



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

2025

Michigan Commission of Agriculture
and Rural Development
P.O. BOX 30017
Lansing, MI 48909



In the event of an agricultural pollution emergency such as a chemical or fertilizer spill, manure lagoon breach, etc., the Michigan Department of Agriculture and Rural Development (MDARD) and/or Michigan Department of Environment, Great Lakes, and Energy (EGLE) should be contacted at the following emergency telephone numbers:

MDARD Agriculture Pollution/Spills Hotline: 800-405-0101

EGLE Pollution Emergency Alerting System Hotline: 800-292-4706

If there is not an emergency, but you have questions on the Michigan Right to Farm Act, or items concerning a farm operation, please contact the:

**MDARD Right to Farm Program
P.O. Box 30017
Lansing, Michigan 48909
517-284-5619 Local Phone
877- 632-1783 Toll Free Phone
517-335-3329 FAX**

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PREFACE

The Michigan Legislature passed into law the Michigan Right to Farm Act ([Act 93 of 1981](#))¹ 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 (Site Selection) are written to fulfill this 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 eight GAAMPs are as follows:

- 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-government 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 may be provided protection from public or private nuisance litigation under the Michigan 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 the ordinance designates existing agricultural operations present prior to the ordinance's adoption as legal nonconforming uses as identified by the Michigan Right to Farm Act for purposes of scale and type of agricultural use.

The website for the GAAMPs is <https://www.michigan.gov/mdard/environment/rff> .

¹ <https://www.legislature.mi.gov/documents/mcl/pdf/mcl-Act-93-of-1981.pdf>

INTRODUCTION

Generally Accepted Agricultural and Management Practices for Site Selection and Odor Control for New and Expanding Livestock Facilities (Site Selection GAAMPs) are developed to establish uniform, statewide standards, and management practices to determine the suitability of sites to place or keep any number of livestock in Michigan.

These GAAMPs, which are based on sound science and recommendations from agency and industry experts, are reviewed annually, revised as considered necessary, and adopted by the Michigan Commission of Agriculture and Rural Development pursuant to the Michigan Right to Farm Act. They are intended to provide guidance for the placement and construction of livestock facilities, and/or associated manure storage facilities.

Site selection for new and expanding livestock facilities is a complex process, and each site should be assessed individually in terms of its proposed use, including water quality preservation, controlling odors, minimizing social conflicts, working within existing land ownership constraints, and compliance with all state and federal regulations. These GAAMPs emphasize the importance of site-specificity in siting decisions. Specific criteria are not equally applicable to all types of operations and all locations.

Appropriate use of technologies and management practices to utilize nutrients, mitigate odors, and prevent polluted runoff are components of the required Site Plan and Manure Management System Plan. The implementation and record keeping specified in these plans will minimize the risks of environmental degradation and nuisance odors associated with animal agriculture production.

These GAAMPs are referenced in Michigan's Natural Resources and Environmental Protection Act (NREPA), [Public Act 451 of 1994](#)², as amended. NREPA protects the state's air and water quality from release of pollutants in quantities and/or concentrations that violate established water quality standards. Surface water discharges are regulated as violations of NREPA's [Part 31](#)³ Rules, Water Resources Protection. Obnoxious odor(s) is regulated as nuisance under [Part 55](#)⁴, Air Pollution Control, of the NREPA. Agricultural producers who voluntarily follow these practices may be protected from public or private nuisance litigation under the Michigan Right to Farm Act.

² <https://legislature.mi.gov/Laws/MCL?objectName=MCL-ACT-451-OF-1994>

³ <https://legislature.mi.gov/Laws/MCL?objectName=MCL-451-1994-II-1-31>

⁴ [https://www.legislature.mi.gov/\(S\(yhdb2h452diubtihenwzpt45\)\)/documents/mcl/pdf/mcl-451-1994-II-1-AIR-RESOURCES-PROTECTION-55.pdf](https://www.legislature.mi.gov/(S(yhdb2h452diubtihenwzpt45))/documents/mcl/pdf/mcl-451-1994-II-1-AIR-RESOURCES-PROTECTION-55.pdf)

DEFINITIONS

AS REFERENCED IN THESE GAAMPs:

Adjacent Property – 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.

Alternative Mitigation Plan – A plan or description of alternative mitigation a livestock facility plans to use should the effectiveness of the original management practice(s) included in the Odor Management Plan, but not under the direct control of the livestock facility, diminishes.

Animal Units – Defined in

Table 1. For those instances not defined in **Table 1**, one animal unit is defined as one-thousand pounds of live weight.

Community Relations Plan – A strategy plan to be implemented to establish and maintain a working relationship with neighbors and community members. It is a plan within the Odor Management Plan.

Distances Between a Livestock Facility and Non-Farm Residences – The span from a livestock facility and a non-farm residence is measured from the nearest point of the livestock facility to the nearest point of the non-farm residence.

Existing Livestock Facility – A livestock facility that has not increased the animal unit capacity within the last three years where animals are confined.

Expanding Livestock Facility – A contiguous addition to an existing livestock facility to increase the animal unit capacity.

A manure storage structure change or installation to accommodate an increase in animal unit capacity within three years from the construction of the manure storage is an expanding livestock facility.

Manure storage structure change or installation at an existing livestock facility to accommodate already existing animal unit capacity is not an expanding livestock facility.

High Public Use Areas - Are locations with high density of individuals during certain periods of time, either time of day or time of year. High public use areas are hospitals; churches; licensed commercial elder care facilities; licensed commercial childcare facilities; school, government, commercial, professional, office or retail buildings; publicly accessible parks or campgrounds (excluding terrestrial and aquatic trails).

Institutional Controls – Land or resource use restrictions required by state or federal environmental laws to reduce or restrict exposure to hazardous substances, to eliminate a potential exposure pathway, to ensure the effectiveness and integrity of contaminant or exposure barriers, to provide for access, or to otherwise assure the effectiveness and integrity or response activities taken in response to environmental contamination.

Institutional controls include, but are not limited to, local ordinances or state laws and regulations that limit or prohibit the use of contaminated groundwater, prohibit the raising of livestock, prohibit development in certain locations, or restrict property to

certain uses.

Livestock – For purposes of the Site Selection GAAMPs, livestock means those species of farm animals used for human food, fiber, fur, recreation and (or) service to humans (e.g., horse and oxen to pull farm equipment). Livestock includes, but is not limited to, cattle, sheep, new world camelids, goats, bison, privately owned cervids, ratites, swine, equine, poultry, and rabbits.

Livestock (cont'd) For the Site Selection GAAMPs, livestock does not include dogs and cats. Site Selection GAAMPs do not apply to aquaculture and bees.

Livestock Farm Residence - A residential structure owned or rented by the livestock farm operation and those residential structures affiliated by contract or agreement with the livestock facility.

Livestock Facility – Any place where livestock are kept and/or the associated manure storage structures are located regardless of the number of animals. Sites such as loafing areas, confinement areas, or feedlots, which have livestock densities that preclude a predominance of desirable forage species as vegetation, are considered part of a livestock facility. This does not include pastureland. Any livestock facility within 1,000 feet of another livestock facility, and under common ownership, constitutes a single livestock facility.

Manure Storage Structure Change or Installation – An alteration or addition to manure storage at a livestock facility. Size is based on the greater of total animal units housed or animal units served by the facility's manure storage structures.

Migrant Labor Housing Camp – Agricultural employee housing that is licensable by MDARD. 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 livestock farm residence.

New Livestock Facility – A place where livestock will be kept and/or manure storage structure will be built at a new site and is not part of another livestock facility. A new livestock facility is also a place that is 1) expanding the animal unit capacity for livestock by 100 percent or greater and the resulting holding animal unit capacity will exceed 749 animal units, or 2) any construction to expand animal unit capacity within three years of completion of an existing facility documented in MDARD's final verification letter and the resulting animal unit capacity will exceed 749 animal units.

Non-Farm Residence – A residential structure that is habitable for human occupation and is not affiliated with the specific livestock facility.

Odor Management Plan – A plan of proposed practice(s) and action(s) to reduce frequency, intensity, duration, and offensiveness of odors.

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

Pastureland – Land primarily used for the production of forage, upon which livestock graze. Pastureland is characterized by a predominance of vegetation consisting of desirable forage. Heavy-use areas within pastures are part of the pastureland. Examples of heavy-use areas include animal travel lanes and small areas immediately

adjacent to shade, feed, water, supplement, or rubbing stations.

Primarily Residential – Sites with more than 13 non-farm residences within 1/8 mile of the livestock facility or have any non-farm residence(s) within 250 feet of the livestock facility.

Property Line Setback – The distance from the livestock facility to the property line as measured from the nearest point of the livestock facility to the nearest point of the livestock 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 Unit(s) (AU) Calculations

Animal Units	50 (AUs)	250 (AUs)	500 (AUs)	750 (AUs)	1,000 (AUs)
Animal Type¹					
Slaughter and Feeder Cattle	50	250	500	750	1,000
Mature Dairy Cattle	35	175	350	525	700
Swine²	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 (e.g. Nursery pigs) not in this table but defined in the Michigan Right to Farm Act or described in the Michigan Commission of Agriculture and Rural Development Policy, are to be calculated as 1,000 pounds live weight equals one animal unit. ² Weighing over 55 pounds.					

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. Sites normally acceptable for livestock facilities and generally defined as areas that are highly agricultural with few non-farm residences.
- Category 2. Sites where odor mitigation 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. Sites that are generally not acceptable for new and expanding livestock facilities with a capacity of 50 Animal Units (AU) or greater due to environmental concerns or other neighboring land uses.
- Category 4. Sites that are not acceptable for new and expanding livestock facilities. This includes livestock facilities that are located: at a site that is considered primarily residential in current land use; where institutional controls have been adopted to prohibit livestock agriculture; or where a new or expanding livestock facilities meets the criteria for Category 4 found in **Table 2**, **Table 3**, or **Table 4**. The placement or keeping of any number of livestock in this category does not conform to the Site Selection GAAMPs.

Existing livestock facilities installing new, altering, or adding manure storage that is not related to an increase in animal unit capacity are not required to go through the site review and verification process, but must meet the applicable setback criteria under Section VI for Manure Storage Structure Change or Installation at Existing Livestock facilities to conform to the provisions of Siting GAAMPs.

Appeal of Site Suitability Approval Determination

The Site Suitability Determination decision by the Michigan Department of Agriculture and Rural Development may be appealed as directed in the Michigan Department of Agriculture and Rural Development Commission [Policy Number 10⁵](https://www.michigan.gov/mdard/about/boards/agcommission) (see **APPENDIX F**).

⁵ <https://www.michigan.gov/mdard/about/boards/agcommission>

Section I: Requirements For All New And Expanding Livestock Facilities

Institutional Controls

Sites where institutional controls have been adopted to prohibit livestock agriculture and meet all the criteria listed below, are considered a Category 4 site and are not acceptable for new and expanding livestock facilities. The following is considered a Category 4 site:

1. The institutional controls were approved by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) pursuant to the Natural Resources and Environmental Protection Act (NREPA), [MCL 324.101⁶](#) et seq., or the United States Environmental Protection Agency pursuant to the [Comprehensive Environmental Response, Compensation, and Liability Act⁷](#) or the [Resource Conservation and Recovery Act⁸](#); and,
2. The institutional controls are necessary to protect human or animal health; and
3. Unacceptability has been confirmed by a vote of the Michigan Commission of Agriculture and Rural Development.

Section II: Requirements For Livestock Facilities With Less Than 50 Animal Unit(s)

Site Review and Verification Process

A livestock facility with less than 50 Animal Unit(s) (AUs) is not required to complete the entire site review and verification process described in **APPENDIX A**. Instead, the livestock facility must submit a complete [GAAMPs Review Application⁹](#) form for determination of conformance. This application must complete Sections 1, 2 and 3 at a minimum.

A livestock facility with less than 50 AUs must conform to all the provisions in **Section I** and **Section II** of the Site Selection GAAMPs, as well as all other applicable GAAMPs to be considered in conformance.

Category Determination

A livestock facility housing less than 50 AUs must not be located within an area that is considered primarily residential. **Table 2** provides the non-farm residence density and the property line setbacks for determining if a location is considered primarily residential.

Table 2: Non-farm Residence Density and Property Line Setbacks for Facilities Less Than 50 AUs

Non-Farm Residences Within 1/8 Mile	
Not Considered Primarily Residential Acceptable Site	13 or fewer non-farm residences and 0 non-farm residences closer than 250 feet
Category 4 Considered Primarily Residential Not Acceptable Site	More than 13 non-farm residences, or 1 or more non-farm residences closer than 250 feet, or Institutional controls enacted

⁶ <https://legislature.mi.gov/Laws/MCL?objectName=MCL-324-101>

⁷ <https://www.epa.gov/enforcement/comprehensive-environmental-response-compensation-and-liability-act-cercla-and-federal>

⁸ <https://www.epa.gov/rcra>

⁹ <https://tinyurl.com/38kes3w4>

Site Plan

The applicant must submit a site plan, including the following features (to scale):

1. Property lines,
2. Size and location of the livestock facilities as defined in the Site Selection GAAMPs; and,
3. Location and distance to the non-farm residences within 1/8 mile.

Manure Treatment and Storage Design Plans

Manure storage structures must be in conformance with the [Manure Management and Utilization GAAMPs](#)¹⁰: Construction Design and Management for Manure Storage, Runoff Storage, and Treatment Facilities section (Refer to **APPENDIX E**).

Manure Management System Plan

The [GAAMPs Review Application](#)¹¹ must include a Manure Management System Plan (MMSP) for the livestock facility which includes existing animals, if any, and those animals housed in a new facility. This plan describes the manure production, collection, transfer, treatment, storage, utilization, and related conservation practices implemented on the site for all proposed new and existing livestock facility. The MMSP must adhere to the guidelines described in the GAAMPs for Manure Management and Utilization. The MMSP for these GAAMPs must include the following two items:

1. The design and installation of manure management system components to ensure proper function of the entire system, and
2. 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.

Section III: Requirements For Livestock Facilities With 50 Animal Units Or Greater

Site Review and Verification Process

Livestock facilities with a capacity of 50 AUs or greater are required to go through the site review and verification process described in **APPENDIX A**. The livestock facility must conform to all the provisions **Section I**, **Section III**, and **Section V**, as well as all other applicable GAAMPs to be in conformance with the Site Selection GAAMPs.

Category Determination

The category of a site will determine the criteria a facility must meet to be found in conformance with this GAAMP. Category is based on the proposed number of AUs housed by the facility, non-farm residence density, and if the location is a new or expanding livestock facility.

1. Determine the number of non-farm residences within a specific radius of the site, measured from the nearest point of the livestock facility to the nearest point of the non-farm residence as defined in these GAAMPs:

¹⁰ <https://www.michigan.gov/mdard/-/media/Project/Websites/mdard/documents/environment/rtf/2024-GAAMPs/Manure-Management-and-Utilization-2024-GAAMPS.pdf>

¹¹ <https://tinyurl.com/38kes3w4>

- I. For facilities with 50 – 749 animal units utilize a ¼ mile radius.
- II. For facilities with 750 animal units or greater, utilize a ½ mile radius.

2. Refer to **Table 3** to determine the Category of the site.

Table 3: Determining Category for Facilities Housing 50 AUs or More

Category	Number of Non-Farm Residences	
	New Livestock Facility	Expanding Livestock Facility
Category 1	5 or fewer	7 or fewer
Category 2	13 or fewer	20 or fewer
Category 3	More than 13 (Not Acceptable)	More than 20 with an acceptable odor management plan
Category 4 (Not Acceptable)	More than 13 or, institutional controls present	More than 20 and unacceptable odor management plan, or institutional controls present

Where a non-farm residence is closer than 250 ft it is considered primarily residential and not acceptable for a new or expanding livestock facility.

Notification to Non-farm Residences

All non-farm residences, within the applicable ¼ or ½ mile distance must be notified by the applicant of the proposed livestock facility and subsequent [Site Selection Application](#)¹². Refer to **Section VII** for notification requirements or **APPENDIX A**.

Property Line Setbacks

New and expanding livestock facilities located at a Category 1 or Category 2 site must meet the minimum property line setbacks provided in **Table 4** and **Table 5** or have an approved variance, as outlined below.

For an expanding livestock facility located at a Category 3 site, property line setbacks are determined by an acceptable **Odor Management Plan** (OMP). The OMP for the expanded livestock facility must not incorporate any new non-farm residences within the MI OFFSET 5 percent odor footprint (Refer to APPENDIX B).

Property line setbacks must be determined by measuring from the nearest point of the livestock facility to the nearest point of the livestock facility owner’s property line(s).

Property line setback variance agreements may be found in **Section VII** or **APPENDIX A**.

Alternatively, the applicant may obtain a setback distance reduction by requesting a variance from MDARD or obtaining a signed variance from the property owner(s) affected by the reduction, as outlined below.

¹² https://www.michigan.gov/mdard/-/media/Project/Websites/mdard/documents/environment/rtf/livestock_siting_application.pdf

1. For new livestock facilities, applicants can submit a request to MDARD for a property line setback reduction of up to 50 percent of the setback distance in **Table 4** and **Table 5**. The setback reduction must not be less than 250 feet.
2. For existing livestock facilities, applicants can submit a request to MDARD for a property line setback reduction of up to 50 percent in **Table 4** and **Table 5**. The setback reduction must not be less than 125 feet.
3. Reductions beyond 50 percent or below the applicable 250 feet or 125 feet minimum setbacks require a signed variance from the affected property owner(s).
4. If a property line setback established by structures constructed before the year 2000 is used for livestock facility expansion and it is closer than 125 feet, a signed variance is required from the affected property owner(s).
5. A review of the OMP and local land uses will be conducted by MDARD for all requests meeting these criteria.

All variances from minimum property line setbacks must be proposed in advance of Site Suitability Approval.

Table 4: Category 1 Setback distances for Facilities Housing 50 AU or More

Category 1 Property Line Set Back Distances		
Animal Units	New Facility	Expanding Facility
50-249	250 ft	125 ft
250-499	250 ft	200 ft
500-749	400 ft	200 ft
750-999	400 ft	200 ft
1,000 or greater	600 ft	300 ft

Table 5: Category 2 Setback distances for Facilities Housing 50 AU or More

Category 2 Property Line Set Back Distances		
Animal Units	New Facility	Expanding Facility
50-249	250 ft	125 ft
250-499	300 ft	200 ft
500-749	400 ft	200 ft
750-999	500 ft	250 ft
1,000 or greater	600 ft	300 ft

Additional Environmental and Community Setbacks

1. High public use area

Areas of high public use are subject to setbacks to minimize the potential effects of a livestock facility on the people that use those areas. New livestock facilities housing 50 or more animal units shall not be constructed within 1,500 feet of a high public use area.

Existing livestock facilities housing 50 or more animal units or more may be expanded within 1,500 feet of high public use areas with appropriate MDARD review and site suitability determination and approval of the expansion. 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 feet setback.

2. Migrant housing camp

New and expanding livestock facilities housing 50 or more animal units may not be constructed within 500 feet of any existing migrant labor housing camp unless a variance is obtained from the United States Department of Labor.

3. Wetlands

New and expanding livestock facilities housing 50 or more AUs must not be constructed within a wetland as defined under [MCL Section 324.30301](#)¹³ (NREPA, PA 451 of 1994, as amended).

4. Floodplain

New and expanding livestock facilities housing 50 AUs or more must not be constructed in an area where the facilities would be inundated with surface water in a 25-year flood event.

Drinking Water Controls

1. Wellhead Protection Areas

New livestock facilities housing 50 AUs or more must not be constructed within a ten-year time-of-travel zone designated as a wellhead protection area as recognized by the EGLE, pursuant to programs established under the Michigan Safe Drinking Water Act, [P.A. 399 of 1976](#)¹⁴, as amended.

An expanding livestock facility may be constructed within the Wellhead Protection Area provided the local unit of government administering the Wellhead Protection Program has reviewed and approved the proposed expansion.

Well isolation distances found under the Public and Private Water Supplies section below must be followed along with this section.

2. Community Surface Water Source

New and expanding livestock facilities housing 50 AUs or more must 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.

3. Public and Private Water Supplies

Construction of new and expanding livestock facilities and offsite manure storages must meet the minimum well isolation distances established under the Michigan Public Health Code, Part 127, [P.A. 368 of 1978](#)¹⁵ and Michigan Safe Drinking Water Act, P.A. 399 of

¹³ <https://www.legislature.mi.gov/Laws/MCL?objectName=MCL-324-30301>

¹⁴ <https://legislature.mi.gov/Laws/MCL?objectName=MCL-ACT-399-OF-1976>

¹⁵ <https://legislature.mi.gov/Laws/MCL?objectName=MCL-368-1978-12-127>

1976 or have an approved deviation or variance as outlined in **Table 6**. The well isolation distance criteria are outlined in **Table 6**.

New Water Supplies

For the installation of a new public or private water supply at a livestock facility, the well must be installed according to a permit from either EGLE or the local health department. Well isolation distances outlined in **Table 6** must be met unless issued a permit or variance by EGLE (Type I and Type IIa) or the local health department (Type IIb, Type III, and private water supplies).

If the local health department does not issue permits for private water supplies, including agricultural wells, the criteria found in **Table 6** must be met to be in conformance with this GAAMP.

Existing Water Supplies

For the installation of new and expanding livestock facilities and offsite manure storages near an existing public water supply, the well isolation distances outline in **Table 6** must be met. A variance may be requested, pursuant to the EGLE Office of Drinking Water and Municipal Assistance Policy Number [ODWMA-368-127-011](https://www.egle.state.il.us/odwma-368-127-011)¹⁶. The well isolation reduction worksheets may be found in **Section VII**. Well isolation distances should be maximized to the extent possible.

Existing private water supplies must either meet the well isolation distance found in Table 6 or the livestock facility must have a variance from the local health department or EGLE.

*=The isolation distances marked with an asterisk may be reduced by MDARD using the well isolation reduction worksheets for existing public water supplies found in **Section VII**.

Table 6: Required minimum well isolation distance from potential sources of agricultural contamination.

Source of Contamination	Required Minimum Isolation Distance (feet)		
	Private Well	Public Well (Type III/IIb)	Public Well (Type IIa/I)
Above grade solid stack manure storage structures (roofed or unroofed)	150	800*	2000*
Below grade liquid manure storage structures	150	800*	2000*
Above grade liquid manure storage tanks	150	800*	2000*
Manure/non mortality composting facilities	150	800*	2000*
Bedded pack facilities	50	75	200
Pastureland	Livestock and manure must be precluded from direct contact with the wellhead		
Livestock lots and loafing areas without a predominance of vegetation	50	75	200

¹⁶ https://cms7files.revize.com/genessecountymi/Document_Center/Department/Health%207-18-22/EH/Wells/DEQ-ODWMA_Minimum_Isolation_Distances-Private_and_Public_491026_7.pdf

Livestock Housing without under barn manure storage	50	75	200
Waste transfer structures (concrete pits, tanks, hoppers, manholes, channels)	50	75	200

Section IV: Offsite Manure Storage Facilities

Site Review and Verification Process

Large offsite manure storages are required to go through the site review and verification process described in Appendix A. The storage facilities must conform to all the provisions **Sections I, IV, V**, and the Additional Environmental and Community Setbacks found in **Section III**. The offsite manure structures must also meet all applicable GAAMPs to be in conformance with the Site Selection GAAMP.

Table 7: Storage Surface Area defining Offsite Manure Storage Facilities

	Storage Surface Area		
	Operational Elevation for Liquid, Sq ft Base Elevation for Solid, Sq ft		
	Liquid Pond-Type	Liquid Fabricated-Type	Solid Manure
Small Offsite Storage	≤ 4,200 sq. ft.	≤ 2,000 sq. ft.	≤ 26,000 sq. ft.
Large Offsite Storage	> 4,200 sq. ft.	> 2,000 sq. ft.	> 26,000 sq. ft.

Category Determination

Determine the number of non-farm residences within a specific radius of the site, measured from the nearest point of the livestock facility to the nearest point of the non-farm residence as defined in these GAAMPs:

1. For small offsite storage, utilize a ¼ mile radius.
2. For large offsite storages, utilize a ½ mile radius.

Table 8: Number of Non-Farm Residences of within applicable radius for offsite manure storages

	Number of Non-Farm Residences Within Applicable Radius
Category 1	5 or fewer
Category 2	13 or fewer
Category 3 (Not Acceptable)	More than 13
Category 4 Considered Primarily Residential (Not Acceptable)	more than 13, or 1 more non-farm residences closer than 250 ft, or, institutional controls present

Notification of Non-farm Residences

All non-farm residences, within the applicable ¼ or ½ mile distance, identified in Table 8, must be notified by the applicant of the proposed livestock facility and subsequent Site Selection Application. Please refer to Section VI notification requirements.

Property line Setbacks

The property line setback requirements depend on the size of the structure. Property line setbacks for offsite manure storage can be found in **Table 9**. Property line setbacks must be determined by measuring from the nearest point of the livestock facility to the nearest point of the livestock facility owner's property line. The minimum property line setback for a large offsite manure storage is 250 feet but may be increased by the OMP. The MI OFFSET within the OMP must not indicate any non-farm residences within the 5% annoyance footprint. All variances from minimum property line setbacks must be proposed in advance of Site Suitability Approval.

Please refer to **Section VII** for property line set back reduction variance forms.

Table 9: Property Line Setback

	Property Line Setback
Small Offsite Storage	250 ft
Large Offsite Storage	TBD ¹
¹ the minimum set back distance is 250 feet but may be increased based on the odor management plan	

Section V: Management Plans

The following management plans must be submitted with the Application for Site Suitability.

Site Plan

A Site Plan is a comprehensive review of a proposed location and must include:

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

9. Topographic map of site and surrounding area.

Manure Management System Plan

The MMSP describes the system of structural components, biological processes (treatments), and management practices that the owner/operator utilizes, or plans to implement, on the site for all manure and other nutrient by-products accumulated at the site. All components that must be included in the MMSP are described in the [GAAMPs for Manure Management and Utilization](#)¹⁷. In addition, the MMSP for these GAAMPs must include:

1. Planning, design specifications and installation of manure management system components to ensure proper function of the entire system.
2. Operation and Maintenance Plan that identifies the major structural components of the manure management system, and includes inspection frequency, areas to address, and regular maintenance records.

Manure Treatment and Storage Design Plans

Manure storage structures must be designed and constructed in accordance with the Michigan Natural Resources Conservation Service Waste Storage Facility [Standard 313](#)¹⁸ or Midwest Plan Service Concrete Manure storages MWPS-36 as outlined in **Appendix E**.

Odor Management Plan

An odor management plan (OMP) is required for:

1. All livestock facilities with 50 AU or more located in a Category 2 or Category 3 site.
2. Large offsite manure storage facilities.
3. Livestock facilities located in a Category 1 site where:
 - a. A property line setback reduction has been requested by the applicant.
 - b. An odor management practice or odor mitigation technology is utilized.
 - c. The proposed livestock facility will house 1,000 AU or greater.

Livestock facilities that are required to submit an OMP must use the Michigan OFFSET 2018 odor model and create a plan to provide 95 percent annoyance-free level of performance for surrounding non-farm residences. Please refer to **Section VII** for an odor variance agreement if needed.

An odor management plan must contain the following:

1. Identification of potential sources of significant odors.
2. Evaluation of the potential magnitude of each odor source.
3. Application and evaluation of odor nuisance potential using Michigan OFFSET 2018.
 - a. Non-farm residences may not be encompassed within the MI OFFSET 5 percent annoyance level footprint.
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.

¹⁷ <https://www.michigan.gov/mdard/-/media/Project/Websites/mdard/documents/environment/rtf/2024-GAAMPs/Manure-Management-and-Utilization-2024-GAAMPS.pdf>

¹⁸ <https://efotg.sc.egov.usda.gov/#/state/MI/documents/section=4&folder=-252>

Identify and assess the odor impact using the worksheets found on MDARD's [website](#)¹⁹

1. Use the Odor Source Assessment Worksheet to identify, describe, and evaluate all odor sources associated with the livestock facility. Please note that land application areas are addressed separately in the MMSP.
2. Use the OMP Worksheet to identify odor management practices and/or mitigation technologies being implemented, planned or that could be considered if odor concerns arise.
3. Use the [MI OFFSET 2018 Centroid Worksheet](#)²⁰ to help identify potential odor sources and calculate an odor control factor to be incorporated into the MI OFFSET 2018 odor model. Please note that some odor sources identified in the odor source assessment worksheet are not considered in this tool. For these sources, a subjective potential odor magnitude evaluation of high, medium, or low, relative to other sources on the farm must be conducted.
4. Current odor mitigation technologies with reduction factors utilized in MI OFFSET 2018 include, ventilation bio-filters, manure storage covers, wet scrubbers, and vegetative buffers. The full list of odor mitigation technologies and associated odor reduction factors can be found in **Appendix B**. Please refer to **Section VII** if a review of a new odor mitigation technology review is needed.
5. Analyze potential odor impact on neighboring non-farm residences and other non-farm areas with the [Michigan OFFSET 2018](#)²¹ tool, utilizing the 5 percent odor footprint.

Mortality Management Plan –

Identify the processes and procedures used to safely dispose of the bodies of dead animals (Bodies of Dead Animals Act, [P.A. 239 of 1994](#)²² as amended). In Michigan all livestock mortality is subject to Bodies of Dead Animals Act, PA 239 of 1994, as amended. Information on handling of dead animals is available at: www.michigan.gov/animaldisposal and https://www.canr.msu.edu/managing_animal_mortalities/composting_tools . MDARD may request design criteria and operational standards of the selected method.

Additional Plans

Other items that may be included in the application:

1. 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.
2. Veterinary Waste Management Plan - Identify the processes and procedures used to safely dispose of livestock-related veterinary wastes accumulated on the farm.
3. Conservation Plan - Field-specific plan describing the structural, vegetative and management measures for the fields where manure and other byproducts will be applied.

Section VI: Manure Storage Structure Changes or Installations at Existing Livestock Facilities

¹⁹ <https://www.michigan.gov/mdard/environment/rtf/gaamps>

²⁰ https://www.michigan.gov/mdard/-/media/Project/Websites/mdard/documents/environment/rtf/mi_offset_centroid_worksheet.xlsx

²¹ <https://enviroweather.msu.edu/mioffset/>

²² <https://www.legislature.mi.gov/documents/mcl/pdf/mcl-act-239-of-1982.pdf>

Site Review and Verification Process

A manure storage structure change or installation at an existing livestock facility is not required to complete the site review and verification process found in Appendix A. In the event of a right to farm compliant, the livestock facility must submit a GAAMPs Review Application form for determination of conformance (sections 1, 2, 3). This can be found at [GAAMPs Review Application](#)²³.

A manure storage structure change or installation at an existing livestock must conform to all the provisions in this section, as well as Manure Management and Utilization GAAMPs to be in conformance with the Site Selection GAAMPs.

Distance to non-farm residence

All manure storage structures must be at least 250 feet from the nearest non-farm residence or no closer than the established setback distance (ESD). Established setback distance is where an established animal production structure exists (a lot or pasture fence line is not considered part of this criterion).

Property line Setbacks

The property line setback requirements depend on the number of animal units. Property line setbacks must be determined by measuring from the nearest point of the livestock facility to the nearest point of the livestock facility owner's property line. All variances from minimum property line setbacks must be proposed in advance of Site Suitability Approval.

A reduction to the property line setback for a manure storage structure change or installation will require a signed variance by the property owners that are within the original setback distance affected by the reduction. Please refer to Section VII for property line set back reduction variance forms.

Table 10: Required Property line setbacks for manure storage structure changes

Existing Livestock Facility	
Animal Units	Property line Setback
50 - 249	125 ft or ESD
250-749	200 ft or ESD
750-999	250 ft or ESD
1,000 or greater	300 ft or ESD

Manure Treatment and Storage Design Plans

Manure storage structure changes or installations at existing livestock facilities must be in conformance with the Manure Management and Utilization GAAMPs: Construction Design and Management for Manure Storage, Runoff Storage, and Treatment Facilities section. Refer to **Appendix E** for further information.

²³ https://www.michigan.gov/mdard/-/media/Project/Websites/mdard/documents/environment/rtf/gaamps_conformance_application.pdf

Section VII: Notifications, Agreements, and Requests

Notification to Non-farm Residences

A livestock facility with a capacity of 50 animal units or more must individually notify all non-farm residences identified in **Table 3** or **Table 7**, as applicable, of the proposed new or expanding livestock facility and subsequent [Site Selection Application](#)²⁴. Please note, the property lines are not included in the definitions of non-farm residence or livestock facility. *Required notification is based on structures, storages, lots, etc. as outlined in the definitions.* Documentation of notification has occurred is required as part of the Site Suitability Determination.

The “Certification of Notification of Non-Farm Residences” form is provided with the [Site Selection Application \(Appendix A\)](#).

Property Line Setback Reduction Agreement

Property line setback reduction agreements are required to be submitted in advance of Site Suitability Approval.

- Property line setbacks may be reduced with a signed variance from the property owner(s) affected by the reduction.
- A property line setback reduction beyond a 50 percent reduction, or below the applicable 250 feet or 125 feet minimum setbacks, requires a signed variance from the property owner(s) affected by the reduction.
- For expanding livestock facilities, established property line setback distances by structures constructed before the year 2000 may be used. If the established property line setbacks are greater than those listed in **Table 4**, **Table 5**, and **Table** then the setbacks identified within tables, and the process detailed above, will be used for determining site suitability.

Facility Site Selection and Setback Variance Agreement” form is provided with the [Site Selection Application \(Appendix B\)](#).

Odor Variance Agreement

If there is a non-farm residence within the 5 percent odor footprint, a signed variance must be obtained from the property owner to be in conformance with this GAAMP. All variances for odor must be submitted in advance of Site Suitability Approval.

Facility Site Selection and Setback Variance Agreement” form is provided with the [Site Selection Application \(Appendix C\)](#).

Odor Mitigation Technologies Request

If the Odor Management Plan (OMP) incorporates a new odor mitigation technology(ies) that does not have an established odor control factor within MI OFFSET 2018, the applicant must submit documentation and/or literature for consideration as part of the [Site Selection Application](#). This documentation should include:

- Documentation the new odor mitigation technology is based on demonstrated

²⁴ https://www.michigan.gov/mdard/-/media/Project/Websites/mdard/documents/environment/rf/livestock_siting_application.pdf?rev=756f9c4736ff4eae46d1c6a23bce155&hash=452C889DCD6CEAB03A257FE5740F254E

- performance for agriculture production or similar applications.
- Demonstrated performance or source(s) of independent verifiable data through publications from:
 - Local, state, or federal agencies, and/or universities.
 - Other independent research organizations: a manufacturer's guarantee based on manufacturer's literature and research results showing generally accepted good engineering practices; and/or actual operating experience.

Well Isolation Distances Deviation Request

For existing public water supplies, the well isolation distances denoted with an asterisk in **Table 6** may be reduced by MDARD upon request by the applicant. The request must include the [well isolation reduction worksheets](#)²⁵. Well isolation distances should be maximized. Utilization of this reduction criteria requires the existing well to be properly constructed in accordance with the Michigan Public Health Code, Part 127, Act 368, P.A. 1978 or Michigan Safe Drinking Water Act, Act 399, P.A. 1976.

²⁵ https://www.michigan.gov/mdard/-/media/Project/Websites/mdard/documents/environment/rtf/Well_Isolation_Distance_Worksheet_2023.pdf?rev=b27a07a1cf63494dbd07b2d71ed6c73b&hash=182B994615486CF36EF9516296C10F67

APPENDIX A

Site Selection GAAMPS Determination Process

Livestock facilities requesting a Site Selection GAAMPS determination in Categories 1, 2, or 3 should submit an application to MDARD prior to the construction of a new or expanding livestock facility. The review of the application will use criteria applicable to the animal units capacity for the proposed livestock facility. Either a formal complaint, or a request by the livestock producer for a GAAMPS determination, will result in a program review of determination of conformance to the Site Selection GAAMPS and adjacent land uses to the livestock facility.

Local government (county and township where the livestock facility is located) is notified at several points in the process. Local government is used to describe the township and county where the livestock facility is located. If the livestock facility is located on the county line, or township line, the adjoining unit of government will also be notified.

To begin the Site Selection GAAMPS determination process, contact the MDARD, Right to Farm Program at 877-632-1783. Or via email at MDARD-LivestockSiting@michigan.gov. Additional information is available on our website at www.michigan.gov/righttofarm.

The following steps outline the process:

1. **Application:** All applications must include a Siting Request Letter from the farm to the MDARD, Right to Farm Program, outlining the proposed construction or expansion project, any areas of concern, agencies, and individuals the farm is working with, and the proposed timeline. Farms may utilize recognized industry consultants, university specialists, and agency professionals in the development of their application, site plan, and manure management system plan.

Livestock facilities with a capacity of less than 50 AU: Farms must submit a complete GAAMPS Review Application for determination of conformance. The application can be found at: [GAAMPS Review Application \(michigan.gov\)](http://www.michigan.gov/gaamps)

Livestock facilities with a capacity of 50 AU or greater: Farms must submit a complete Livestock Site Selection Application for determination of conformance. The application and a checklist are available at <https://www.michigan.gov/mdard/environment/rtf/gaamps> under site selection. The checklist will assist in identifying and addressing all components of the Site Selection GAAMPS. If special technologies or management practices are to be implemented for the successful operation of the livestock facility, these must be included in the Livestock Site Selection Application.

2. **Application Review:** Upon receipt of a Siting Request Letter and application, MDARD, Right to Farm program will send an acknowledgement letter to the farm, with forwarded copies to local government. MDARD will review materials and notify the farm of any deficiencies.
3. **Initial Site inspection:** MDARD will conduct an inspection to verify the information outlined in the application and identify any areas of concern or deficiencies that need to be addressed. At the request of the farm, a preliminary site visit may be conducted prior to submission of the application.

4. **Site Suitability Determination:** Site and management plan review has been completed and a Site Suitability Determination has been made. MDARD will send a letter to the farm and to local government. The determination will be posted on MDARD's RTF website. Construction must begin within three years from the date of the Site Suitability Approval letter. An additional two-year extension to begin construction may be requested in writing to MDARD. The start of construction is defined as the physical movement of soil or installation of permanent structures.
5. **30-day Public Comment period to Appeal the Site Suitability Determination:** MDARD will open a 30-day public comment period, starting on the day the determination is posted on the Right to Farm's Website. It may be appealed by the owner of the proposed livestock facility, the local unit of government where the site is located, as well as property owners and adjacent local unit of government within one-half mile of the livestock facility. It is recommended a livestock facility does not begin construction until the 30-day appeal window has ended.
6. **Appeal Process, if requested:** The Site Suitability Determination decision by the Michigan Department of Agriculture and Rural Development, Right to Farm Program, may be appealed as per Michigan Department of Agriculture and Rural Development Commission Policy number 10. This policy can be found in Appendix F and at http://www.michigan.gov/mdard/0,4610,7-125-1572_2878---,00.html
7. **Construction Plan Review:** Design plans for the manure storage structures and site layout, stamped by a licensed engineer, must be submitted for review and approval, and should be submitted prior to construction. If the preconstruction design plans meet the required specifications, MDARD will issue an approval to construct letter to the farm. A qualified individual as described in Appendix E must inspect the installation of the manure storage structures and provide documentation that the structures were built as designed (known as an 'as built' determination). MDARD may also conduct construction site inspections for quality assurance. The owner should notify MDARD one month prior to beginning the installation of the manure storage facility.
8. **Final Conformance Determination:** MDARD will conduct a final inspection, preferably, prior to animal population, and review submitted as-built construction documentation, stamped by a professional engineer. The livestock facility must be completed as stated in the Siting Request Letter or Livestock Site Selection Application that has been approved. MDARD will send a final letter of determination for Site Selection GAAMPs Conformance to the farm. This letter will be copied to the local unit(s) of government.

APPENDIX B
Michigan Odor Management Plan Resources

Utilize the MI OFFSET 2018 Centroid Worksheet located at <https://www.michigan.gov/mdard/environment/rtf/site-selection> when assessing odor mitigation technologies.

Use the identified Odor Control Factor to adjust the centroid location to be used in the MI OFFSET 2018 model <https://enviroweather.msu.edu/mioffset/>.

Maximum Potential Odor Mitigation Technology Adjustment Factors		
Odor Mitigation Technologies		Odor Control Factor
Biofilter on All Exhaust Fans		0.1
Biofilter on Pit Fans		0.55
Geotextile Cover (≥ 25.4 mm or 1 inch)		0.5
Straw or Natural Crust on Manure	2" Thick	0.5
	4" Thick	0.4
	6" Thick	0.3
	8" Thick	0.2
Impermeable Cover		0.1
Vegetative Environmental Buffer		0.8
Wet Scrubbers		0.55

APPENDIX C

Example Dairy Odor Management Plan

The Odor Management Plan includes the following text and tables and output from Michigan OFFSET 2018, which is not shown here.

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 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 2018 has identified two non-farm residences that are within the odor impact zone prior to the expansion and three additional homes that are likely impacted (see Michigan OFFSET 2018 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, except for 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 2018 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

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

4. Keeping the farmstead area esthetically pleasing will continue to be a high priority.
5. Each spring, a farm newsletter will be sent to all appropriate community members describing farm activities, personnel, and management.
6. A community picnic and farm tour will be held at least semi-annually for all in the immediate community and manure application areas.
7. Example Dairy Farm will make itself available to local schools for farm visits as field trips or school projects as appropriate.
8. We will seek to participate in local community events and youth activities, such as the local town festival and youth athletic teams.
9. Additional opportunities to strengthen community relations will be considered whenever they arise.
10. 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. Michigan OFFSET 2018 value if available or High, Medium, Low for sources not addressed in Michigan OFFSET 2018

2. NV = No Value available in Michigan OFFSET 2018; however, a defensible 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 (ft²) and odor control factor, divided by 10,000.

Odor Management Practices

Odor Source	Odor Management Practices & Reduction Factor		
	Current	Planned	Potential
Large Manure Storage	<ol style="list-style-type: none"> 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		<ol style="list-style-type: none"> 1. Plans include the planting of a tree shelterbelt the length of the freestall barns, parlor, and treatment area. 	
Milking Center Wastewater	<ol style="list-style-type: none"> 1. Fills from bottom. 2. Long term storage facilitates minimal disturbance of only about two times per year. 		<ol style="list-style-type: none"> 3. Impermeable synthetic cover (OCF = 0.1)
Run Off Storage	<ol style="list-style-type: none"> 1. Long-term storage, disturbed only 1-2 times per year 		
Outside Lots			<ol style="list-style-type: none"> 1. Lot could be reduced in size.
Settling Basins	<ol style="list-style-type: none"> 1. Cleaned out frequently, about every ten days, minimizing anaerobic production of odors. 	<ol style="list-style-type: none"> 2. Plans include the planting of tree shelterbelt between the basins and the road/property line. 	
Bedded Barns			
Open Lot Manure Storage	<ol style="list-style-type: none"> 1. Storage is emptied frequently so that anaerobic activity is limited. 2. Storage crusts (OCF = 0.5) 		
Agitation			
Land Application	<ol style="list-style-type: none"> 1. Manure is injected or incorporated whenever field conditions permit. 2. Weekend and holiday application is avoided. 		
Silage & Feed Storage	<ol style="list-style-type: none"> 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 D

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 several 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. 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 facilities receiving technical and/or financial assistance through USDA-NRCS Farm Bill program contracts.
2. A livestock facility that a) applies for coverage with the EGLE's National Pollutant Discharge Elimination System (NPDES) permit, or b) is directed by EGLE on a case-by-case basis.
3. A livestock facility 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/EGLE.

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

APPENDIX E

New, Expanding, or Existing Manure/Waste Storage or Treatment Facility Plan

Construction plans detailing the design of new manure/waste 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 eFOTG 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.

Standards and specifications for manure/waste storage and treatment facilities need to follow industry standards, state codes for structures, or under university guidance and technology development. For further information, refer to the NRCS-MI Conservation Practice Standard (CPS) Waste Storage Facility 313 (USDA-NRCS-MI FOTG) and Chapter 10, Appendix 10D of the Animal Waste Management Field Handbook (AWMFH), part 651, (USDA-NRCS-2009). Additional publications include the Rectangular Concrete Manure Storages Handbook MWPS-36, 2nd Ed (MidWest Plan Service, 2005), the Circular Concrete Manure Tanks, TR-9 (MidWest Plan Service 1999), and the Building Code Requirements for Structural Concrete industry standard of the American Concrete Institute ACI-318-19 (ACI Committee 318, 2022).

Plans for new or expanding must include the following information:

- Design Standards utilized and construction requirements/specifications.
- Identify the design storage volume as justified by the nutrient utilization plan, runoff volume, precipitation volume, freeboard, and emergency storage depths. Use of the NRCS Animal Waste Management (AWM) program with reports are recommended.
- Identify the size of structure, including length, width, and depth.
- Floodplain documentation – use the FEMA website or the local county GIS documentation.
- 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 to determine any evidence of a seasonal high-water table. The borings must extend to a depth of at least two feet below the bottom of the structure and must indicate the depth to a high water and any seeps encountered. The soils must be classified according to the Unified Soil Classification System (USCS) using ASTM D2487 or ASTM D2488.
 - Soil test locations are to be provided on a site map with the planned storage or treatment facility location.
 - Soil tests are to show and document the soils encountered and associated depths with elevations that are all based on an established surveyed benchmark that tied together the following:
 - Surface ground elevation
 - Elevations of the proposed structure
 - Surface depth of soil borings with total depth of each soil boring

- Elevation and depth of changing soil types within the soil boring (USCS)
- For a new compacted earth-lined structure, a laboratory permeability test, or Plasticity Index (PI) with Atterberg Limits must be submitted documenting the planned liner material is adequate to meet the permeability rate and liner thickness and in conformance with the NRCS Conservation Practice Standard (CPS); 313 – Waste Storage Facility (WSF) and/or the associated Pond Sealing or Lining CPS (520, 521, 522).
- Document isolation distance from the waste structure or treatment facility to any drinking water well, use [the “Well Isolation Distance Worksheet for Major and Potential Sources of Contamination for Type IIA, IIB and III Public Wells and Private Wells on Farm Operations” reduction criteria worksheet](#) where applicable.
 - Evaluate any drinking water well within 2000 feet of the planned facility.
- Describe the method used to remove solids from the waste storage while still maintaining the liner integrity.
- Where a manure/waste or treatment facility system such as, an anaerobic digester, gasification, or odor mitigation technology will be utilized, all associated design plans, treatment flow diagram, and specifications, with an operation and maintenance plan must be submitted for review.
- Submittals of As-built documentation requirements:
 - Updated site plan showing installed location, elevations, and dimensions based on the established surveyed benchmark as red lined As-builts.
 - Earthen Lined Structure:
 - Submit an in-situ permeability test (ASTM D5084-Hydraulic Conductivity) of the compacted liner to verify the liner meets the minimum requirements for thickness and seepage.
 - Document the thickness of the soil cover over the compacted liner.
 - Concrete Structure:
 - Submit the concrete mix design used, with any additives used.
 - Document the thickness of concrete installed.
 - Submit any concrete quality control documentation that the installed concrete meets the mix design specified.
 - Subsurface Drainage system:
 - Document any subsurface drainage system installed associated with the installation of the waste storage structure and identify the drainage outlet location.
 - Waste Treatment Facility:
 - Identify location of equipment or system installed.

All manure/waste storage structures or treatment facilities must be designed and constructed by individuals or companies qualified in the appropriate area of expertise for that work. Qualified

individuals may include Geologist, Soil Scientist, licensed professional such as Engineers, or a professional business that constructs manure/waste storage or treatment facilities or conducts engineering soil testing procedures in accordance with ASTM standards.

New designs must be sealed by a Michigan licensed Professional Engineer (P.E.) or a licensed professional for smaller conservation practices such as an above ground dry stacking facility. The P.E. is required to sign a statement that the structure was installed according to identified standards and meet all requirements on the Design and red line As-builts must be sealed with a date and state license number.

Existing Manure/Waste Storage Structure:

As part of the MDARD Site Review and Verification process, existing storages must also be evaluated for structural integrity and soundness. This is referred to as an Evaluation of Existing components (EEC). The existing storage must be evaluated by a qualified individual for the type of storage being evaluated indicating that the structure currently meets the environmental performance equivalent to the applicable NRCS 313-WSF practice standard and/or 520- Pond Sealing or Lining, Compacted Soil Treatment for earthen structure liner permeability or specific discharge: industry standards such as MWPS, or ACI for concrete structures, and American Institute of Steel Construction (AISC) for Steel type fabricated structures.

For guidance on EEC equivalence by manure/waste storage structures use the NRCS-MI CNMP Guidance for CEMA 227 - ([NRCS CEMA-227 EEC Guidance 2024 January.docx](#)).

APPENDIX F
Michigan Commission of Agriculture and Rural Development Policy No. 10

Policy Title: **APPEALS FROM MDARD'S SITE SUITABILITY DETERMINATIONS**

Under the Generally Accepted Agricultural and Management Practices for Site Selection and Odor Control for New and Expanding Livestock Facilities (Site Selection GAAMP), farms may request a site suitability determination from MDARD. MDARD's site suitability determinations are sent to the farmer and the local unit of government and posted on MDARD's RTF website. MDARD's site suitability determination can be appealed to MDARD's Director as provided below.

A. Who can request to appeal MDARD's site suitability determination?

The following people or entities can request to appeal MDARD's site suitability determination:

- The owner of the proposed livestock facility.
- A person with property within one-half mile of the site of the proposed livestock facility.
- The local unit of government in which the site for the proposed livestock facility is located.
- Local unit of government which is within one-half mile of the proposed livestock facility.

B. Timing of a request to appeal

A request to appeal must be filed within 30 days from the date MDARD's site suitability determination is posted on MDARD's Right to Farm Siting website.

C. Contents of a request to appeal

A request to appeal MDARD's site suitability determination is made by sending a written description of the appeal including all documentation supporting the appeal to MDARD's Director through the Commission email at MDA-Ag-Commission@michigan.gov.

The request to appeal must identify with specificity the section or requirement in the Site Selection GAAMPs that the requestor believes MDARD failed to or improperly applied when it made its site suitability determination.

The request for appeal must include relevant facts, data, analysis, and supporting documentation for the appellant's position.

A request to appeal that does not identify with specificity the way MDARD failed to or improperly applied the Site Selection GAAMPs or does not provide supporting documentation will be denied. The Director will notify the Site Selection GAAMPs Chair, as well as the Commission of Agriculture and Rural Development of this decision. MDARD will send a letter to the entity who submitted the request to appeal stating the reason the request has been denied. A denial of a request to appeal is a final agency decision on MDARD's site suitability determination.

A request to appeal that meets the requirements of this section will be approved and will proceed through the appeal process outlined below. MDARD shall make all determinations

regarding requests to appeal within 14 days after the close of the 30- day appeal window.

D. Appeal process

Once MDARD approves a request to appeal, the following process will be initiated:

1. MDARD will ask the Chairperson of the Site Selection GAAMPs Committee to convene a panel of recognized professionals to review MDARD's site suitability determination. The panel of recognized professionals may include, but are not limited to, personnel from the following: conservation districts, industry representatives, Michigan Department of Environment, Great Lakes, and Energy, professional consultants and contractors, professional engineers, the United States Department of Agriculture - Natural Resources Conservation Service, university agricultural engineers, and other university specialists and shall contain no less than three recognized professionals.
2. Within 28 days, the panel of recognized professionals shall review MDARD's site suitability determination and consider the information provided by the Appellant. The panel of recognized professionals shall create a written report to be considered at the Commission's next scheduled public meeting.
3. The Commission will consider the panel of recognized professionals report, oral or written comments from the appellant(s), and other public comments regarding MDARD's site suitability determination.
4. The Commission shall make a recommendation to the MDARD Director. The Commission's recommendation can take one of three forms: (i) approve MDARD's site suitability determination; (ii) reverse MDARD's site suitability determination; or (iii) send the case back to the panel of recognized professionals or MDARD staff with instructions to consider certain factors or issues that were not sufficiently considered during the panel's initial review, including a timeframe for providing the information to the Commission. In the event of a tie vote by the Commission, the matter shall be submitted to the Director without a recommendation from the Commission.
5. The Director shall issue a written final decision regarding the site suitability determination within 14 days of the Commission's recommendation/ submission.
6. Following the Director's final decision, the farmer, appellant, and local unit of government will be sent MDARD's final decision, and the final decision will be posted on the MDARD RTF Siting website.

Approved in St. Johns, Michigan

May 15, 2019

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