Rural Development
P. O. Box 30017
Lansing, MI 48909
(517) 284-5625
(517) 335-3329 - FAX
crookm@michigan.gov

Brian Culham
Michigan Dept. of Environmental
Quality, Air Quality Division
P. O. Box 30473
Lansing, MI 48909 7973
(517) 284-6633
culhamb@michigan.gov

Suzanne Reamer
NRCS - Environmental Engineer
3001 Coolidge Rd., Suite 250
East Lansing, MI 48823-6321
cell: 517-290-6145
suzanne.reamer@mi.usda.gov

Samuel C. Hines
Executive Vice President
Michigan Pork Producers Assn.
3515 West Road, Suite B
East Lansing, MI 48823
517/853-3782
hines@mipork.org

Matthew Kapp
Michigan Farm Bureau
P. O. Box 30960
Lansing, MI 48909
(517) 323-7000
mkapp@michfb.com

Steve Mahoney
Michigan Dept. of Agriculture and
Rural Development
P. O. Box 30017
Lansing, MI 48909
(517) 284-5620
(517) 335-3329 - FAX
mahoneys@michigan.gov

Gerald May
MSU Extension Agriculture &
Natural Resources Educator
214 E. Center Street
Ithaca, MI 48847
(989) 875-5233
(989) 875-5289 - FAX
mayg@msu.edu

Ken Nobis
Mich. Milk Producers Assn.
1531 N. Lowell Road
St. Johns, MI 48879
(989) 224-6170
nobis@mimilk.com

William Renn
Michigan Township's Assn.
6206 Campbell Road
Pigeon, MI 48755
(989) 553-4005
chanrenn@avci.net

Bruce Washburn
Michigan Dept. of
Environmental Quality,
Water Resource Division
7953 Adobe Road
Kalamazoo, MI 49009-5025
(269) 567-3500
(269) 567-9440 – FAX
washburnb2@michigan.gov

Andy Welden
County Government
1900 E. Hastings Lake Road
Jonesville, MI 49250
(517) 398-0973
andywelden@comcast.net

Wayne Whitman
Michigan Dept. of Agriculture
and Rural Development
P. O. Box 30017
Lansing, MI 48909
(517) 284-5618
(517) 335-3329 - FAX
whitmanw@michigan.gov