



**Nutrient Management Plan Special Conditions for
Virginia Pollution Abatement (VPA) and Virginia Pollutant Discharge
Elimination System (VPDES) Permits**
November 2023

The following management practices will be utilized for dairy/beef operations requiring a VPA or VPDES permit:

1. Soil samples for manure application fields will be analyzed at least once every three (3) years for pH, phosphorus, potassium, calcium, and magnesium in order to maximize the efficient utilization of nutrients. A single composite soil sample should represent an area up to approximately 20 acres. Fields such as those common to strip cropping may be combined when soils, previous cropping history, and soil fertility are similar. Soil sampling core depth will be from 0-4 inches for land which has not been tilled within the past three (3) years, or 0-6 inches for land that has been tilled within the past three (3) years. Soil pH should be adjusted to the level suited for the crop.
2. Soil test analysis will be performed by one of the laboratories listed below or other laboratories approved by the department. Soil phosphorus levels must be determined using the Mehlich I or Mehlich III procedure, or other methods approved by the department and correlated to Mehlich I.
 - A list of all approved laboratories can be found at <https://www.dcr.virginia.gov/soil-and-water/document/nmlablist.pdf>.
3. For existing operations, the most recent organic nutrient source analysis results or an average of past nutrient analysis results for the specific operation within the last three-year period shall be used to determine the nutrient content of organic nutrient sources. More frequent manure analysis may be necessary to meet permit requirements. Representative manure samples will be analyzed for the following: total nitrogen or total Kjeldahl nitrogen (TKN), ammonium nitrogen, total phosphorus, total potassium, calcium, magnesium, and percent (%) moisture. Separate samples shall be taken from all manure sources to be used for application (i.e. liquid, solid, etc.). All manure analyses shall be performed using laboratory methods consistent with *Recommended Methods of Manure Analysis*, publication A3769, University of Wisconsin, 2003 or other methods approved by the Virginia Department of Conservation and Recreation (DCR). Manure analysis results will be used to determine actual manure rates that do not exceed the nitrogen and phosphorus application rates specified in the nutrient management plan using either the most recent manure analysis results (not greater than 1 year old) or the facility's average results based on actual manure analysis. Dairy manure coefficients for organic nitrogen availability in manures (found in Table 8-2 of *Virginia Nutrient Management Standards and Criteria, Revised October 2005*) shall be used for beef manure.
4. Make manure applications at or near planting or to existing actively growing crops to ensure that nutrients are properly utilized. Utilize the spreading schedule contained in the nutrient management plan and the spreading schedule in #15 of this document to determine appropriate manure application times and rates. Additional commercial fertilizer applications (especially nitrogen) should be made as a split application separate from the manure applications, either as a sidedress or topdress application.
5. Do not spread manure within the following setback areas:
 - 100 feet from wells or springs
 - 35 feet from surface waters if the entire setback is a permanent perennial vegetated buffer
 - **OR**

- 100 feet from surface waters if there is not a permanent perennial vegetated buffer of at least 35 feet in width
- 50 feet from sinkholes*
- 50 feet from limestone rock outcrops
- 25 feet from other rock outcrops
- 10 feet from agricultural drainage ditches (5 feet if injected)
- 200 feet from occupied dwellings (unless waived in writing by the occupant)

*Waste shall not be applied in areas subject to concentrated flow generated by runoff from storm events such that it would discharge into sinkholes in the area.

6. To avoid manure runoff from application fields*:
 - It is not recommended to apply liquid manure utilizing non-irrigation liquid spreading equipment at rates which exceed 14,000 gallons per acre (approximately one-half (0.5) inch) per application.
 - Do not apply liquid manure (above 85.5% moisture content) or commercial fertilizers to frozen, ice or snow covered ground.

*If runoff is observed, reduce the application rate immediately to prevent overland flow, which reaches buffer areas or accumulates in low-lying areas.

7. Liquid irrigation systems will be operated in a manner to prevent runoff into buffered areas and low-lying areas. Use a liquid application rate at or below the specified maximum hydraulic application rate for each field per application. Traveling guns used for irrigation of effluent should be operated in a full circle pattern whenever possible to allow for maximum infiltration. A small wedge shaped area may be left dry ahead of the gun to reduce soil compaction.
8. Spreader calibration is extremely critical to ensure proper application rates. Calibration of equipment or verification of actual equipment application rates should occur at a minimum of once per year.
9. Waste handling structures, piping, pumps, etc. should be inspected on a regular basis to prevent breakdowns, leaks and spills.
10. Composting of animal mortalities should be conducted in accordance with the latest guidance developed by Virginia Cooperative Extension.
11. Nutrient management plans that contain fields in which row crops will be grown will be revised at least once every three (3) years. Nutrient management plans that contain only hay or pasture fields will be revised at least once every five (5) years. Any such plan revisions will be submitted to DCR for review and approval.
12. This nutrient management plan must be amended or modified if animal numbers increase above the level specified in the plan; animal types including intended market weights are changed; additional imported manure, biosolids, or industrial waste that was not identified in the existing plan is applied to fields under the control of the operator; available land area for the utilization of manure decreases below the level necessary to utilize manure in the plan; and/or manure application fields have Mehlich I soil phosphorus levels at or above 55ppm (110 lbs/acre) where either cropping systems, rotations, or fields are changed.

13. All major plan modifications should be discussed with the NM planner prior to implementing any changes. Major modifications include, but are not limited to, proposed changes to the plan expiration date; increases in animal numbers of greater than 10%; changes in animal type including intended market weight; additional imported manure, biosolids, or industrial wastes not included in the original plan are to be applied; or available land area for the utilization of manure decreases below the level necessary to utilize manure in the plan due to sale of land, expired lease, etc.
14. These conditions do not override any more restrictive plan requirements if required by other specific legislative, regulatory or incentive programs which apply to a specific operator.

15. Manure spreading schedule EXAMPLE (application schedule may vary based on crop, environmental, or geographic factors):

DAIRY/BEEF MANURE SPREADING SCHEDULE*

CROP	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Alfalfa	[Solid Black]								[Diagonal Hatching]	[Diagonal Hatching]	[Diagonal Hatching]	[Solid Black]
Bermudagrass	[Solid Black]						[Diagonal Hatching]	[Diagonal Hatching]	[Diagonal Hatching]	[Diagonal Hatching]		
Corn	[Diagonal Hatching]	[Diagonal Hatching]	[Vertical Lines]	[Vertical Lines]			[Diagonal Hatching]	[Diagonal Hatching]	[Solid Black]	[Solid Black]	[Solid Black]	[Solid Black]
Hay**	[Diagonal Hatching]	[Diagonal Hatching]	[Diagonal Hatching]						[Diagonal Hatching]	[Diagonal Hatching]	[Diagonal Hatching]	[Diagonal Hatching]
Pasture**	[Diagonal Hatching]	[Diagonal Hatching]	[Diagonal Hatching]								[Diagonal Hatching]	[Diagonal Hatching]
Sorghum/Millet	[Diagonal Hatching]	[Diagonal Hatching]	[Diagonal Hatching]	[Vertical Lines]	[Vertical Lines]		[Diagonal Hatching]	[Diagonal Hatching]	[Solid Black]	[Solid Black]	[Solid Black]	[Solid Black]
Small Grain	[Diagonal Hatching]	[Diagonal Hatching]	[Diagonal Hatching]			[Solid Black]	[Solid Black]	[Solid Black]	[Solid Black]			

Do not spread liquid manure, dry or semi-solid manure, or parlor effluent on soils that are saturated.

* Do not spread liquid manure/effluent (above 85.5% moisture content) on frozen, ice or snow-covered ground.

* Application of dry or semi-solid manure (85.5% moisture content or less) should be avoided on frozen, ice or snow-covered ground. If necessary, applications may be made to fields that have: (i) slopes not greater than 6.0%, (ii) 60% uniform ground cover from crop residue or an existing actively growing crop such as a small grain or tall fescue with an exposed plant height of ≥ 3 inches, (iii) a minimum 200 foot vegetated or adequate crop residue buffer between the application area and all surface water courses, AND (iv) soils characterized by USDA as "well drained."

** Cool season grasses only: Fescue and/or Orchardgrass.



Spread liquid manure, dry or semi-solid manure and parlor effluent at the rates and times specified in the nutrient management plan.



Do not spread liquid manure, dry or semi-solid manure and parlor effluent during these shaded months, if crop is not actively growing.



Manure applications will not be made earlier than 30 days prior to planting on environmentally sensitive sites.

On fields not listed as environmentally sensitive:

- Liquid manure applications will not occur more than 60 days prior to spring planting.
- Applications of semi-solid beef manure (85.5% moisture content or less) or semi-solid dairy manure (85% moisture content or less) for operations using straw or sawdust (not sand) bedding will not occur more than 90 days prior to spring planting on fields having (i) slopes less than 7% throughout the application area or (ii) having at least 60% uniform ground cover from crop residue.



Consult with your NM Specialist for application timing.