Application No. OH0132799

Issue Date: September 15, 2011

Effective Date: October 1, 2011

Expiration Date: September 30, 2016

Ohio Environmental Protection Agency
Authorization to Discharge Under the
National Pollutant Discharge Elimination System

In compliance with the provisions of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et. seq., hereinafter referred to as the "Act"), and the Ohio Water Pollution Control Act (Ohio Revised Code Section 6111),

Zylstra Dairy, Ltd.

is authorized by the Ohio Environmental Protection Agency, hereinafter referred to as "Ohio EPA," to discharge storm water associated with industrial activity from the Zylstra Dairy Ltd. CAFO located at 11753 Road 21, Antwerp, Ohio, Paulding County and discharging to an unnamed tributary of South Creek in accordance with the conditions specified in Parts I, II, III, and VII of this permit.

This permit is conditioned upon payment of applicable fees as required by Section 3745.11 of the Ohio Revised Code.

This permit and the authorization to discharge shall expire at midnight on the expiration date shown above. In order to receive authorization to discharge beyond the above date of expiration, the permittee shall submit such information and forms as are required by the Ohio EPA no later than 180 days prior to the above date of expiration.

_____
Scott Nally
Director

Total Pages: 54

Part I, A. - Daily Maximum Discharge Limitations

1. CAFO PRODUCTION AREA

a. Beginning on the effective date of this permit, there shall be no discharge of manure pollutants from the productions area to waters of the State. The production area shall be properly designed, constructed, operated, and maintained to contain manure, direct precipitation, and the runoff from a 100-year, 24-hour storm event and the production area shall be operated in compliance with the additional measures and records required in Part II and Part VII.

b. Dry weather discharges of manure are prohibited from production and land application areas.

c. Storm water associated with industrial activity can be discharged in accordance with this permit as long as good housekeeping practices are conducted to ensure that the storm water is not contaminated by manure, animal feed, etc. See Part I, B for monitoring requirements.

d. Any spill, discharge, or overflow of pollutants from the production area to waters of the State shall not cause an exceedance of Ohio Water Quality Standards in the receiving water of the State.

e. If a spill, discharge or overflow of manure occurs at any time from the production area to waters of the State, the permittee shall collect and analyze grab samples from each spill, discharge or overflow for the following list of parameters:

00310 - Biochemical Oxygen Demand, 5 Day (BOD5) - mg/l
00610 - Nitrogen, Ammonia (NH3) - mg/l
00665 - Phosphorus, Total (P) - mg/l

(Note: units of mg/l)

The permittee shall: (a) collect the sample within 30 minutes of the first knowledge of the spill, discharge, or overflow; or (b) if sampling in that period is inappropriate due to dangerous weather conditions, collect the sample as soon as possible after suitable conditions occur, and document the reason for delay.

The permittee shall notify Ohio EPA by calling 1-800-282-9378 as soon as possible but no later than 24 hours following the first knowledge of the spill, discharge, or overflow. Immediate notification allows Ohio EPA to assist in clean-up and remediation efforts and may reduce magnitude of environmental impact and extent of permit violations.

The permittee shall report the results of the spill, discharge, or overflow sample to Ohio EPA, Central Office, Division of Surface Water, within 14 days of occurrence. The report shall, at a minimum, contain the sample results of the aforementioned parameters, describe the reason for the spill, discharge, or overflow, the location, estimate of quantity and duration of the spill, discharge, or overflow, quantity and duration of the precipitation leading up to the event, as well as any measures taken to clean up and eliminate the spill, discharge, or overflow and prevent reoccurrence of the spill, discharge or overflow. See Part III, 12 and Part VII, Production Area Requirements.

f. The permittee shall ensure removal and disposal of animal carcasses in a manner that prevents discharge of pollutants to waters of the State and ensure that carcasses are not disposed of in the manure storage or treatment facility unless the facility is designed specifically to treat the carcasses. Please note that mortality compost is included in the definition of manure in Part I, A, 4 of this permit, therefore all permit requirements pertaining to manure also include mortality compost.

f. Chemicals and other contaminants shall not be disposed of in the manure storage or treatment facility unless the facility is designed specifically to treat such chemicals and contaminants.

g. Chemicals and other contaminants shall not be disposed of in the manure storage or treatment facility unless the facility is designed specifically to treat such chemicals and contaminants.

h. Animals stabled or confined at the facility shall not come into contact with surface waters of the State.

2. LAND APPLICATION ACTIVITIES

a. There shall be no discharge of pollutants to waters of the State from manure stockpiles. See Part VII, B for stockpile setback restrictions.

b. There shall be no discharge to waters of the State during the process of applying manure to land.

c. There shall be no discharge of pollutants to waters of the State from land applied manure except for discharges that are composed of storm water runoff and/or snow melt runoff originating from a land area where manure from a CAFO has been applied in compliance with the manure management plan and this permit.

d. The permittee shall notify Ohio EPA by calling 1-800-282-9378 as soon as possible but no later than 24 hours following the first knowledge of a spill or discharge of pollutants from land applied manure that is not composed of storm water runoff (e.g., tile discharge during dry weather). See Part VII, B for land application on frozen and/or snow covered ground. Immediate notification allows Ohio EPA to assist in clean up and remediation efforts and may reduce magnitude of environmental impact and extent of permit violations.

The permittee shall submit a written report of the event to Ohio EPA, Central Office, Division of Surface Water, within 14 days of the spill or discharge. The report shall, at a minimum, describe the reason for the spill or discharge, the location, estimate of quantity and duration of the spill or discharge, the quantity and duration of the precipitation leading up to the event, land application records, as well as measures taken to clean up and eliminate the spill or discharge and prevent reoccurrence of the spill or discharge. See Part III, 12 and Part VII, Production Area Requirements.

3. LIST OF POLLUTANTS

For the purpose of Part III, 12, A, 4 of this permit, the following list of pollutants is established: Biochemical Oxygen Demand, 5 Day (BOD5); Nitrogen, Ammonia (NH3); Phosphorus, Total (P).

4. DEFINITIONS

100-YEAR, 24-HOUR STORM EVENT: means the maximum 24-hour precipitation event with a probable recurrence interval of once in 100 years (i.e., a storm event that has a 1% chance of happening in any given year) as defined by the National Weather Service in Technical Paper Number 40, "Rainfall Frequency Atlas of the United States", May 1961, and subsequent amendments, or equivalent regional or state rainfall probability information developed there from. Current information can be found on the National Oceanic and Atmospheric Administration's National Weather Service Web page http://dipper.nws.noaa.gov/hdsc/pfds/orb/oh_pfds.html.

ANIMAL FEEDING OPERATION (AFO): is defined in 40 CFR 122.23(b)(1) as: "...a lot or facility (other than an aquatic animal production facility) where the following conditions are met: (i) Animals (other than aquatic animals) have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and (ii) Crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility".

BEST MANAGEMENT PRACTICES (BMPs): means schedules of activities, prohibitions of practice, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. Best Management Practices also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

CERTIFIED MANURE MANAGEMENT PLANNER: means a technical service provider as defined by United States Department of Agriculture in 7 CFR Part 652.2 as "an individual, entity, or public agency either: (1) certified by NRCS and placed on the approved list to provide technical services to participants; or, (2) selected by the Department to assist in the implementation of conservation programs covered by this part through a procurement contract, contribution agreement or cooperative agreement with the Department."

CHRONIC RAINFALL: means a series of wet weather conditions that preclude manure removal from a properly designed, constructed, maintained, and operated manure storage or treatment facility, precludes land application of manure in accordance with this permit, and exceeds the documented and/or State approved chronic rainfall design storage value used in the design of the manure storage or treatment facility.

CONCENTRATED ANIMAL FEEDING OPERATION (CAFO): means an AFO that is defined as a large CAFO or as a medium CAFO, or that is designated as a CAFO by the Director or Regional Administrator. Two or more AFOs under common ownership are considered to be a single AFO for the purposes of determining the number of animals at an operation, if they adjoin each other or if they use a common area or system for the disposal of wastes.

DISCHARGE: means the addition of any pollutant or combination of pollutants to the waters of the State from a point source. This definition includes additions of pollutants into waters of the State from: surface water runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances leading into privately owned treatment works.

DRINKING WATER SOURCE PROTECTION AREA FOR A PUBLIC WATER SYSTEM USING GROUND WATER: means the surface and subsurface area surrounding a public water supply well(s) which will provide water from an aquifer to the well(s) within five years as delineated or endorsed by the Director under Ohio's wellhead protection and source water assessment and protection programs.

EMERGENCY MANAGEMENT ZONE (EMZ): means the surface and subsurface area in the immediate vicinity of a public water system intake as delineated or endorsed by the Director under the source water assessment and protection program within which the public water supply owner/operator has little or no time to respond to potential contamination from a spill, release or weather related event. The standard emergency management zone boundary consists of a semi-circle that extends five hundred feet upstream of the intake and one hundred feet downstream of the intake, except as modfied due to local conditions.

FLOODPLAIN: means the area adjoining any river, stream, watercourse or lake that has been or may be covered by floodwater.

FORECAST: means the daily "hour by hour" forecast as presented by the Weather Channel (www.weather.com), or equivalent. More specifically, the forecast for the zip code that represents the land application area/site shall be printed/recorded up to, but not greater than 24-hours prior to each land application event at any site. The percent chance of rain listed under the hour by hour forecast shall be used to determine compliance with Part VII, B, 2 of this permit.

FREEBOARD: means the linear distance in feet from the top of the water surface measured vertically to the lowest possible overflow elevation (i.e., the top of the bank of the lagoon/storage/retention structure or any overflow structure).

INNER MANAGEMENT ZONE (IMZ): means the surface and subsurface area within a drinking water source protection area for a public water system using ground water surrounding a public water supply well(s) that will provide water to the well(s) within one year as delineated or endorsed by the Director under the wellhead protection program and the source water assessment and protection program.

LAND APPLICATION: means the placement of manure within the boundaries of a land application site by: 1) spraying or spreading onto the land surface; 2) injection below the land surface in the crop root zone using equipment specifically designed for this purpose; or 3) incorporation into the soil by means of the mixing of manure with the surface soil using standard agricultural practices, such as tillage.

LARGE CAFO: means an AFO that stables or confines as many as or more than the numbers of animals specified in any of the following categories: (i) 700 mature dairy cows, whether milked or dry; (ii) 1,000 veal calves; (iii) 1,000 cattle other than mature dairy cows or veal calves. Cattle includes but is not limited to heifers, steers, bulls and cow/calf pairs; (iv) 2,500 swine each weighing 55 pounds or more; (v) 10,000 swine each weighing less than 55 pounds; (vi) 500 horses; (vii) 10,000 sheep or lambs; (viii) 55,000 turkeys; (ix) 30,000 laying hens or broilers, if the AFO uses a liquid manure handling system; (x) 125,000 chickens (other than laying hens), if the AFO uses other than a liquid manure handling system; (xi) 82,000 laying hens, if the AFO uses other than a liquid manure handling system; (xii) 30,000 ducks (if the AFO uses other than a liquid manure handling system); (xiii) 5,000 ducks (if the AFO uses a liquid manure handling system).

MANURE: means any of the following wastes used in or resulting from the production of agricultural animals or direct agricultural products such as milk or eggs: animal excreta, discarded products, bedding, litter, process wastewater, process generated wastewater, waste feed, silage drainage and leachate, and compost products resulting from mortality composting or the composting of animal excreta.

MANURE STORAGE OR TREATMENT FACILITY: means any excavated, diked, or walled structure or combination of structures designed for the biological stabilization, holding, or storage of manure. This includes all collection ditches, conduits and swales for the collection of runoff from the production area and wastewater that is routed to the manure storage or treatment structure.

MULTI-YEAR PHOSPHORUS APPLICATION: means phosphorus applied to a field in excess of the crop needs for that year. In multi-year phosphorus applications, no additional manure, litter, or process wastewater is applied to the same land in subsequent years until the applied phosphorus has been removed from the field via harvest and crop removal.

OVERFLOW: means the discharge of manure resulting from the filling of manure storage structures beyond the point at which no more manure, process wastewater, or storm water can be contained by the structures.

POLLUTANT: means the following as defined under 40 CFR 122.2: "dredged spoil, solid waste, incinerator residue, filter back-wash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials..., heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water."

PROCESS WASTEWATER: means water directly or indirectly used in the operation of the AFO for any or all of the following: spillage or overflow from animal or poultry watering systems; washing, cleaning or flushing pens, barns, manure pits or other AFO facilities; direct contact swimming, washing, or spray cooling of animals; and dust control. Process wastewater also includes any water which comes into contact with any raw materials, products or byproducts, including manure, litter, feed, milk, eggs or bedding.

PRODUCTION AREA: means that part of an AFO that includes the animal confinement area, the manure storage area, the raw materials storage area, and the waste containment areas. The animal confinement area includes but is not limited to open lots, housed lots, feedlots, confinement houses, stall barns, free stall barns, milkrooms, milking centers, cowyards, barnyards, medication pens, walkers, animal walkways, and stables. The manure storage area includes but is not limited to lagoons, runoff ponds, storage sheds, stockpiles, under house or pit storages, liquid impoundments, static piles, and composting piles. The raw materials storage area includes but is not limited to feed silos, silage bunkers, bedding materials, and areas used for storage of pesticides, herbicides, disinfectants, pharmaceuticals, and fertilizers. The waste containment area includes but is not limited to settling basins, and areas within berms and diversions which separate uncontaminated storm water. Also included in the definition of production areas is any egg washing or egg processing facility, and any area used in the storage, handling, treatment or disposal of mortalities.

PUBLIC WATER SYSTEM (PWS): means a system which provides water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least sixty days out of the year. Such term includes any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system, any collection or pretreatment storage facilities not under such control which are primarily in connection with such system, and any water supply system serving an agriculture labor camp, as defined in section 3733.41 of the Revised Code. A public water system is either a community water system or a noncommunity water system. A community water system means a public water system which serves at least fifteen service connections used by year-round residents or regularly serves at least twenty-five year-round residents. A noncommunity water system means a public water system that is not a community water system. A nontransient noncommunity water system means a public water system that is not a community water system and that regularly serves at least twenty-five of the same persons six months per year. A transient noncommunity water system means a noncommunity public water system that does not regularly serve at least twenty-five of the same persons over six months of the year.

SETBACK: means a specified distance from surface waters or potential conduits to surface waters where manure, litter, and process wastewater may not be land applied. Examples of conduits to surface waters include but are not limited to: open tile line intake structures, sinkholes, and agriculture wellheads.

SOURCE WATER ASSESSMENT AND PROTECTION PROGRAM: means Ohio EPA's source water assessment and protection program based on the Safe Drinking Water Act (88 Stat. 1660, 42 U.S.C. 300(f), as amended in 1996) and approved by U.S. EPA in November 1999.

SPILL: means a discharge, usually (but not exclusively) a small, inadvertent discharge of manure, toxic pollutant or hazardous substance, not caused by weather conditions.

STORM WATER ASSOCIATED WITH INDUSTRIAL ACTIVITY: means the following under 40 CFR Part 122.26 "discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. This term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process wastewaters (as defined in 40 CFR Part 401); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and final products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water. Material handling activities include storage, loading and unloading, transportation, or conveyance of any raw product, intermediate product, final product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas."

UPSET: means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment or storage facilities, inadequate treatment or storage facilities, lack of preventative maintenance, or careless or improper operation.

VEGETATED BUFFER: means a narrow, permanent strip of dense perennial vegetation established parallel to the contours of and perpendicular to the dominant slope of the field for the purposes of slowing water runoff, enhancing water infiltration, and minimizing the risk of any potential nutrients or pollutants from leaving the field and reaching surface waters.

WATER QUALITY STANDARDS: defined in 40 CFR 130.2(d) as: "Provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act." The State of Ohio's water quality standards are contained in Ohio Administrative Code (OAC) 3745-1.

WATERS OF THE STATE: defined in Rule ORC 6111.01(H) as: "means all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, regardless of the depth of the strata in which underground water is located, which are situated wholly or partly within, or border upon, this State, or are within its jurisdiction, except those private waters which do not combine or effect a junction with natural surface or underground waters."

WELLHEAD PROTECTION PROGRAM: means Ohio EPA's wellhead protection program based on the Safe Drinking Water Act (88 Stat. 1660, 42 U.S.C. 300(f), as amended in 1996) and approved by U.S. EPA in November 1992.

5. STATION DESCRIPTION.

Description of the location of the required sampling station is as follows:

2IK00013601 - Storm Water Monitoring: Outfall discharge pipe from the clean storm water basin prior to the discharge to the unnamed tributary of South Creek.
(41 degrees, 08 minutes, 44 seconds N; 84 degrees, 46 minutes, 02 seconds W)

Part I, B. - DOWNSTREAM-NEARFIELD MONITORING REQUIREMENTS

1. Storm Water Monitoring. During the period beginning on the effective date of this permit and lasting until the expiration date, the permittee shall monitor the Storm Water Basin Outfall at Station Number 2IK00013601, and report to the Ohio EPA in accordance with the following table. See Part I, A,5, for location of sampling.

Table - Downstream-Nearfield Monitoring - 601 - Final

| Effluent Characteristic | Discharge Limitations | | | | | | | Monitoring Requirements | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Concentration Specified Units | | | | Loading* kg/day | | | | | |
| Parameter | Maximum | Minimum | Weekly | Monthly | Daily | Weekly | Monthly | Measuring Frequency | Sampling Type | Monitoring Months |
| 00045 - Total Precipitation - Inches | - | - | - | - | - | - | - | When Disch. | 24hr Total | Semi-annual - 5 |
| 00310 - Biochemical Oxygen Demand, 5 Day - mg/l | - | - | - | - | - | - | - | 2/Year | Grab | Semi-annual - 5 |
| 00610 - Nitrogen, Ammonia (NH3) - mg/l | - | - | - | - | - | - | - | 2/Year | Grab | Semi-annual - 5 |
| 00665 - Phosphorus, Total (P) - mg/l | - | - | - | - | - | - | - | 2/Year | Grab | Semi-annual - 5 |

NOTES for Station Number 2IK00013601:
A Monthly Operating Report (Form 4500) for this Station must be submitted for the months of May and November.
a. PARAMETER 00045 - Total Precipitation shall be reported for at least two days prior to the sampling event as well as the day of the sampling event.
b. PARAMETERS 00310 - BOD5, 00610 - Ammonia, and 00665 - Total Phosphorus shall be monitored and reported twice per year (2/Year) during the months of May and November during wet weather. The exact day/time of monitoring shall be determined in the field by the operator provided that the samples are collected by grab sample from the detention basin outlet during a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measureable (greater than 0.1 inch rainfall) storm event but no greater than the 25-year, 24-hour storm event. The grab samples shall be taken during the first thirty (30) minutes of the rainfall event. If collection of a grab sample during the first thirty (30) minutes is impractical, a grab sample can be taken during the first hour of the rainfall event, and the permittee shall submit with the monitoring report a description of why a grab sample during the first thirty minutes was impractical.
c. Grab samples shall be collected at such times and locations, and in such a fashion, as to be representative of storm water discharge from the facility.

Part II, OTHER REQUIREMENTS

A. This NPDES permit applies to the storage, collection, treatment, handling, and disposal/land application of manure and management of storm water associated with industrial activity associated with the permittee which is currently designed to confine a maximum of 1,400 mature dairy cattle. This operation shall not be expanded above 1,400 mature dairy cattle, or to encompass more land to be included in the production area, until Ohio EPA has been notified in writing of the intended actions. A modified NPDES permit (and updated Manure Management Plan) reflecting the expansion will be required for significant changes (e.g., greater than 10 percent increase in animals confined). For Manure Management Plan changes, see Part II, I.

B. The discharge of manure or other wastes to waters of the State as defined in ORC 6111.01 and which include surface waters, wetlands (not included constructed treatment wetlands), and ditches is prohibited except in compliance with this permit.

C. Spill prevention and good housekeeping techniques, along with diversion of clean water, shall be used to ensure that uncontained storm water from the production area is not contaminated by manure and to ensure that storm water discharges from the following areas maintain compliance with Ohio Water Quality Standards in the receiving water of the State: immediate access roads and rail lines used or traveled by carriers or raw materials, products, waste material, or by-products used or created by the CAFO; refuse sites; sites used for the storage and maintenance of material handling equipment; and shipping and receiving areas. Storm water that is contaminated by manure or raw material (such as silage) is process wastewater, which is included in the definition of manure in Part I, A, 4 and may only be discharged in accordance with Part I, A of this permit.

D. The permittee shall maintain the manure storage or treatment facilities (including regular solids removal) to ensure that the design storage volume is provided, as approved by Ohio EPA or ODA or necessary to achieve compliance with this permit, whichever is greater. See Part VII.

E. For all open manure storage or treatment structures, a minimum freeboard of one foot must be maintained at all times. This is in addition to the capacity needed to contain direct precipitation and runoff from the 100-year, 24-hour storm. These structures must be equipped with a depth marker which clearly indicates the minimum capacity to contain the runoff and precipitation of the 100-year, 24-hour storm event. If this freeboard is violated, Zylstra Dairy Ltd. shall immediately begin investigating removal options. See Part VII, Production Area Requirements.

F. The permittee shall give advance notice to Ohio EPA of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

G. The permittee shall be responsible for proper operation and maintenance of the manure storage, treatment, or disposal system.

H. Any variation from the operational practices included in this NPDES permit must be authorized by Ohio EPA in advance.

I. Manure Management Plans

The Manure Management Plan (MMP) received by Ohio EPA on May 19, 2011, has been reviewed, and approved by the Director through issuance of this NPDES permit and is incorporated as a condition of this NPDES permit.

1. SIGNATURE AND PLAN REVIEW
a. The plan shall be retained onsite at the CAFO.
b. The Director may notify the permittee at any time that the plan does not meet one or more of the minimum requirements of this permit. Within 30 days of such notification from the Director, the permittee shall make the required changes to the plan and shall submit to the Director a revised plan demonstrating that the requested changes have been made.

2. KEEPING PLANS CURRENT
The permittee shall amend the plan prior to a change in design, construction, operation, or maintenance, which has an effect on the potential for the discharge of pollutants to the surface waters of the State or if the MMP proves to be ineffective in eliminating or minimizing pollutants from sources identified under Part I, A, 3, or otherwise achieving the general objectives of minimizing pollutant discharges associated with the CAFO.

When a permittee proposes to makes changes to the MMP previously submitted to and approved by the Director, the permittee shall provide the Director with the most current version of the MMP and identify changes from the previous version in a cover letter prior to implementation of the changes. The results of calculations made in accordance with Part II, J, 4 are not subject to this notification requirement.

In the event of the sale of Zylstra Dairy, the successor to Zylstra Dairy Ltd. shall submit a revised Manure Management Plan to Ohio EPA within 60 days of taking over operational control of the facility.

The Director will review the revised MMP to ensure that it meets the requirements of this permit and will determine whether the changes to the MMP necessitate revision to the terms of the MMP incorporated into this permit. If no revision is necessary, the Director will notify the permittee and upon such notification the permittee shall implement the revised plan. If revision to the terms of the MMP is necessary, the Director will follow the applicable modification process in 40 CFR Part 122.42(e)(6)(A) to revise the terms of the MMP incorporated into this permit. Modified MMP submittals with substantial changes are subject to a 30-day public notification period on the Ohio EPA website.

Examples of substantial changes to a MMP requiring a permit modification include, but are not limited to:
a. Addition of new land application areas not previously included in the MMP;
b. Any changes to the field-specific maximum annual rates for land application and to the maximum amounts of nitrogen and phosphorus derived from all sources for each crop;
c. Addition of any crop or other uses not included in the MMP and corresponding field-specific rates of application; and
d. Changes to site-specific components of the MMP, where such changes are likely to increase the risk of nitrogen and phosphorus transport to waters of the State.

3. CONTENTS OF PLAN

The manure management plan shall address the form, source, amount, timing, agronomic rate, and method of application of nutrients to each field to achieve compliance with this permit, ensure appropriate agricultural utilization of the nutrients, and minimize movement of pollutants to surface waters. To the extent applicable, the MMP shall address the following:

a. Storage of manure, management of mortalities, diversion of clean water, prevention of contact of animals with waters of the State, and proper chemical handling to ensure compliance with Part I, A, 1, Part II, and Part VII of this permit.
b. Inspections, monitoring, and maintenance activities for structures and equipment involved in manure handling and storage in compliance with Part II and Part VII, Production Area Requirements of this permit.
c. If applicable, a manure land application plan that will be implemented to comply with Part VII of this permit, including: 1) a total nutrient budget; 2) manure and soil characterizations; 3) application methods and timing that will minimize nutrient transport to waters of the State; and 4) field specific agronomic application rates.
d. If applicable, a manure distribution and utilization plan including: 1) total nutrient budget; 2) manure characterization; and 3) manure removal methods and timing that will minimize nutrient transport to waters of the State.
e. Site specific conservation practices to be implemented, including as appropriate buffers or equivalent practices, to control runoff of pollutants to waters of the State.

4. ANNUAL CALCULATIONS

The permittee shall calculate the maximum amount of manure to be land applied at least once each year using the results of the most recent representative manure tests for nitrogen and phosphorus taken within twelve months of the date of land application. The results shall be submitted to Ohio EPA by January 31 of each year as part of the Annual Report. See Part II, J.

5. ANNUAL REVIEW

The annual review and update shall include field-specific information that identifies when manure will be applied, where manure will be applied, the method of application, and how much manure will be applied to each field during the following growing season, except where manure ownership is transferred. The permittee shall annually review the MMP for the following:

1. Manure sources or amounts.
2. Manure nutrient content.
3. Methods of application.
4. Fields used for application.
5. Crop rotations.
6. Expected crop yields.
7. Soil test results.
8. Manure storage practices.
9. Other management changes which affect the available nutrient amounts, crop nutrient needs, setbacks, or production area operation and maintenance.

J. ANNUAL REPORT: By January 31 of each year, the permittee shall submit an annual report to Ohio EPA, Central Office, Division of Surface Water. The annual report shall be submitted on forms prepared by the Director and shall include, but not necessarily be limited to, the following:

1. The number and type of animals confined in the previous year.
2. Estimated amount of manure generated in the previous year in gallons or tons.
3. Total amount of manure removed from the facility for land application and/or distribution or utilization in gallons or tons.
4. Total number of acres for land application covered by the MMP.
5. Total number of acres under the control of the permittee that were used for land application in the previous year.
6. Manure distribution or utilization records.
7. Summary of the number of discharges from the production area and the number of discharges from land application areas that were not composed of agricultural storm water runoff for the past year, including date, time and approximate volumes.
8. Information on any non-compliance not previously reported to Ohio EPA. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
9. A statement indicating if the MMP was developed by a certified manure management planner.
10. The actual crop(s) planted and actual yield(s) for each field, the actual nitrogen and phosphorus content of the manure, the results of calculations conducted in accordance with Part II, I, 4, and the amount of manure applied to each field during the previous twelve months.

K. Distribution and Utilization: For manure that is distributed to other persons (per Part VII, B, 6 of this permit), the permittee shall record the recipient's name and address, the approximate amount of manure transferred to that recipient, and the date of the transfer. The permittee shall provide the most current manure nutrient analysis to the recipient. If the permittee is notified by Ohio EPA, Ohio Department of Agriculture, or Ohio Department of Natural Resouces, or otherwise becomes aware that the recipient is not in compliance with ORC 6111 (e.g., causing a nonexempt discharge of manure to waters of the State), the permittee shall cease providing manure to the recipient until written authorization to continue is provided by Ohio EPA.

OPERATION/MANAGEMENT PRACTICES

L. The manure handling equipment shall be effectively maintained and operated at all times so that there is no discharge to waters of the State, except in compliance with Part I, A. In the event that the equipment fails to perform satisfactorily, including the creation of nuisance conditions or failure of an application area to adequately assimilate the manure, the permittee shall take immediate corrective actions including those actions that may be required by Ohio EPA, such as the aquisition of equipment capable of properly applying manure in the proper approved amounts in accordance with this permit.

M. In the event that this facility is closed for production purposes or is no longer a CAFO, this permit shall remain effective until the permittee demonstrates to the satisfaction of the Director that there is no remaining potential for a discharge of manure that was generated while the operation was a CAFO, other than agricultural storm water from land application areas. All manure shall be properly disposed of, and in the case of facility closure, the manure storage or treatment facilities shall be properly closed.

N. A protective vegetative cover shall be established and maintained on all earthen basin embankments (outside toe of embankment to maximum operating elevation), berms, pipe runs, erosion control areas, and surface water diversions. Trees, shrubs, and other woody vegetation shall not be allowed to grow on the earthen basin, dikes, or embankments. Earthen basin embankment areas shall be kept mowed or otherwise controlled and accessible.

O. Adequate manure storage volume shall be provided and maintained to prevent the necessity of land applying manure on frozen and/or snow covered ground. No later than September 15 of each year, the permittee shall evaluate the storage capacity in their manure storage or treatment facilities and determine what steps are needed to avoid the need to land apply manure on frozen or snow covered fields for the upcoming winter. For example, a CAFO should plan to have at least four months of storage capacity available by December 1. The operating record for the facility shall include documentation of the storage level as well as what is considered in this evaluation, and what actions were taken to avoid the need for land application of manure on frozen or snow covered ground. Failure to perform the evaluation or failure to take action if the evaluation indicated that action was necessary to avoid land application on frozen or snow covered ground shall be considered a violation of this permit. See Part VII, B, 5.

P. A rain gauge shall be kept on site at the CAFO and properly maintained. A log of all measurable rainfall events shall be kept with the Manure Management Plan.

Q. All records required by this permit including documentation of inspections and manure land application must be retained by the permittee for a period of five years from the date of the documented activity. This includes a complete copy of the information required by 40 CFR 122.21(i)(1) and 40 CFR 122.42 (e)(2) and the records specified in paragraphs (b)(1) through (b)(6) of 40 CFR 412.37.

R. Final permit limitations based on preliminary or approved waste load allocations are subject to change based on modifications to or finalization of the allocation or report or changes to Water Quality Standards. Monitoring requirements and/or special conditions of this permit are subject to change based on regulatory or policy changes.

S. Grab samples shall be collected at such times and locations, and in such fashion, as to be representative of the facility's performance.

PART III - GENERAL CONDITIONS

1. DEFINITIONS

"Daily discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

"Average weekly" discharge limitation means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week. Each of the following 7-day periods is defined as a calendar week: Week 1 is Days 1 - 7 of the month; Week 2 is Days 8 - 14; Week 3 is Days 15 - 21; and Week 4 is Days 22 - 28. If the "daily discharge" on days 29, 30 or 31 exceeds the "average weekly" discharge limitation, Ohio EPA may elect to evaluate the last 7 days of the month as Week 4 instead of Days 22 - 28. Compliance with fecal coliform bacteria or E coli bacteria limitations shall be determined using the geometric mean.

"Average monthly" discharge limitation means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month. Compliance with fecal coliform bacteria or E coli bacteria limitations shall be determined using the geometric mean.

"85 percent removal" means the arithmetic mean of the values for effluent samples collected in a period of 30 consecutive days shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period.

"Absolute Limitations" Compliance with limitations having descriptions of "shall not be less than," "nor greater than," "shall not exceed," "minimum," or "maximum" shall be determined from any single value for effluent samples and/or measurements collected.

"Net concentration" shall mean the difference between the concentration of a given substance in a sample taken of the discharge and the concentration of the same substances in a sample taken at the intake which supplies water to the given process. For the purpose of this definition, samples that are taken to determine the net concentration shall always be 24-hour composite samples made up of at least six increments taken at regular intervals throughout the plant day.

"Net Load" shall mean the difference between the load of a given substance as calculated from a sample taken of the discharge and the load of the same substance in a sample taken at the intake which supplies water to given process. For purposes of this definition, samples that are taken to determine the net loading shall always be 24-hour composite samples made up of at least six increments taken at regular intervals throughout the plant day.

"MGD" means million gallons per day.

"mg/l" means milligrams per liter.

"ug/l" means micrograms per liter.

"ng/l" means nanograms per liter.

"S.U." means standard pH unit.

"kg/day" means kilograms per day.

"Reporting Code" is a five digit number used by the Ohio EPA in processing reported data. The reporting code does not imply the type of analysis used nor the sampling techniques employed.

"Quarterly (1/Quarter) sampling frequency" means the sampling shall be done in the months of March, June, August, and December, unless specifically identified otherwise in the Effluent Limitations and Monitoring Requirements table.

"Yearly (1/Year) sampling frequency" means the sampling shall be done in the month of September, unless specifically identified otherwise in the effluent limitations and monitoring requirements table.

"Semi-annual (2/Year) sampling frequency" means the sampling shall be done during the months of June and December, unless specifically identified otherwise.

"Winter" shall be considered to be the period from November 1 through April 30.

"Bypass" means the intentional diversion of waste streams from any portion of the treatment facility.

"Summer" shall be considered to be the period from May 1 through October 31.

"Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

"Sewage sludge" means a solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works as defined in section 6111.01 of the Revised Code. "Sewage sludge" includes, but is not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment processes. "Sewage sludge" does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator, grit and screenings generated during preliminary treatment of domestic sewage in a treatment works, animal manure, residue generated during treatment of animal manure, or domestic septage.

"Sewage sludge weight" means the weight of sewage sludge, in dry U.S. tons, including admixtures such as liming materials or bulking agents. Monitoring frequencies for sewage sludge parameters are based on the reported sludge weight generated in a calendar year (use the most recent calendar year data when the NPDES permit is up for renewal).

"Sewage sludge fee weight" means the weight of sewage sludge, in dry U.S. tons, excluding admixtures such as liming materials or bulking agents. Annual sewage sludge fees, as per section 3745.11(Y) of the Ohio Revised Code, are based on the reported sludge fee weight for the most recent calendar year.

2. GENERAL EFFLUENT LIMITATIONS

The effluent shall, at all times, be free of substances:

A. In amounts that will settle to form putrescent, or otherwise objectionable, sludge deposits; or that will adversely affect aquatic life or water fowl;

B. Of an oily, greasy, or surface-active nature, and of other floating debris, in amounts that will form noticeable accumulations of scum, foam or sheen;

C. In amounts that will alter the natural color or odor of the receiving water to such degree as to create a nuisance;

D. In amounts that either singly or in combination with other substances are toxic to human, animal, or aquatic life;

E. In amounts that are conducive to the growth of aquatic weeds or algae to the extent that such growths become inimical to more desirable forms of aquatic life, or create conditions that are unsightly, or constitute a nuisance in any other fashion;

F. In amounts that will impair designated instream or downstream water uses.

3. FACILITY OPERATION AND QUALITY CONTROL

All wastewater treatment works shall be operated in a manner consistent with the following:

A. At all times, the permittee shall maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee necessary to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with conditions of the permit.

B. The permittee shall effectively monitor the operation and efficiency of treatment and control facilities and the quantity and quality of the treated discharge.

C. Maintenance of wastewater treatment works that results in degradation of effluent quality shall be scheduled during non-critical water quality periods and shall be carried out in a manner approved by Ohio EPA as specified in the Paragraph in the PART III entitled, "UNAUTHORIZED DISCHARGES".

4. REPORTING

A. Monitoring data required by this permit shall be submitted on Ohio EPA 4500 Discharge Monitoring Report (DMR) forms using the electronic DMR (e-DMR) internet application. e-DMR allows permitted facilities to enter, sign, and submit DMRs on the internet. e-DMR information is found on the following web page:

http://www.epa.ohio.gov/dsw/edmr/eDMR.aspx

Alternatively, if you are unable to use e-DMR due to a demonstrated hardship, monitoring data may be submitted on paper DMR forms provided by Ohio EPA. Monitoring data shall be typed on the forms. Please contact Ohio EPA, Division of Surface Water at (614) 644-2050 if you wish to receive paper DMR forms.

B. DMRs shall be signed by a facility's Responsible Official or a Delegated Responsible Official (i.e. a person delegated by the Responsible Official). The Responsible Official of a facility is defined as:

1. For corporations - a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation; or the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

2. For partnerships - a general partner;

3. For a sole proprietorship - the proprietor; or,

4. For a municipality, state or other public facility - a principal executive officer, a ranking elected official or other duly authorized employee.

For e-DMR, the person signing and submitting the DMR will need to obtain an eBusiness Center account and Personal Identification Number (PIN). Additionally, Delegated Responsible Officials must be delegated by the Responsible Official, either on-line using the eBusiness Center's delegation function, or on a paper delegation form provided by Ohio EPA. For more information on the PIN and delegation processes, please view the following web page:

http://www.epa.ohio.gov/dsw/edmr/eDMRpin.aspx

C. DMRs submitted using e-DMR shall be submitted to Ohio EPA by the 20th day of the month following the month-of-interest. DMRs submitted on paper must include the original signed DMR form and shall be mailed to Ohio EPA at the following address so that they are received no later than the 15th day of the month following the month-of-interest:

Ohio Environmental Protection Agency
Lazarus Government Center
Division of Surface Water - PCU
P.O. Box 1049
Columbus, Ohio 43216-1049

D. Regardless of the submission method, a paper copy of the submitted Ohio EPA 4500 DMR shall be maintained onsite for records retention purposes (see Section 7. RECORDS RETENTION). For e-DMR users, view and print the DMR from the Submission Report Information page after each original or revised DMR is submitted. For submittals on paper, make a copy of the completed paper form after it is signed by a Responsible Official or a Delegated Responsible Official.

E. If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified in Section 5. SAMPLING AND ANALYTICAL METHODS, the results of such monitoring shall be included in the calculation and reporting of the values required in the reports specified above.

F. Analyses of pollutants not required by this permit, except as noted in the preceding paragraph, shall not be reported to the Ohio EPA, but records shall be retained as specified in Section 7. RECORDS RETENTION.

5. SAMPLING AND ANALYTICAL METHOD

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored flow. Test procedures for the analysis of pollutants shall conform to regulation 40 CFR 136, "Test Procedures For The Analysis of Pollutants" unless other test procedures have been specified in this permit. The permittee shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to insure accuracy of measurements.

6. RECORDING OF RESULTS

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

A. The exact place and date of sampling; (time of sampling not required on EPA 4500)

B. The person(s) who performed the sampling or measurements;

C. The date the analyses were performed on those samples;

D. The person(s) who performed the analyses;

E. The analytical techniques or methods used; and

F. The results of all analyses and measurements.

7. RECORDS RETENTION

The permittee shall retain all of the following records for the wastewater treatment works for a minimum of three years except those records that pertain to sewage sludge disposal, use, storage, or treatment, which shall be kept for a minimum of five years, including:

A. All sampling and analytical records (including internal sampling data not reported);

B. All original recordings for any continuous monitoring instrumentation;

C. All instrumentation, calibration and maintenance records;

D. All plant operation and maintenance records;

E. All reports required by this permit; and

F. Records of all data used to complete the application for this permit for a period of at least three years, or five years for sewage sludge, from the date of the sample, measurement, report, or application.

These periods will be extended during the course of any unresolved litigation, or when requested by the Regional Administrator or the Ohio EPA. The three year period, or five year period for sewage sludge, for retention of records shall start from the date of sample, measurement, report, or application.

8. AVAILABILITY OF REPORTS

Except for data determined by the Ohio EPA to be entitled to confidential status, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the appropriate district offices of the Ohio EPA. Both the Clean Water Act and Section 6111.05 Ohio Revised Code state that effluent data and receiving water quality data shall not be considered confidential.

9. DUTY TO PROVIDE INFORMATION

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking, and reissuing, or terminating the permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

10. RIGHT OF ENTRY

The permittee shall allow the Director or an authorized representative upon presentation of credentials and other documents as may be required by law to:

A. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit.

B. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit.

C. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit.

D. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

11. UNAUTHORIZED DISCHARGES

A. Bypass Not Exceeding Limitations - The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 11.B and 11.C.

B. Notice

1. Anticipated Bypass - If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

2. Unanticipated Bypass - The permittee shall submit notice of an unanticipated bypass as required in paragraph 12.B (24 hour notice).

C. Prohibition of Bypass

1. Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

c. The permittee submitted notices as required under paragraph 11.B.

2. The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 11.C.1.

12. NONCOMPLIANCE NOTIFICATION

A. Exceedance of a Daily Maximum Discharge Limit

1. The permittee shall report noncompliance that is the result of any violation of a daily maximum discharge limit for any of the pollutants listed by the Director in the permit by e-mail or telephone within twenty-four (24) hours of discovery.

The permittee may report to the appropriate Ohio EPA district office e-mail account as follows (this method is preferred):

Southeast District Office: sedo24hournpdes@epa.state.oh.us
Southwest District Office: swdo24hournpdes@epa.state.oh.us
Northwest District Office: nwdo24hournpdes@epa.state.oh.us
Northeast District Office: nedo24hournpdes@epa.state.oh.us
Central District Office: cdo24hournpdes@epa.state.oh.us
Central Office: co24hournpdes@epa.state.oh.us

The permittee shall attach a noncompliance report to the e-mail. A noncompliance report form is available on the following web site:

http://www.epa.ohio.gov/dsw/permits/permits.aspx

Or, the permittee may report to the appropriate Ohio EPA district office by telephone toll-free between 8:00 AM and 5:00 PM as follows:

Southeast District Office: (800) 686-7330
Southwest District Office: (800) 686-8930
Northwest District Office: (800) 686-6930
Northeast District Office: (800) 686-6330
Central District Office: (800) 686-2330
Central Office: (614) 644-2001

The permittee shall include the following information in the telephone noncompliance report:

a. The name of the permittee, and a contact name and telephone number;

b. The limit(s) that has been exceeded;

c. The extent of the exceedance(s);

d. The cause of the exceedance(s);

e. The period of the exceedance(s) including exact dates and times;

f. If uncorrected, the anticipated time the exceedance(s) is expected to continue; and,

g. Steps taken to reduce, eliminate or prevent occurrence of the exceedance(s).

B. Other Permit Violations

1. The permittee shall report noncompliance that is the result of any unanticipated bypass resulting in an exceedance of any effluent limit in the permit or any upset resulting in an exceedance of any effluent limit in the permit by e-mail or telephone within twenty-four (24) hours of discovery.

The permittee may report to the appropriate Ohio EPA district office e-mail account as follows (this method is preferred):

Southeast District Office: sedo24hournpdes@epa.state.oh.us
Southwest District Office: swdo24hournpdes@epa.state.oh.us
Northwest District Office: nwdo24hournpdes@epa.state.oh.us
Northeast District Office: nedo24hournpdes@epa.state.oh.us
Central District Office: cdo24hournpdes@epa.state.oh.us
Central Office: co24hournpdes@epa.state.oh.us

The permittee shall attach a noncompliance report to the e-mail. A noncompliance report form is available on the following web site:

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Southwest District Office: (800) 686-8930
Northwest District Office: (800) 686-6930
Northeast District Office: (800) 686-6330
Central District Office: (800) 686-2330
Central Office: (614) 644-2001

The permittee shall include the following information in the telephone noncompliance report:

a. The name of the permittee, and a contact name and telephone number;

b. The time(s) at which the discharge occurred, and was discovered;

c. The approximate amount and the characteristics of the discharge;

d. The stream(s) affected by the discharge;

e. The circumstances which created the discharge;

f. The name and telephone number of the person(s) who have knowledge of these circumstances;

g. What remedial steps are being taken; and,

h. The name and telephone number of the person(s) responsible for such remedial steps.

2. The permittee shall report noncompliance that is the result of any spill or discharge which may endanger human health or the environment within thirty (30) minutes of discovery by calling the 24-Hour Emergency Hotline toll-free at (800) 282-9378. The permittee shall also report the spill or discharge by e-mail or telephone within twenty-four (24) hours of discovery in accordance with B.1 above.

C. When the telephone option is used for the noncompliance reports required by A and B, the permittee shall submit to the appropriate Ohio EPA district office a confirmation letter and a completed noncompliance report within five (5) days of the discovery of the noncompliance. This follow up report is not necessary for the e-mail option which already includes a completed noncompliance report.

D. If the permittee is unable to meet any date for achieving an event, as specified in a schedule of compliance in their permit, the permittee shall submit a written report to the appropriate Ohio EPA district office within fourteen (14) days of becoming aware of such a situation. The report shall include the following:

1. The compliance event which has been or will be violated;

2. The cause of the violation;

3. The remedial action being taken;

4. The probable date by which compliance will occur; and,

5. The probability of complying with subsequent and final events as scheduled.

E. The permittee shall report all other instances of permit noncompliance not reported under paragraphs A or B of this section on their monthly DMR submission. The DMR shall contain comments that include the information listed in paragraphs A or B as appropriate.

F. If the permittee becomes aware that it failed to submit an application, or submitted incorrect information in an application or in any report to the director, it shall promptly submit such facts or information.

13. RESERVED

14. DUTY TO MITIGATE

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

15. AUTHORIZED DISCHARGES

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than, or at a level in excess of, that authorized by this permit shall constitute a violation of the terms and conditions of this permit. Such violations may result in the imposition of civil and/or criminal penalties as provided for in Section 309 of the Act and Ohio Revised Code Sections 6111.09 and 6111.99.

16. DISCHARGE CHANGES

The following changes must be reported to the appropriate Ohio EPA district office as soon as practicable:

A. For all treatment works, any significant change in character of the discharge which the permittee knows or has reason to believe has occurred or will occur which would constitute cause for modification or revocation and reissuance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. Notification of permit changes or anticipated noncompliance does not stay any permit condition.

B. For publicly owned treatment works:

1. Any proposed plant modification, addition, and/or expansion that will change the capacity or efficiency of the plant;

2. The addition of any new significant industrial discharge; and

3. Changes in the quantity or quality of the wastes from existing tributary industrial discharges which will result in significant new or increased discharges of pollutants.

C. For non-publicly owned treatment works, any proposed facility expansions, production increases, or process modifications, which will result in new, different, or increased discharges of pollutants.

Following this notice, modifications to the permit may be made to reflect any necessary changes in permit conditions, including any necessary effluent limitations for any pollutants not identified and limited herein. A determination will also be made as to whether a National Environmental Policy Act (NEPA) review will be required. Sections 6111.44 and 6111.45, Ohio Revised Code, require that plans for treatment works or improvements to such works be approved by the Director of the Ohio EPA prior to initiation of construction.

D. In addition to the reporting requirements under 40 CFR 122.41(l) and per 40 CFR 122.42(a), all existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:

1. That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis of any toxic pollutant which is not limited in the permit. If that discharge will exceed the highest of the "notification levels" specified in 40 CFR Sections 122.42(a)(1)(i) through 122.42(a)(1)(iv).

2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the "notification levels" specified in 122.42(a)(2)(i) through 122.42(a)(2)(iv).

17. TOXIC POLLUTANTS

The permittee shall comply with effluent standards or prohibitions established under Section 307 (a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement. Following establishment of such standards or prohibitions, the Director shall modify this permit and so notify the permittee.

18. PERMIT MODIFICATION OR REVOCATION

A. After notice and opportunity for a hearing, this permit may be modified or revoked, by the Ohio EPA, in whole or in part during its term for cause including, but not limited to, the following:

1. Violation of any terms or conditions of this permit;

2. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

3. Change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge.

B. Pursuant to rule 3745-33-04, Ohio Administrative Code, the permittee may at any time apply to the Ohio EPA for modification of any part of this permit. The filing of a request by the permittee for a permit modification or revocation does not stay any permit condition. The application for modification should be received by the appropriate Ohio EPA district office at least ninety days before the date on which it is desired that the modification become effective. The application shall be made only on forms approved by the Ohio EPA.

19. TRANSFER OF OWNERSHIP OR CONTROL

This permit may be transferred or assigned and a new owner or successor can be authorized to discharge from this facility, provided the following requirements are met:

A. The permittee shall notify the succeeding owner or successor of the existence of this permit by a letter, a copy of which shall be forwarded to the appropriate Ohio EPA district office. The copy of that letter will serve as the permittee's notice to the Director of the proposed transfer. The copy of that letter shall be received by the appropriate Ohio EPA district office sixty (60) days prior to the proposed date of transfer;

B. A written agreement containing a specific date for transfer of permit responsibility and coverage between the current and new permittee (including acknowledgement that the existing permittee is liable for violations up to that date, and that the new permittee is liable for violations from that date on) shall be submitted to the appropriate Ohio EPA district office within sixty days after receipt by the district office of the copy of the letter from the permittee to the succeeding owner;

At anytime during the sixty (60) day period between notification of the proposed transfer and the effective date of the transfer, the Director may prevent the transfer if he concludes that such transfer will jeopardize compliance with the terms and conditions of the permit. If the Director does not prevent transfer, he will modify the permit to reflect the new owner.

20. OIL AND HAZARDOUS SUBSTANCE LIABILITY

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Clean Water Act.

21. SOLIDS DISPOSAL

Collected grit and screenings, and other solids other than sewage sludge, shall be disposed of in such a manner as to prevent entry of those wastes into waters of the state, and in accordance with all applicable laws and rules.

22. CONSTRUCTION AFFECTING NAVIGABLE WATERS

This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in any navigable waters.

23. CIVIL AND CRIMINAL LIABILITY

Except as exempted in the permit conditions on UNAUTHORIZED DISCHARGES or UPSETS, nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

24. STATE LAWS AND REGULATIONS

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Clean Water Act.

25. PROPERTY RIGHTS

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

26. UPSET

The provisions of 40 CFR Section 122.41(n), relating to "Upset," are specifically incorporated herein by reference in their entirety. For definition of "upset," see Part III, Paragraph 1, DEFINITIONS.

27. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

28. SIGNATORY REQUIREMENTS

All applications submitted to the Director shall be signed and certified in accordance with the requirements of 40 CFR 122.22.

All reports submitted to the Director shall be signed and certified in accordance with the requirements of 40 CFR Section 122.22.

29. OTHER INFORMATION

A. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

B. ORC 6111.99 provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $25,000 per violation.

C. ORC 6111.99 states that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $25,000 per violation.

D. ORC 6111.99 provides that any person who violates Sections 6111.04, 6111.042, 6111.05, or division (A) of Section 6111.07 of the Revised Code shall be fined not more than $25,000 or imprisoned not more than one year, or both.

30. NEED TO HALT OR REDUCE ACTIVITY

40 CFR 122.41(c) states that it shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with conditions of this permit.

31. APPLICABLE FEDERAL RULES

All references to 40 CFR in this permit mean the version of 40 CFR which is effective as of the effective date of this permit.

32. AVAILABILITY OF PUBLIC SEWERS

Not withstanding the issuance or non-issuance of an NPDES permit to a semi-public disposal system, whenever the sewage system of a publicly owned treatment works becomes available and accessible, the permittee operating any semi-public disposal system shall abandon the semi-public disposal system and connect it into the publicly owned treatment works.

## PART VII – Production Area Monitoring and Inspections and Land Application Requirements

General
The permittee's approved manure management (MMP) plan shall be developed and implemented in accordance with the best management practices contained within this permit.

## PRODUCTION AREA REQUIREMENTS

Table 1. Monitoring/Inspection Requirements

| Action | Frequency | Record Keeping Requirements |
|---|---|---|
| Grab samples shall be taken of all discharges from the production area. Clean storm water that has been diverted does not need to be sampled. | Each time they occur | Date and time of sample, results of analysis, and the information required in Part III, 5 and 6. See Part I, A, 1, e. |
| All discharges from the production area and land application area shall be recorded in the operating record. | Each time they occur | Cause, volume, and duration of discharge and any corrective actions needed and the dates those actions were taken. See Part I, A, 1, e and Part I, A, 2, d. |
| In accordance with Part VII, B, 5 of this permit, grab samples shall be taken of discharges from land application areas where manure was applied on frozen and/or snow covered ground. | Each time they occur | Date and time of sample, results of analysis, and the information required in Part III, 5 and 6. See Part VII, B, 5. |
| Representative samples of the manure to be land applied shall be taken from each source (e.g., each lagoon, storage tank, or permanent stockpile area must be sampled). | 1/year | The information required in PART III, 5 and 6. See Part VII, A, 2. (See note below.) |
| Representative soil samples of the manure land application fields. | Every 3 years | The information required in Part III, 5 and 6. See Part VII, A, 3. (See note below.) |
| Monitor operating level of all manure storage or treatment facilities. | 1/week | Date and time of observation, manure level in each structure. See Part II, E. (See note below.) |
| Inspect manure storage or treatment facilities, including devices channeling contaminated storm water to the manure storage or treatment facility for evidence of erosion, leakage, animal damage, overflow, or discharge. | 1/week | Date and time of inspection, structural integrity, vegetation condition, and any corrective actions needed and the dates those actions were taken. (See note below.) |
| Inspect storm water diversion devices or runoff diversion structures. | 1/week | Date and time of inspection, observations of flow quantity and color, structural integrity (e.g. signs of cracks, sparse or stressed vegetation, erosion, etc.), any corrective actions needed and the dates those actions were taken. |
| Inspect drinking and cooling water lines that are located above ground, readily visible or accessible for daily inspections. | Daily | Date and time of inspection, number of leaks, any corrective actions needed and the dates those actions were taken. |
| Monitor forecast at the CAFO location. | Every land application event | Date, weather conditions (including percentage chance of rain) 24 hours prior to application, at the time of application, and 24 hours after application. See Part VII, A, 5 and Part VII, B, 2, e. |
| Inspect land application fields. | In accordance with MMP | Date and signs of discharge or runoff into surface waters and/or conduits to surface waters of the State. |
| Inspect land application equipment. | In accordance with MMP | List of equipment, date of inspections, corrective actions, calibration dates. (See note below.) |

Note: Much of this information is required in the operating record for the Review Compliance Certificate or Permit to Operate issued by the Director of ODA. The operating record form provided by ODA is an acceptable format for maintaining records for the purposes of complying with this permit as well. However, make sure that additional records required by this permit are added to those record keeping forms.

1. Any deficiencies found as a result of these inspections must be corrected as soon as possible. Deficiencies not corrected within 30 days must be accompanied by an explanation of the factors preventing immediate correction.

2. Records of mortalities management and practices used by the CAFO shall be maintained to ensure compliance with Part I, A, 1, f.

3. Records documenting the current design of any manure storage structures, including volume for solids accumulation, design treatment volume, total design volume, and approximate number of days of storage capacity must be maintained at the CAFO.

**LAND APPLICATION REQUIREMENTS**

A. CONTENTS OF THE MMP

1. Nutrient Budget: The manure management plan shall include a total nutrient budget for the operation, based on 1) targeted crop yields based on actual crop yields, 2) soil productivity information, 3) historical yield data, 4) realistic potential yield, or 5) combinations of yield data. The plan shall consider all potential sources of nutrients including quantity of manure and manure nutrients, organic by-products, wastewater, commercial fertilizer, crop residues, legume credits, and irrigation water and a summary of the total acres of land to be used for land application.

2. Manure Characterization: At a minimum, manure from each manure storage or treatment facility shall be analyzed annually for the following: total nitrogen, ammonium nitrogen, organic nitrogen, phosphorus, potassium, and percent total solids. Procedures for the collection and analysis of the samples shall be in accordance with Publication A3769, “Recommended Methods of Manure Analysis; Published by the Board of Regents of the University of Wisconsin System, University of Wisconsin-Extension”.

3. Soil Characterization: At a minimum, soil samples shall be taken to a uniform depth and the fertility analysis shall include: pH, phosphorus, potassium, calcium, magnesium and cation exchange capacity.

    a. Soil fertility analysis shall be conducted in accordance with Publication 221, "Recommended Chemical Soil Test Procedures for the North Central Region; Published by the North Central Regional Committee on Soil Testing and Plant Analysis (NCR-13), North Dakota Agricultural Experiment Station". See Part VII, A, 3, e, below.

    b. Sample shall be representative of a land application site with one composite soil sample representing no more than twenty-five acres or one composite soil sample for each land application site, whichever is less. A sample depth of 8 inches shall be used unless justified otherwise in the plan.

    c. The manure management plan shall specify the soil sampling frequency in accordance with the following requirements:

        (1) A site that receives manure shall be soil tested, at a minimum, once every three years.

(2) For any land application site used by the owner or operator the land application site shall be sampled at least six months following application.

d. Results of the soil sampling events shall be recorded and shall include the location of the soil sample collection site, the depth of the sample collected and the analysis.

e. In developing appropriate manure application rates for land application methods, the owner or operator shall use the Bray P1 soil test level or equivalent appropriate phosphorus soil test, (Mehlich III, Olsen, Phosphorus Retention Test). The owner or operator shall choose a phosphorus soil test method and identify the selected method in the manure management plan.

4. Land Application Methods – Methodology for Determining Manure Application Rates

a. Determine if the land application site has soils that are prone to flooding and when the expected flooding seasons are according to Table 3. For timing restrictions, see Part VII, B, 2, c.

b. The manure application rate shall be based on the land application site's soil tests that are no older than three years. See Part VII, A, 3, above.

c. The manure application rate shall be based on the most current manure test results. The manure test results expressed as a nutrient percentage shall be converted into either pounds per ton of dry manure or pounds per one thousand gallons of liquid manure.

d. Determine if a solid or liquid manure application will be performed. The manure application rate shall be based on the most limiting factor (i.e., most restrictive factor for the purpose of protecting surface water quality) of the following:

(1) For liquid manure (less than 20% solids):

i. The crop nitrogen requirements or removal expressed in thousands of gallons of manure per acre, as determined in accordance with g., below;

ii. The crop phosphorus requirements or removal expressed in thousands of gallons of manure per acre, as determined in accordance with h., below;

iii. The restrictions on the volume of liquid manure application, in accordance with Part VII, B and Part VII, C, Tables 21 and 22, with volume expressed as a measure of gallons per acre or inches per acre, with twenty seven thousand two hundred gallons equal to one acre/inch;

iv. The application rate shall not exceed the available water capacity in the upper eight inches of the soil for both subsurface and nonsubsurface drained sites in accordance with Part VII, C, Table 4; and

v. The application rate shall be adjusted to preclude surface ponding and/or runoff from a land application site. See Part VII, B, 2.

(2) For solid manure (greater than or equal to 20% solids):

i. Either the crop nitrogen requirements or removal of nitrogen expressed in pounds per ton of dry manure per acre, as determined in accordance with g., below;

ii. The crop phosphorus requirements or removal expressed in pounds per ton of dry manure per acre, as determined in accordance with h., below; or

iii. The restrictions on the volume of solid manure applied, taken from Part VII, B and Part VII, C, Tables 21 and 22, with volume expressed as a measure of tons/acre.

e. Determine if solid manure will be stockpiled at the land application site. Stockpiles shall meet the setbacks in Part VII, B, Table 2.

f. For liquid manure applications, determine restrictions based on Part VII, C, Table 4 Available Water Capacity and Tables 21 and 22 Most Limiting Manure Application Rates (for Tiled Fields and Non-Tiled Fields). For solid manures, determine restrictions based on Part VII, C, Tables 21 and 22 Most Limiting Manure Application Rates Charts (for Tiled Fields and Non-Tiled Fields).

g. The manure application rate for nitrogen shall be the most restrictive value (i.e., most restrictive factor for the purpose of protecting surface water quality) determined after considering the following:

(1) The application rate for nitrogen shall be based on utilization of crops at the recommended agronomic rates (using the Ohio Agronomy Guide, OSU Bulletin 472) and based on minimum runoff and leaching to waters of the state, as determined in accordance with (3) below.

(2) In determining the agronomic rate for nitrogen, the owner or operator shall do the following:

i. Determine the nitrogen requirements (based on Part VII, C, Tables 6, 7, and 8) or removal rates (based on Part VII, C, Table 5) for a realistic yield goal of planned crops; Determine the nutrient removal for the expected cropping sequence using Part VII, C, Table 5 Nutrient removed in Harvested Portions of Crops. Determine residual nitrogen credits for the expected cropping sequence using Part VII, C, Table 8 Residual Nitrogen Credits Based on Previous Crops.

ii. Subtract the nitrogen credit to be given to the next crop in accordance with values for previous crops, subtract credits for crop residues and legumes grown in previous years, and subtract nitrogen that will be added in other forms including commercial fertilizer and organic by-products (see Part VII, C, Table 8); and

iii. When applying nitrogen to a grass or legume cover crop that is growing or being established immediately after manure application, manure can be applied at the recommended nitrogen rate (using the Ohio Agronomy Guide, OSU Bulletin 472) for the next non-legume crop or the nitrogen removal rate for the next legume crop.

(3) In determining how to minimize nitrogen leaching to waters of the state, the owner or operator shall do the following:

i. Assess each land application site with the Ohio nitrogen leaching risk assessment procedure in Part VII, C; and

ii. If the nitrogen leaching risk assessment procedure completed in accordance with i above, demonstrates that the land application site has a high nitrogen leaching potential and no growing cover crop, then application of manure shall be limited to fifty

pounds per acre as applied nitrogen calculated at the time of application (by adding ammonia-nitrogen to one third of organic nitrogen) from June to October first.

(4) Use the current manure analysis and the relevant sections of the following tables in Part VII, C to determine the amount of manure nutrient available for crop production: Table 10 Calculating Available Nitrogen of Manure, Table 11 Nitrogen Sufficiency ranges for Corn, Soybeans, Alfalfa and Wheat, and Table 12 Sidedress N Fertilizer Rates for Corn.

(5) When using legumes as a nitrogen removal source, the maximum legume nitrogen removal must be less than or equal to one hundred and fifty pounds per acre.

h. The manure application rate for phosphorus shall be the most restrictive value (i.e., most restrictive factor for the purpose of protecting surface water quality) determined after considering the following:

(1) The application rate for phosphate applications shall be based on the following:

i. Estimated plant uptake by crops at the recommended agronomic rates (using the Ohio Agronomy Guide, OSU Bulletin 472);

ii. Soil test analysis;

iii. Subsequent phosphorus removal in plant biomass (see Part VII, C, Table 5); and

iv. Minimum runoff to waters of the State.

(2) In determining the agronomic rate for phosphate application, the owner or operator shall do the following:

i. Determine the phosphorus requirements for a realistic yield goal of planned crops and/or crop rotations (see Part VII, C, Tables 13, 14, 15, 16, and 17);

ii. Subtract phosphorus that will be added in other forms including commercial fertilizer and organic by-products; and

iii. The application rate for phosphorus shall not exceed the removal rates for a realistic yield goal of planned crops, unless following the procedures in h, (3) below.

(3) In determining how to minimize phosphorus runoff to waters of the State, the owner or operator shall do the following:

i. Prior to the land application of manure, a land application site shall be assessed with either the phosphorus index risk assessment procedure or the phosphorus soil test risk assessment procedure in Part VII, C. This risk assessment shall be used in the determination of manure application rates and the results shall be documented as required in Part VII, A, 5. Use the phosphorus index risk assessment procedure if the Bray P1 value of the soil test is over one hundred and fifty parts per million. The phosphorus index risk assessment procedure shall only be relied upon for a transitional period of time to allow the owner or operator an opportunity to find other fields or other methods to distribute nutrients from the facility in order to achieve less than one hundred and fifty parts per million Bray P1 soil test method;

ii. There shall be no multi-year phosphorus applications on fields where either the phosphorus index risk assessment procedure produces a high rating or the phosphorus soil test risk assessment procedure produces a high potential rating. There shall be no phosphorus applications on fields where either the phosphorus index risk assessment procedure produces a very high rating or the phosphorus soil test risk assessment procedure produces a very high potential rating; and

iii. Phosphate manure application rates above two hundred and fifty pounds per acre are not recommended. However, if phosphate concentrations in liquid manure exceed sixty pounds of phosphate per one thousand gallons or eighty pounds phosphate per ton for solid manure, rates higher than two hundred and fifty pounds per acre may need to be applied due to limitations of the application equipment. In no case shall manure application exceed the rates specified in Part VII, A, 4, g and Part VII, A, 4, h, (3), ii. In no case shall phosphate applications exceed five hundred pounds per acre of phosphate during one year. When phosphate applications exceed two hundred and fifty pounds per acre the following additional criteria applies:

- Phosphate applications exceeding two hundred and fifty pounds per acre in any one year shall not be applied on fields with a phosphorus soil test exceeding 100 ppm Bray P1 or equivalent, results of a phosphorus index risk assessment procedure notwithstanding.

- The manure shall be immediately injected or incorporated 3 to 5 inches deep.

- The manure shall not be applied on either frozen or snow covered ground.

- There shall be no further phosphate applications for a minimum of three years on land with a phosphorus soil test level below 40 ppm (80 pounds per acre) Bray P1 or equivalent and no additional phosphate applications for a minimum of five years on land with a phosphorus soil test level above 40 ppm (80 pounds per acre) Bray P1 or equivalent.

i. A comparison shall be made of all the manure land application requirements. The selected rate shall be documented in accordance with the record keeping requirements in Part VII, A, 5.

5. Record Keeping Requirements: At a minimum, the following records must be kept by the permittee:

a. Expected crop yields.

b. The date(s) manure is applied to each field.

c. Weather conditions at the time of application and for 24 hours prior to and following application. See Part VII, B, 2, e.

d. Test methods used to sample and analyze manure and soil.

e. Results from manure and soil sampling.

f. Explanation of the basis for determining manure application rates, as provided by Part VII, A, 4.

g. Calculations showing the total nitrogen and phosphorus to be applied to each field, including sources other than manure.

h. Total amount of nitrogen and phosphorus actually applied to each field, including documentation of calculations for the total amount applied.

i. The method used to apply the manure.

j. Date(s) of manure application equipment inspection.

B. LAND APPLICATION RESTRICTIONS (Effective beginning on the date that coverage under this permit is granted.)

1. Land application of manure shall be conducted in accordance with the following:

Table 2. Manure Application Rate Restrictions

| **Manure Application Distance Restrictions and, Where Appropriate, Rate Restrictions For the Following Items** |
|---|
| Streams, Lakes, Ponds, Watercourses, Other Surface Water, Waterways, Open Tile Line Intake Structures, or Other Conduits to Surface Waters |
| Manure shall not be applied closer than 100 feet, unless a 35-foot vegetated buffer has been established where manure application is prohibited. A mandatory 35-foot vegetated buffer must be established along fields with perennial streams regardless of setback requirement. |
| Public Drinking Water Surface Water Intakes |
| Land Application shall not take place within the emergency management zone of a public water system using surface water. Otherwise, manure shall not be applied closer than 300 feet from the edge of the field. |
| Seasonal Salmonid and Cold Water Habitats |
| Manure shall not be applied closer than 100 feet, unless a 35-foot vegetated buffer has been established where manure application is prohibited. |
| Public Drinking Water Wells |
| Land application shall not take place within a highly susceptible drinking water source protection area (as defined by Ohio EPA) for a community public water system using ground water and not within the inner management zone for all other community public water systems using ground water. |
| Land application shall not take place within the inner management zone of a drinking water source protection area or within 300 feet of a water supply well serving a transient non-community or non-community, non-transient public water system using ground water, whichever distance is greater. |
| Private Drinking Water Wells |
| For injection application and surface application followed by incorporation within 24 hours, manure shall not be applied closer than 100 feet. |
| For surface application not followed by incorporation within 24 hours, manure shall not be applied closer than 300 feet. |
| Class V Agricultural Drainage Wells, Agricultural Wellheads, or Sinkholes |
| For injection application and surface application followed by incorporation within 24 hours, manure shall not be applied closer than 100 feet. |
| For surface application not followed by incorporation within 24 hours, manure shall not be applied closer than 300 feet. |
| Springs |
| Manure shall not be applied closer than 300 feet. |
| Slope |
| For fields with a slope less than 15%, surface application can be used when yearly average soil loss is less than five tons per acre or “T”, whichever is less. |

| |
|---|
| Manure shall not be applied to cropland over 15% slope or to pasture/hay land over 20% slope unless one of the following precautions are taken:<br>a. Immediate incorporation or injection with operations done on the contour, unless the field has 80% ground cover (residue or canopy);<br>b. Applications are timed during periods of lower runoff and/or rainfall (May 20 to October 15);<br>c. Split applications are made (separated by rainfall events) with single applications not exceeding 5000 gallons per acre for liquid manure or 10 wet tons per acre for solid manure;<br>d. The field is established and managed in contour strips with alternated strips in grass or legume. |
| Stockpiling of Manure |
| Streams, Lakes, Ponds, Watercourses, Waterways, Open Tile Line Intake Structures, or Other Conduits to Surface Waters, minimum 300 feet. (Stockpiling within waterways or concentrated flow areas is prohibited.) |
| Public and Private Wells/Springs, minimum 300 feet. |
| Flooding/flood plains/floodways, prohibited. |
| Public drinking water surface intakes, minimum 1500 feet. |
| Class V agricultural drainage wells and sinkholes, minimum 300 feet. |
| Slope, 0-6% only. |

2. Timing/Site Restrictions:

   a. Prior to land applying manure, the permittee shall inspect the land application area to determine the suitability of the site for land application (considerations shall include tile location and depth, soil type, evidence of soil cracking, available water capacity of the soil, crop maturity, prior precipitation, forecasted precipitation, etc.) and document field conditions at the time of the inspection. See Part VII, A, 5. Broken tiles or blow out holes shall be repaired prior to land application.

   b. For fields with soil cracks greater than six inches deep, the soil must be tilled before the land application of liquid manure or the application must be delayed until the cracks are sealed. However, liquid manure applications may be made on tiled fields with growing crops if the application rate is less than or equal to a quarter of an inch or six thousand seven hundred gallons per acre and tile plugs are used or tile stops closed prior to application. See Part VII, B, 3 below.

   c. For fields that are prone to flooding, floodplains, or floodways, manure must be injected or incorporated within 24 hours of application. No manure application shall occur during periods of expected flooding. See USDA, NRCS Field Office Technical Guide.

   d. Land application of manure shall not cause ponding or runoff. For liquid manure applications, the land application shall not exceed the available water capacity in the upper eight inches of the soil in the application field.

   e. Land application shall not occur on saturated soils or during rain or runoff events, and shall not occur if the forecast contains a greater than fifty per cent chance of precipitation as determined in “Managing Manure Nutrients at Concentrated Animal Feeding Operations, Appendix M, United States Environmental Protection Agency, EPA-821-B-04-006, August 2004,” exceeding an amount of one-quarter inch for hydrologic soil group D soils and one-half inch for hydrologic soil group A, B, and C soils, for a period extending twenty-four hours after the start of land application. Record weather conditions in the operating record for conditions at the time of

application and for twenty-four hours prior to and following application. For determining hydrologic soil groups, refer to USDA-NRCS Engineering Field Manual, Chapter 2 – Ohio Supplement (1989), Table 2.1, pages 2-42 through 2-83.

f. If solid manure is applied on conventionally tilled bare soil, the manure shall be incorporated into the soil within two days after application on the land. This requirement does not apply to no-till fields, pasture, or fields where crops are actively growing.

g. Manure application shall not take place on fields where soil loss exceeds “T” (Tolerable Soil Loss, See USDA, NRCS Field Office Technical Guide).

3. For land application sites with subsurface tile drainage, the permittee shall visually monitor all field tile outlets before, during and after application of manure to the site and record the results of that monitoring. The permittee shall have access to or methods/devices to stop or capture subsurface drain flow. If manure reaches the subsurface drain outlet to waters of the State, the application of manure shall cease and the flow stopped or captured. If land application has caused manure laden water to be discharged from a field tile, Ohio EPA shall be notified by calling 1-800-282-9378 as soon as possible, but in no case later than 24 hours following first knowledge of the occurrence. See Part I, A, 2, d.

4. For the land application of liquid manure to sites with subsurface tile drainage, the following criteria must be followed:

   a. Application rates shall be less than or equal to half an inch or thirteen thousand gallons per acre per application event;

   b. A tool shall be used that can disrupt and/or close the preferential flow paths in the soil using horizontal fracturing, or the surface of the soil shall be tilled three to five inches deep to a seedbed condition to soak up the liquid manure and keep it out of preferential flow channels;

   c. If injection is used, manure shall only be injected deep enough to cover manure with soil. The soil shall be tilled at least three inches below the depth of injection prior to application; and

   d. For fields with growing crops or continuous no till fields where tillage is not an option, all tile outlets from the application area are to be plugged/tile stops closed prior to application.

5. Manure shall be managed in such a manner to prevent land application on frozen or snow covered ground. Every attempt shall be made by the permittee to avoid land application during the frozen or snow covered ground conditions because of lack of agronomic benefit and high risk of pollution of surface waters. As stated in Part II, failure to take appropriate action to avoid land application on frozen and/or snow covered ground is a violation of this permit and subject to enforcement. The nutrients in the manure applied on frozen and/or snow covered ground shall be included in the manure application rate calculations for the next crop.

   If practical, manure should be injected and/or incorporated within 24 hours to minimize surface manure runoff. Where manure is not injected or incorporated within 24 hours, the following frozen and/or snow covered ground restrictions are mandatory.

   Other locations for manure disposal shall be investigated prior to the land application (i.e., transfer of manure to another waste treatment or storage facility, wastewater treatment plant, rental or acquisition of a storage tank, etc.).

Stockpiling of solid manure, in accordance with this permit, shall be utilized rather than spreading on the field.

Only limited quantities of manure shall be applied to address manure storage limitations until non-frozen or non-snow covered soils are available for manure application.

Records must be maintained for all instances of application on frozen or snow covered ground that include: date, amount applied, location, acres applied to, weather and soil conditions including depth of snow cover, surface residue cover, and reason for applying manure at that time.

In addition to all of the above land application restrictions (restrictions on fields prone to flooding, not causing ponding or runoff, restrictions on saturated soils, and requirements for tiled fields), the following criteria must also be met for surface manure application on frozen or snow covered ground per application event per field per winter season:

a. The field must have greater than or equal to ninety percent surface residue cover at the time of application, and vegetation/residue shall not be completely covered by ice and/or snow at the time of application;

b. The maximum manure application rate is five thousand gallons per acre for liquid manure, ten wet tons per acre for solid manure with more than fifty percent moisture, and five wet tons per acre for solid manure with less than fifty percent moisture. Depending on soil hydrologic group and surface residue cover, the liquid manure application rate on frozen soils may need to be lowered to prevent manure ponding or runoff;

c. Manure shall not be applied on more than twenty contiguous acres. Contiguous areas for application are to be separated by a break of at least two hundred feet. Areas used for application are to be the furthest from surface waters and present the least potential for runoff;

d. Setbacks from surface waters and conduits to surface waters (including grassed waterways and surface drains) must be a minimum of two hundred feet. This setback shall also have at least 90 percent surface residue cover, and vegetation/residue shall not be completely covered by ice and/or snow at the time of application. This distance may need to be further increased due to local conditions and other setback restrictions in Part VII, B, 1;

e. For fields with slopes greater than six percent, manure shall be applied in alternating strips sixty to two hundred feet wide generally on the contour, or in the case that the field is managed in contour strips with alternative strips in grass or legume, manure shall only be applied on alternative strips. Note that the application rate shall be determined for each separate application strip area, not area of entire field;

f. Manure phosphate applications exceeding two hundred and fifty pounds per acre are prohibited.

If the permittee surface applies manure on frozen or snow covered ground, concentrated field surface drainage and tile outlets shall be visually monitored at the conclusion of the manure application, and periodically afterwards when weather is likely to produce manure runoff including when temperatures rise, snow melts, and in conjunction with rainfall, etc., until the manure has been assimilated into the field and is no longer likely to discharge into waters of the State. If the land applied manure discharges to waters of the State, then the permittee shall notify Ohio EPA within two hours of detection of the runoff event. In accordance with Part I, A of this permit, a discharge of manure to waters of the State from land application on frozen and/or snow covered ground that is not the result of a precipitation event is prohibited and a violation of the permit.

If the ammonia nitrogen level in a water quality sample is determined to be 26 mg/L or greater in the discharge at the point it enters waters of the State, then any additional surface application of manure to frozen and/or snow covered ground is prohibited on the field where the runoff event occurred. In the event that the permittee follows the permit requirements and runoff from frozen or snow covered fields discharges to waters of the State with an ammonia nitrogen content of 26 mg/L or greater in a total of three surface land application events, then surface application of manure on any frozen and/or snow covered ground is prohibited for that permittee from that point on.

In the event that a permittee fails to comply with the land application requirements for frozen or snow covered ground (including notification of discharges, monitoring and record keeping requirements) more than two times, then land application on any frozen or snow covered ground will be prohibited for that permittee upon receipt of the third notice of violation by Ohio EPA.

In addition to the visual monitoring and reporting requirements stated above, the permittee shall collect representative grab samples from discharges of land applied manure into waters of the State at the point that the discharge enters waters of the State (i.e., concentrated field surface runoff or field tile outlet discharge prior to entrance to surface water) and have the sample analyzed for, at a minimum, the following parameter:

00610 – Nitrogen, Ammonia (NH3) – mg/L

The permittee shall: (a) collect the sample within 30 minutes of the first knowledge of the discharge; or (b) if the sampling in that period is inappropriate due to dangerous weather conditions, collect the sample as soon as possible after suitable conditions occur, and document the reason for delay.

The permittee shall report the results of the discharge sample(s) to Ohio EPA, Central Office, Division of Surface Water, within 14 days of occurrence. The report shall, at a minimum, contain the sample results, describe the reason for the discharge, the location, estimate of quantity and duration of the discharge, and duration of the precipitation leading up to the event, as well as any measures taken to clean up and eliminate the discharge and required land application records stated above. Laboratory results not available at the time of the report submittal shall be submitted to Ohio EPA within five days of receipt.

6. The permittee is responsible for complying with this permit for land application activities conducted on each site where the permittee, or anyone employed by the permittee, owns, operates, or land applies manure generated from the CAFO or determines timing and amount of manure to be applied on fields not otherwise owned, rented, or leased by the CAFO.

C. Tables and Procedures for Manure Application Rate Determination

Note: Much of the information contained in this section is consistent with ODA rule in OAC 901:10-2-14 and associated appendices.

Table 3. Soils Prone to Flooding

| Soils Prone to Flooding | Months | Comment | Soils Prone to Flooding | Months | Comment |
|---|---|---|---|---|---|
| Abscota Variant | Feb-Jun | | Medway Variant | Nov-May | |
| Adrian | Nov-May | | Medway, limestone substratum | Nov-Dec | |
| Aetna | Dec-Jun | | Melvin | Sep-May | Frequently flooded, long |

| Soils Prone to Flooding | Months | Comment | Soils Prone to Flooding | Months | Comment |
|---|---|---|---|---|---|
| | | | | | duration |
| Algansee | Nov-May | | Melvin | Dec-May | |
| Algiers | Dec-Jun | Frequently flooded | Mentor | Jan-Dec | |
| Alluvial land | Nov-Dec | Occasionally flooded | Millgrove | Nov-Jun | |
| Alluvial land | Jan-Dec | Long duration | Montgomery | Nov-May | |
| Ashton | Dec-May | Very long duration | Moshannon | Dec-May | |
| Beaucoup | Mar-Jun | | Muskego | Nov-May | |
| Bonnie | Oct-Jun | | Newark | Dec-Apr | |
| Brookston | Dec-May | | Newark Variant | Jan-Apr | |
| Carlisle | Nov-May | | Nolin | Feb-May | |
| Ceresco | Mar-May | | Nolin Variant | Feb-Apr | |
| Chagrin | Nov-May | | Olentangy | Nov-Dec | |
| Chavies | Nov-Mar | | Orrville | Nov-May | |
| Clifty | Nov-May | | Otego | Nov-Dec | |
| Coblen | Nov-Jun | | Papakating | Nov-Jun | |
| Cohoctah | Nov-Apr | | Patton | Jan-Dec | |
| Cuba | Jan-May | | Peoga | Jan-Dec | |
| Defiance | Jan-May | | Pewamo | Mar-Apr | |
| Edwards | Sep-May | | Philo | Dec-May | |
| Eel | Oct-Jun | | Piopolis | Mar-Jun | |
| Eel Variant | Jan-May | | Pope | Nov-Apr | |
| Elkinsville | Jan-Dec | | Rockmill | Sep-Jun | |
| Euclid | Dec-Jun | | Romeo | Mar-Jun | |
| Fitchville | Dec-Jun | | Ross | Nov-Jun | |
| Flatrock | Dec-Apr | | Rossburg | Nov-Jun | |
| Flatrock, limestone substratum | Nov-Apr | | Sarahsville | Dec-May | |
| Fluvaquents | Nov-Jun | | Saranac | Nov-May | |
| Genesee | Oct-May | | Scioto | Nov-Jun | |
| Genesee Variant | Jan-May | | Sebring | Nov-Jun | Occasionally flooded |
| Gessie | Oct-May | | Senecaville | Dec-Apr | |
| Glendora | Jan-Dec | | Shoals | Oct-Jun | |
| Grigsby | Dec-Apr | | Shoals Variant | Nov-May | Used in Miami, Putnam, and Richland Counties |
| Hackers | Jan-Apr | | Shoals Variant | Oct-Jun | Used in Champaign County |
| Harrod | Nov-Jun | | Shoals, Till Substratum | Nov-Dec | |
| Hartshorn | Nov-May | | Skidmore | Dec-May | |
| Haymond | Dec-May | | Sligo | Mar-Apr | |
| Holly | Sep-May | Frequently flooded, very long duration | Sloan | Nov-Jun | |
| Holly | Nov-May | | Sloan, Till Substratum | Nov-Dec | |
| Holton | Dec-Jun | | Stanhope | Nov-Dec | |
| Huntington | Dec-May | | Stendal | Jan-May | |
| Joliet | Apr-Jun | | Stone | Nov-Jun | |
| Jules | Mar-Jun | | Stonelick | Nov-Jun | |
| Kerston | Mar-May | | Stringley | Nov-Jun | |
| Killbuck | Jan-Dec | | Taggart | Jan-Dec | |
| Kinn | Dec-Apr | | Tioga | Nov-May | |
| Knoxdale | Dec-Apr | | Tioga Variant | Jan-Apr | |
| Kyger | Nov-May | | Toledo | Nov-May | |
| Landes | Jan-Jun | | Tremont | Jan-Dec | |
| Landes Variant | Nov-Jun | | Wabash | Nov-May | |
| Lanier | Nov-Jun | | Wabasha | Sep-Jun | |
| Latty | Jan-May | | Wakeland | Jan-May | |

| Soils Prone to Flooding | Months | Comment | Soils Prone to Flooding | Months | Comment |
|---|---|---|---|---|---|
| Lenawee | Mar-May | | Wallkill | Sep-Jun | |
| Lindside | Dec-Apr | | Wappinger | Jan-Dec | |
| Linwood | Nov-Jun | | Warsaw Variant | Jan-May | |
| Lobdell | Jan-Apr | Frequently flooded | Wayland | Nov-Jun | |
| Lobdell | Nov-Apr | | Wick | Oct-Jun | |
| Martinsville | Jan-Apr | | Wilbur | Oct-Jun | |
| Martisco | Mar-Jun | | Willette | Nov-Dec | |
| McGary Variant | Jan-Dec | | Seperick | Nov-Jun | |
| Medway | Nov-Jun | | Zipp | Dec-May | |

## Available Water Capacity (AWC)

This table shall be used to determine the AWC at the time of application and the liquid volume in gallons that can be applied not to exceed the AWC. To determine the AWC in the upper 8 inches use a soil probe or similar device to evaluate the soils to a depth of 8 inches. For land application, liquid manure application may also be calculated by converting acres per inch to gallons per acre. This conversion is based on the following formula: 1 acre – inch equals 27,156 gallons per acre.

Table 4. Available Water Capacity

| Available Moisture in the Soil | Sands, Loamy Sands | Sandy Loam, Fine Sandy Loam | Very Fine Sandy Loam, Loam, Silt Loam, Silty Clay Loam | Sandy Clay, Silty Clay, Clay, Fine & Very Fine Textured Soils |
|---|---|---|---|---|
| <25% Soils Moisture | Dry, loose and single-grained; flows through fingers. | Dry and loose; flows through fingers. | Powdery dry; in some places slightly crushed but breaks down easily into powder. | Hard, baked and cracked; has loose crumbs on surface in some places. |
| Amount to Reach AWC | 20,000 gal/ac | 27,000 gal/acre | 40,000 gal/acre | 27,000 gal/acre |
| 25-50% or Less Soil Moisture | Appears to be dry; does not form a ball under pressure. | Appears to be dry; does not form a ball under pressure. | Somewhat crumbly but holds together under pressure. | Somewhat pliable; balls under pressure. |
| Amount to Reach AWC | 15,000 gal/acre | 20,000 gal/acre | 30,000 gal/acre | 20,000 gal/acre |
| 50-75% Soil Moisture | Appears to be dry; does not form a ball under pressure. | Balls under pressure but seldom holds together. | Forms a ball under pressure; somewhat plastic; slicks slightly under pressure. | Forms a ball; ribbons out between thumb and forefinger. |
| Amount to Reach AWC | 10,000 gal/acre | 13,000 gal/acre | 20,000 gal/acre | 13,000 gal/acre |
| 75% to Field Capacity | Sticks together slightly; may form a weak ball under pressure. | Forms a weak ball that breaks easily, does not stick. | Forms ball; very pliable; slicks readily if relatively high in clay. | Ribbons out between fingers easily; has a slick feeling. |
| Amount to Reach AWC | 5,000 gal/acre | 7,000 gal/acre | 11,000 gal/acre | 7,000 gal/acre |
| 100% Field Capacity | On squeezing, no free water appears on soil, but wet outline of ball on hand. | On squeezing, no free water appears on soil, but wet outline of ball on hand. | On squeezing, no free water appears on soil, but wet outline of ball on hand. | On squeezing, no free water appears on soil, but wet outline of ball on hand. |
| Above Field Capacity | Free water appears when soil is bounced in hand. | Free water is released with kneading. | Free water can be squeezed out. | Puddles; free water forms on surface. |

NOTE: Liquid manure applications to tiled fields must be less than or equal to 13,576 gal/acre.

## Table 5. Nutrients Removed in Harvested Portions of Crops

| Crop (Yield) | Nutrients Removed For Given Yields[a] | | | Nutrients Removed for Unit Yields[b] | |
|---|---|---|---|---|---|
| | N | $P_2O_5$ | $K_2O$ | $P_2O_5$ | $K_2O$ |
| | Pound/Acre | | | Pound/Bushel or Ton | |
| Alfalfa (6 T) | 340[c] | 80 | 360 | 13.3 lb/T | 60 lb/T |
| Corn (150 Bu) | | | | | |
| Grain | 135 | 55 | 40 | 0.37 lb/bu | 0.27 lb/bu |
| Stover | 100 | 25 | 160 | | |
| Corn-Silage (26 T) | 235 | 80 | 235 | 3.1 lb/T | 9.0 lb/T |
| Grass – Cool season (3.5 T), Tall grasses and/or Forage legumes (established) | 140 | 45 | 175 | 13.0 lb/T | 60.0 lb/T |
| Oats (100 Bu) | | | | | |
| Grain | 65 | 25 | 20 | 0.25 lb/bu | 0.20 ib/bu |
| Straw | 35 | 15 | 100 | 0.15 lb/bu | 1.0 lb/bu |
| Sorgum-grain (7,600 lb) | | | | | |
| Grain | 105 | 30 | 30 | 0.39 lb/100 lb | 0.39 lb/100 lb |
| Stover | 80 | 50 | 230 | | |
| Soybean (50 Bu) | 190[c] | 40 | 70 | 0.80 lb/bu | 1.4 lb/bu |
| Sugar Beets – roots (25 T) | 100 | 50 | 250 | 2.0 lb/T | 10.0 lb/T |
| Tobacco – Burley and Cigar filler | | | | | |
| Leaf (3000 lb) | 105 | 25 | 185 | | |
| Stems and Suckers (2000 lb) | 55 | 15 | 65 | | |
| Leaves and Stalks | | | | 1.3 lb/100 lb | 8.3 lb/100 lb |
| Wheat (55 Bu) | | | | | |
| Grain | 70 | 35 | 20 | 0.64 lb/bu | 0.36 lb/bu |
| Straw | 30 | 5 | 50 | 0.90 lb/bu | 0.91 lb/bu |

[a]Source: National Plant Food Institute and others.
[b]Source: Ohio Agronomy Guide, 12th Edition.
[c]Inculated legumes fix nitrogen from the air.

## Table 6. Nitrogen Rates[a] for Corn Based on Yield Potential

| | Corn Yield Potential (bu/acre) | | | | | |
|---|---|---|---|---|---|---|
| Previous Crop | 80 | 100 | 120 | 140 | 160 | 180+ |
| Corn, small grains | 80 | 110 | 140 | 160 | 190 | 220 |

[a]N fertilizer rates are based on the following relationship:
N (lb/acre) = -27 + (1.36 * yield potential) – N credit or 110 + [1.36 * (yield potential – 100)] – N credit

## Table 7. Nitrogen Rates for Wheat Based on Yield Potential

| Yield Potential (bu/acre) | Nitrogen Rate (Pounds N to Apply/acre) |
|---|---|
| 50 | 40 |
| 70 | 75 |
| 90+ | 110 |

1. N rate is based on the following relationship:
N (lb/acre) = 40 + [1.75 * (yield potential – 50)]
2. No nitrogen credits are made based on previous crop.

Table 8. Residual Nitrogen Credits Based on Previous Crop

| Previous Crop | Nitrogen Credits |
|---|---|
| | Pounds of N |
| Corn, small grains | 0 |
| Soybeans | 30 |
| Grass sod | 40 |
| Established forage legume | |
| Average stand (3 plants/ft$^2$) | [b] |
| Good stand (5 plants/ft$^2$) | [b] |
| Annual legume cover crop | 30 |

[b]N credits for established forage legume = 40 + 20 * (plants/to maximum of 140/ft$^2$)

## Ohio Nitrogen Leaching Assessment Procedure

Soils are classified as having a high, medium or low nitrogen leaching potential with relative index ratings from 0 - 10+ for their potential to leach nitrates below the root zone. The leaching potential is rated as high, medium or low by combing the soil's hydrologic soil grouping (A, B, C or D), the local county's annual rainfall, and the local county's season rainfall (October 1 to March 1).

To determine the soil's nitrogen leaching potential, use the following procedure:

1. Determine the soils hydrological soil grouping – A, B, C or D. For this information, refer to USDA-NRCS Engineering Field Manual, Chapter 2 – Ohio Supplement (1989), Table 2.1, pages 2-42 through 2-83.

2. Determine the local county's annual rainfall and the local county's season rainfall (October 1 to March 1). For this information, refer to USDA-NRCS Engineering Field Manual, Chapter 2 – Ohio Supplement (1989), Exhibit OH2-3, Supplement pages 1 through 4 and USDA-NRCS Engineering Field Manual, Chapter 2 – Ohio Supplement (1989), Exhibit OH2-1 and Sheets 1 though 3.

3. Refer to Table 9 below for the respective county to determine the soils relative leaching index rating.

(a) Soils with a rating of 0-2 have a low potential to leach nitrates below the root zone.
(b) Soils with a rating of 3-10 have a medium potential to leach nitrates below the root zone.
(c) Soils with a rating of 10+ have a high potential to leach nitrates below the root zone.
(d) All soils with systematic subsurface drains (tile) are rated high potential.

Table 9. Ohio (By County) Leaching Index Ratings for Soils by Hydrologic Groups (A, B, C, D)

| County | A | B | C | D | County | A | B | C | D |
|---|---|---|---|---|---|---|---|---|---|
| Adams | 15 | 10 | 6 | 4 | Licking | 15 | 8 | 6 | 4 |
| Allen | 10 | 6 | 4 | 2 | Logan | 15 | 8 | 4 | 4 |
| Ashland | 15 | 8 | 4 | 4 | Lorain | 15 | 8 | 4 | 2 |
| Ashtabula | 15 | 10 | 4 | 4 | Lucas | 10 | 6 | 4 | 2 |
| Athens | 15 | 10 | 6 | 4 | Madison | 15 | 8 | 6 | 4 |
| Auglaize | 10 | 8 | 4 | 2 | Mahoning | 15 | 8 | 4 | 4 |
| Belmont | 15 | 10 | 6 | 4 | Marion | 15 | 8 | 4 | 4 |
| Brown | 15 | 10 | 6 | 4 | Median | 15 | 8 | 4 | 4 |
| Butler | 15 | 10 | 6 | 4 | Meigs | 15 | 10 | 6 | 4 |
| Carroll | 15 | 8 | 4 | 4 | Mercer | 10 | 8 | 4 | 2 |
| Champaign | 15 | 8 | 4 | 4 | Miami | 15 | 8 | 4 | 4 |
| Clark | 15 | 8 | 6 | 4 | Monroe | 15 | 10 | 6 | 4 |
| Clermont | 15 | 10 | 6 | 4 | Montgomery | 15 | 10 | 6 | 4 |
| Clinton | 15 | 10 | 6 | 4 | Morgan | 15 | 8 | 6 | 4 |
| Columbiana | 15 | 8 | 4 | 4 | Morrow | 15 | 8 | 4 | 4 |

| County | A | B | C | D | County | A | B | C | D |
|---|---|---|---|---|---|---|---|---|---|
| Coshocton | 15 | 8 | 4 | 4 | Muskingum | 15 | 8 | 6 | 4 |
| Crawford | 15 | 8 | 4 | 2 | Noble | 15 | 8 | 6 | 4 |
| Cuyahoga | 15 | 8 | 4 | 4 | Ottawa | 10 | 6 | 4 | 2 |
| Darke | 15 | 8 | 4 | 4 | Paulding | 10 | 6 | 4 | 2 |
| Defiance | 10 | 6 | 4 | 2 | Perry | 15 | 8 | 6 | 4 |
| Delaware | 15 | 8 | 4 | 4 | Pickaway | 15 | 8 | 6 | 4 |
| Erie | 10 | 8 | 4 | 2 | Pike | 15 | 10 | 6 | 4 |
| Fairfield | 15 | 8 | 6 | 4 | Portage | 15 | 8 | 4 | 4 |
| Fayette | 15 | 10 | 6 | 4 | Preble | 15 | 10 | 6 | 4 |
| Franklin | 15 | 8 | 6 | 4 | Putnam | 10 | 6 | 4 | 2 |
| Fulton | 10 | 6 | 4 | 2 | Richland | 15 | 8 | 4 | 4 |
| Gallia | 15 | 10 | 6 | 4 | Ross | 15 | 10 | 6 | 4 |
| Geauga | 15 | 10 | 4 | 4 | Sandusky | 10 | 6 | 4 | 2 |
| Greene | 15 | 10 | 6 | 4 | Scioto | 15 | 10 | 6 | 4 |
| Guernsey | 15 | 8 | 6 | 4 | Seneca | 10 | 6 | 4 | 2 |
| Hamilton | 15 | 10 | 6 | 4 | Shelby | 15 | 8 | 4 | 4 |
| Hancock | 10 | 6 | 4 | 2 | Stark | 15 | 8 | 4 | 4 |
| Hardin | 10 | 8 | 4 | 2 | Summit | 15 | 8 | 4 | 4 |
| Harrison | 15 | 8 | 6 | 4 | Trumbull | 15 | 8 | 4 | 4 |
| Henry | 10 | 6 | 4 | 2 | Tuscarawas | 15 | 8 | 4 | 4 |
| Highland | 15 | 10 | 6 | 4 | Union | 15 | 8 | 4 | 4 |
| Hocking | 15 | 10 | 6 | 4 | Van Wert | 10 | 6 | 4 | 2 |
| Holmes | 15 | 8 | 4 | 4 | Vinton | 15 | 10 | 6 | 4 |
| Huron | 10 | 8 | 4 | 2 | Warren | 15 | 10 | 6 | 4 |
| Jackson | 15 | 10 | 6 | 4 | Washington | 15 | 10 | 6 | 4 |
| Jefferson | 15 | 8 | 6 | 4 | Wayne | 15 | 8 | 4 | 4 |
| Knox | 15 | 8 | 4 | 4 | Williams | 10 | 6 | 4 | 2 |
| Lake | 15 | 10 | 4 | 4 | Wood | 10 | 6 | 4 | 2 |
| Lawrence | 15 | 10 | 6 | 4 | Wyandot | 10 | 8 | 4 | 2 |

## Calculating Available Nitrogen of Manure[1]

Use the following table to calculate available nitrogen based on time of year and type of application. Determine available nitrogen by multiplying the percent available for ammonia N and organic N and adding them together (i.e., 0.5 * $NH_4N$ + 0.33 * Organic N).

Table 10. Available Nitrogen

| Manure Applied | Manure Available Nitrogen | Poultry Manure Available Nitrogen | Available Nitrogen % | | Time of Application | Days Until Incorporation[2] |
|---|---|---|---|---|---|---|
| Tons | Pounds | Pounds | $NH_4$ | Organic | Date | Days |
| | | | 50 | 33 | Nov-Feb | <5 |
| | | | 25 | 33 | Nov-Feb | >3 |
| | | | 50 | 33 | Mar-Apr | <3 |
| | | | 25 | 33 | Mar-Apr | >3 |
| | | | 75 | 33 | Apr-Jun | <1 |
| | | | 25 | 33 | Apr-Jun | >1 |
| | | | 75 | 15 | Jul-Aug | <1 |
| | | | 25 | 15 | Jul-Aug | >1 |
| | | | 25 | 33 | Sep-Oct | <1 |
| | | | 15 | 33 | Sep-Oct | >1 |

[1]The calculations are for all animal manures. It is assumed that 50% of the organic N in poultry manure is converted to $NH_4$ rapidly and is therefore included in the $NH_4$ column for calculating available N.
[2]Incorporation is the mixing of manure and soil in the tillage layer. Disking is usually enough tillage for conserving N availability.

Table 11. Nutrient Sufficiency Ranges for Corn, Soybeans, Alfalfa and Wheat

| Element | Corn | Soybeans | Alfalfa | Wheat |
|---|---|---|---|---|
| | Ear leaf sampled at initial silking | Upper fully developed leaf sampled prior to initial flowering | Top 6 inches sampled prior to initial flowering | Upper leaves sampled prior to initial bloom |
| | Percent (%) | | | |
| Nitrogen | 2.90-3.50 | 4.25-5.50 | 3.76-5.50 | 2.59-4.00 |
| Phosphorus | 0.30-0.50 | 0.30-0.50 | 0.26-0.70 | 0.21-0.50 |
| Potassium, | 1.91-2.50 | 2.01-2.50 | 2.01-3.50 | 1.51-3.00 |
| Calcium | 0.21-1.00 | 0.36-2.00 | 1.76-3.00 | 0.21-1.00 |
| Magnesium | 0.16-0.60 | 0.26-1.00 | 0.31-1.00 | 0.16-1.00 |
| Sulfur | 0.16-0.50 | 0.21-0.40 | 0.31-0.50 | 0.21-0.40 |
| | Parts Per Million (ppm) | | | |
| Manganese | 20-150 | 21-100 | 31-100 | 16-200 |
| Iron | 21-250 | 51-350 | 31-250 | 11-300 |
| Boron | 4-25 | 21-55 | 31-80 | 6-40 |
| Copper | 6-20 | 10-30 | 11-30 | 6-50 |
| Zinc | 20-70 | 21-50 | 21-70 | 21-70 |
| Molybdenum | - | 1.0-5.0 | 1.0-5.0 | - |

Original Source: M.L. Vitosh (Michigan State University), J.W. Johnson (The Ohio State University), and D.B. Mengel (Purdue University) (1995). Tri-State Fertilizer Recommendations for Corn, Soybeans, Wheat and Alfalfa. Bulletin E-2567. East Lansing Michigan; Michigan State University.

## Sidedress Nitrogen Fertilizer Rates for Corn, Based on a Presidedress Nitrate Soil Test at the 4 to 6 Leaf Stage

Instructions: To effectively use the presidedress nitrate soil test, soil samples should be collected when the corn is in the 4 to 6 lead stage, or 6 to 12 inches tall. Where manure or fertilizer has been broadcast, sampling procedures consist of taking a composite soil sample of 20-25 soil cores at random throughout the sampling area. The cores should be collected to a depth of 12 inches.

Table 12. Sidedress Nitrogen Fertilizer Rates for Corn

| Soil Nitrate Level | Corn Yield Potential (bu/acre) | | | | | |
|---|---|---|---|---|---|---|
| | 80 | 100 | 120 | 140 | 160 | 180 |
| ppm $NO_3$-N | Pounds Additional Fertilizer N To Apply Per Acre | | | | | |
| 0-10 | 80 | 110 | 140 | 160 | 190 | 220 |
| 11-15 | 50 | 80 | 110 | 140 | 160 | 190 |
| 16-20 | 30 | 60 | 90 | 120 | 140 | 170 |
| 21-25 | 0 | 10 | 40 | 60 | 90 | 120 |
| >25 | 0 | 0 | 0 | 0 | 0 | 0 |

Table 13. Phosphate ($P_2O_5$) Rate for Corn

| Soil Test | Yield Potential (bu/acre) | | | | |
|---|---|---|---|---|---|
| | 100 | 120 | 140 | 160 | 180 |
| ppm (lb/acre) | Pounds $P_2O_5$ /acre | | | | |
| 5 (10) | 85 | 95 | 100 | 110 | 115 |
| 10 (20) | 60 | 70 | 75 | 85 | 90 |
| 15-30 (30-60) | 35 | 45 | 50 | 60 | 65 |
| 35 (70) | 20 | 20 | 25 | 30 | 35 |
| 40 (80) | 0 | 0 | 0 | 0 | 0 |

## Table 14. Phosphate ($P_2O_5$) Rate for Corn Silage

| Soil Test | Yield Potential (tons/acre) | | | | |
|---|---|---|---|---|---|
| | 20 | 22 | 24 | 26 | 28 |
| ppm (lb/acre) | Pounds $P_2O_5$ /acre | | | | |
| 5 (10) | 115 | 125 | 130 | 135 | 140 |
| 10 (20) | 90 | 100 | 105 | 110 | 115 |
| 15-30 (30-60) | 65 | 75 | 80 | 85 | 90 |
| 35 (70) | 35 | 40 | 40 | 45 | 45 |
| 40 (80) | 0 | 0 | 0 | 0 | 0 |

## Table 15. Phosphate ($P_2O_5$) Rate for Soybeans

| Soil Test | Yield Potential (bu/acre) | | | | |
|---|---|---|---|---|---|
| | 30 | 40 | 50 | 60 | 70 |
| ppm (lb/acre) | Pounds $P_2O_5$ /acre | | | | |
| 5 (10) | 75 | 80 | 90 | 100 | 105 |
| 10 (20) | 50 | 55 | 65 | 75 | 80 |
| 15-30 (30-60) | 25 | 30 | 40 | 50 | 55 |
| 35 (70) | 10 | 15 | 25 | 25 | 30 |
| 40 (80) | 0 | 0 | 0 | 0 | 0 |

## Table 16. Phosphate ($P_2O_5$) Rate for Wheat

| Soil Test | Yield Potential (bu/acre) | | | | |
|---|---|---|---|---|---|
| | 50 | 60 | 70 | 80 | 90 |
| ppm (lb/acre) | Pounds $P_2O_5$ /acre | | | | |
| 5 (10) | 80 | 90 | 95 | 100 | 105 |
| 10 (20) | 55 | 65 | 70 | 75 | 80 |
| 15-30 (30-60) | 30 | 40 | 45 | 50 | 55 |
| 35 (70) | 15 | 20 | 20 | 25 | 30 |
| 40 (80) | 0 | 0 | 0 | 0 | 0 |

## Table 17. Phosphate ($P_2O_5$) Rate for Alfalfa

| Soil Test | Yield Potential (tons/acre) | | | | |
|---|---|---|---|---|---|
| | 5 | 6 | 7 | 8 | 9 |
| ppm (lb/acre) | Pounds $P_2O_5$ /acre | | | | |
| 5 (10) | 115 | 130 | 140 | 185 | 165 |
| 10 (20) | 90 | 105 | 115 | 130 | 140 |
| 15-30 (30-60) | 65 | 80 | 90 | 105 | 115 |
| 35 (70) | 35 | 40 | 45 | 50 | 60 |
| 40 (80) | 0 | 0 | 0 | 0 | 0 |

## Phosphorus Index (P Index) Risk Assessment Procedure

The P Index is a procedure that combines well-established factors that influence the runoff of phosphorus to surface waters. Each of the factors is evaluated based on site-specific data and weighted according to its overall effect on phosphorus transport. Each of the site subvalues are added together to establish an overall site rating of low, moderate, high, or very high risk.

In most cases the use of the P Index will allow higher rates of phosphorus application than the Phosphorus Soil Test Risk Assessment Procedure. The use of the P Index should be viewed as a continuous measure until other alternatives can be developed to utilize excess phosphorus produced on the farm.

Purpose:
The P Index is a planning tool designed to help identify fields or areas of fields on a farm that have a higher or lower risk of phosphorus runoff from manure or other organic materials. Based on the risk assessment the appropriate land treatment and nutrient application treatments can be planned to minimize phosphorus transport from the site.

Procedure:
Use the P Index Assessment Procedure Worksheet to determine the site's overall P Index. Use the following guidance to determine each of the site's subvalues. The subvalues are added together to determine the overall site P Index. The worksheet can be photocopied as needed. A "Field Summary Worksheet" is also available with this procedure to record a series of site/field values for a given farm. It can be photocopied as needed.

1. SOIL EROSION – Sheet and rill erosion as measured by the Revised Universal Soil Loss Equation (RUSLE) [USDA-NRCS (2001) National Soil Survey handbook, Section 618.55] or Wind Erosion Prediction Procedure (where wind erosion is the primary concern) [USDA-NRCS (2001) National Soil Survey handbook, Section 618.72]. Determine the predicted soil loss and multiply by (1) to determine the "soil loss" site subvalue.

2. CONNECTIVITY TO WATER – Defines the vulnerability of P to be transferred from the site to a perennial stream or water body. The more closely connected the runoff is from the field via concentrated flow (from a defined grassed waterway or surface drain) to a perennial stream or water body the higher the vulnerability of P transport. To determine the "connectivity to water" site subfactor ask the question: Does concentrated flow (via a defined waterway, tile inlet, or surface drain) leave the site? Read the value definitions to determine the site's "connectivity to water" subvalue.

3. RUNOFF CLASS – This represents the effect of the Hydrologic Soil Group (A, B, C, D) combined with the effect of slope. This factor represents the site's runoff vulnerability. Use the table below to determine the runoff class. The runoff class is the site's subvalue.

Table 18. Runoff Class Matrix – Phosphorus Index Values

| Slope Range | Hydrologic Soil Group | | | |
|---|---|---|---|---|
| | A | B | C | D |
| <1% | 0 | 1 | 3 | 6 |
| 1-3% | 1 | 2 | 4 | 7 |
| 4-6% | 2 | 3 | 5 | 8 |
| 7-10% | 3 | 5 | 7 | 10 |
| 11-15% | 4 | 6 | 9 | 12 |
| >15% | 6 | 8 | 11 | 15 |

4. SOIL "P" TEST (BRAY-KURTZ P1) – The soil test procedure using the Bray P1 extraction, or other extraction test calibrated to Bray P1, that provides an index of plant available P expressed in either ppm or lbs/acre (ppm x 2 = lbs/acre). Determine the Bray P1 value in ppm and multiply the ppm by (0.07) to determine the soil P test site subvalue.

5. FERTILIZER $P_2O_5$ APPLICATION RATE – The amount of manufactured (commercial) phosphate fertilizer applied expressed in lbs/acre of $P_2O_5$. To determine the site's subvalue multiply the year's P fertilizer application rate by (0.05).

6. FERTILIZER $P_2O_5$ APPLICATION METHOD – Defines if the phosphate ($P_2O_5$) fertilizer is actually incorporated into the soil and the time interval between application and incorporation or if the fertilizer is applied over a given amount of crop residue. Incorporation or injection with the fertilizer application equipment or using a tillage tool operated a minimum of 3-4 inches deep to incorporate the $P_2O_5$ fertilizer. To determine the site's subvalue select the description that most closely describes the method of application. The value with that description is the site's subvalue.

7. ORGANIC $P_2O_5$ APPLICATION RATE – The amount of phosphate applied (expressed in lbs/acre of $P_2O_5$) from manure, sludge, or other bio-solids. To determine the site's subvalue multiply the year's P fertilizer application rate by (0.06).

8. ORGANIC $P_2O_5$ APPLICATION METHOD – Defines if the phosphate ($P_2O_5$) from the manure, sludge, or other bio-solids is actually incorporated into the soil, the time interval between application and incorporation, or if the manure/bio-solids are applied over a given amount of crop residue. Incorporation or injection with the application equipment or by using a tillage tool operated a minimum of 3-4 inches deep to incorporate the manure, sludge, or other bio-solids. To determine the site's subvalue select the description that most closely describes the method of application. The value with that description is the site's subvalue.

9. BUFFER STRIP – Deduct 2 points if field runoff flows via sheet flow through a designed filter strip – minimum 35 feet wide. For the type of buffer strip that is limited to the use of filter strips only, it is critical that sheet flow crosses the filter strip, not concentrated flow, to credit a 2 point deduction.

Table 19. Phosphorus Index Risk Assessment Procedure Worksheet

| Site Characteristic | Phosphorus Vulnerability Values | | | | |
|---|---|---|---|---|---|
| 1. Soil Erosion | Soil Loss (tons/acre/year) * 1.0 | | | | |
| 2. Connectivity to Water – Does concentrated flow (via a defined waterway, tile inlet, or surface drain) leave the site? | No, and the site is not adjacent to an intermittent or perennial stream. Value = 0 | No, but the site is adjacent to an intermittent or perennial stream. Value = 4.0 | Yes, but the site is intermittent or perennial. Value = 8.0 | Yes, and the site is adjacent to and/or the concentrated flow outlets into an intermittent stream or through a tile inlet. Value = 12.0 | Yes, and the site is adjacent to and/or the concentrated flow outlets into a perennial stream or through a tile inlet; OR outlets to a pond or lake within 1 mile. Value = 16.0 |
| 3. Runoff Class | See Runoff Class Matrix | | | | |
| 4. Soil Test Bray-Kurtz P1 ppm | Bray-Kurtz P1 (ppm) * (0.07) | | | | |
| 5. Fertilizer $P_2O_5$ Application Rate | Fertilizer $P_2O_5$ Applied (lbs/acre) * (0.05) | | | | |
| 6. Fertilizer $P_2O_5$ Application Method | 0 Applied Value = 0 | Immediate incorporation OR Applied on 80% cover Value = 0.75 | Incorporation <1 week OR Applied on 50-80% cover Value = 1.5 | Incorporation >1 week & <3 months OR Applied on 30-49% cover Value = 3.0 | No incorporation OR Incorporation >3 months OR Applied on <30% cover Value = 6.0 |

| Site Characteristic | Phosphorus Vulnerability Values | | | | |
|---|---|---|---|---|---|
| 7. Organic $P_2O_5$ Application Rate | Available – Manure/Biosolids $P_2O_5$ Applied (lbs/acre) * (0.06) | | | | |
| 8. Organic $P_2O_5$ Application Method | 0 Applied<br>Value = 0 | Immediate incorporation OR Applied on 80% cover<br>Value = 0.5 | Incorporation <1 week OR Applied on 50-80% cover<br>Value = 1.0 | Incorporation >1 week & <3 months OR Applied on 30-49% cover<br>Value = 2.0 | No incorporation OR Incorporation >3 months OR Applied on <30% cover<br>Value = 4.0 |
| Buffer Strip Factor (Deduct 2 points if field runoff flows through a designed filter strip – minimum 35 feet wide) | | | | | |
| TOTAL SITE INDEX VALUE = | | | | | |
| Field Vulnerability for Phosphorus Loss to Surface Water | | | | | |
| Phosphorus Index for Field | Generalized Interpretation of Phosphorus Index & Management | | | | |
| LOW<br>< 15 | LOW potential for P movement from the field. If farming practices are maintained at the current level there is a low probability of an adverse impact to surface waters from P loss. Manure or other biosolids can be applied to meet the recommended nitrogen for the next grass crop or nitrogen removal of the next legume crop. | | | | |
| MEDIUM<br>15-30 | MEDIUM potential for P movement from the field. The chance of organic material and nutrients getting into surface water exists. Runoff reduction practices such as buffers, setbacks, lower manure/biosolids rates, cover crops, and crop residue practices alone or in combination should be considered to reduce P loss impacts. Manure or other biosolids can be applied to meet the recommended nitrogen for the next grass crop or nitrogen removal of the next legume crop. Applications of P at the crop removal rate should be considered. | | | | |
| HIGH<br>31-45 | HIGH potential for P movement from the field and for an adverse impact on surface waters unless remedial action is taken. Runoff reduction practices such as buffers, setbacks, lower manure/biosolids rates, cover crops, and crop residue practices alone or in combination should be considered to reduce P loss impacts. Limit application of P to crop removal rates for one year. | | | | |
| VERY HIGH<br>> 45 | VERY HIGH potential for P movement from the field and an adverse impact on surface water. Remedial action is required to reduce the risk of P loss. A complete soil and water conservation system is needed. Apply no additional P. | | | | |

**Phosphorus Soil Test Risk Assessment Procedure**
**Nitrogen and Phosphorus Application Criteria for Manure**

Criteria Application to All Soil Test Levels:
1. Nitrogen application rates from manure shall be based on Total Ammonium Nitrogen content plus 1/3 of the Organic Nitrogen content calculated at time of application when applied during the summer, fall, or winter for spring planted crops. When applied in the spring for spring planted crops the nitrogen application rate can be adjusted to apply the recommended nitrogen within the $P_2O_5$, $K_2O$, and other limitations.
2. Nitrogen rates are not to exceed the succeeding crop's recommended Nitrogen for non-legume crops or the Nitrogen removal in the crop's biomass for legume crops.
3. All applications are based on current soil test results (not more than 3 years old).
4. No manufactured $P_2O_5$ applied above 40 ppm Bray P1 or equivalent test, unless recommended by appropriate industry standards or the land grant universities for specialty crops, vegetable crops, etc.
5. Manure shall be applied in accordance with the restrictions and setbacks in this permit.

Table 20. Phosphorus Soil Test Risk Assessment

| "P" Soil Test Level | Application Criteria |
|---|---|
| Bray P1 < 40 ppm<br>(<80 lbs/acre)<br>OR<br>Other equivalents (e.g., Mehlich 3) | Recommended N or $P_2O_5$.<br>Manure can be applied to meet the succeeding crop's recommended nitrogen requirements for non-legume crops or the nitrogen removal for legume recommended $P_2O_5$ but not to exceed the nitrogen needs of the succeeding crop. |
| Bray P1 40-100 ppm<br>(80-200 lbs/acre)<br>OR<br>Other equivalents (e.g., Mehlich 3) | Recommended N or $P_2O_5$ Removal whichever is less.<br>The field shall have >30% ground cover at the time of application or the manure shall be incorporated within one week. The manure can be applied to meet the succeeding crop's recommended nitrogen requirements for non-legume crops or the nitrogen removal for legume crops; or $P_2O_5$ removal (annual or multiple year applications) whichever is less. |
| Bray P1 100-150 ppm<br>(200-300 lbs/acre)<br>OR<br>Other equivalents (e.g., Mehlich 3) | Recommended N or $P_2O_5$ Removal whichever is less.<br>Manure shall be applied so as not to exceed the succeeding crop's recommended nitrogen requirements for non-legume crops or the nitrogen removal for legume crops. In addition a multiple year application of Phosphorus is authorized if the following conditions are met:<br>1. The application field has >50% ground cover at the time of application; or<br>2. The manure is incorporated into the application field within 7 days on fields with <50% cover. |
| Bray P1 > 150 ppm<br>(> 300 lbs/acre)<br>OR<br>Other equivalents (e.g., Mehlich 3) | 1. No additional $P_2O_5$ – Use P2O5 draw-down strategies; or<br>2. Shall use the Phosphorus Index Risk Assessment Procedure in Part VII, C. |

## Table 21. Most Limiting Manure Application Rates for Tiled Fields

| Select the Most Limiting Application Rate Based on the Following Criteria | | | | | |
|---|---|---|---|---|---|
| Field Situation & Time of Year | Limiting Application Rate Criteria | | | | |
| | Nitrogen | $P_2O_5$ [4] | $K_2O$ | Tons/acre Gallons/acre | Available Water Capacity Table |
| Subsurface Drained (Tiled) Fields | | | | | |
| (Apr-Jun)<br>Subsurface Drained or High N Leaching Potential | [1] Crop needs factoring N losses | Crop needs or crop removal <250 lbs/acre | Crop needs or crop removal <500 lbs/acre | 13,000 gal/acre | Upper 8” |
| (Apr-Jun)<br>Pasture >20% or Cropland >15%<br>Subsurface Drained or High N Leaching Potential | [1] Crop needs factoring N losses | Crop needs or crop removal <250 lbs/acre | Crop needs or crop removal <500 lbs/acre | [5] 10 wet tons, 5,000 gal/acre unless contoured strips or incorporated immediately | Upper 8” |
| (Jul-Sep)<br>No Growing Crop<br>Subsurface Drained or High N Leaching Potential | [2] 50 lbs/acre as applied N | Crop needs or crop removal <250 lbs/acre | Crop needs or crop removal <500 lbs/acre | 13,000 gal/acre | Upper 8” |
| (Jul-Sep)<br>With a Growing Cover Crop<br>Subsurface Drained or high N Leaching Potential | [3] Next year’s crop needs as applied N | Crop needs or crop removal <250 lbs/acre | Crop needs or crop removal <500 lbs/acre | 13,000 gal/acre | Upper 8” |
| (Jul-Sep)<br>No Growing Crop, Cropland >15%<br>Subsurface Drained or High N Leaching Potential | [2] 50 lbs/acre as applied N | Crop needs or crop removal <250 lbs/acre | Crop needs or crop removal <500 lbs/acre | 13,000 gal/acre | Upper 8” |
| (Oct-Mar)<br>Subsurface drained or High N Leaching Potential | [3] Next year’s crop needs as applied N | Crop needs or crop removal <250 lbs/acre | Crop needs or crop removal <500 lbs/acre | 13,000 gal/acre | Upper 8” |
| (Oct-Mar)<br>Pasture >20% or Cropland >15%<br>Subsurface Drained or High N Leaching Potential | [3] Next year’s crop needs as applied N | Crop needs or crop removal <250 lbs/acre | Crop needs or crop removal <500 lbs/acre | [5] 10 wet tons, 5,000 gal/acre – unless contoured strips or incorporated immediately | Upper 8” |
| Frozen or Snow-Cover<br>Subsurface Drained or High N Leaching Potential | [3] Next year’s crop needs as applied N | Crop needs or crop removal <250 lbs/acre | Crop needs or crop removal < 500 lbs/acre | [5] 10 wet tons < 50% solids, 5 wet tons > 50% solids, liquid manure 5.000 gal/acre | |

[1] Crop needs factoring N losses – Maximum total nitrogen applied to meet the succeeding crop’s recommended nitrogen requirements for non-legume crops or 150 lbs/acre nitrogen for the succeeding legume crop. Considers loss of N through application method and time of year.

[2] 50 lbs/acre as applied N – Nitrogen application limited to 50 lbs/acre based in the addition of the $NH_4$ (ammonium/ammonia) content of the manure + 1/3 of the organic nitrogen content of the manure as applied. Considers no losses due to application method or time of year.

[3] Next year’s crop needs as applied N – Maximum total nitrogen applied to meet the succeeding crop’s recommended nitrogen requirements for non-legume crops or 150 lbs/acre nitrogen for the succeeding legume crop. Considers no losses due to application method or time of year.

[4] Under special conditions and criteria the rate of $P_2O_5$ application can be increased to 500 lbs/acre (See Part VII, A, 4, h, (3), iii). Frozen or snow-covered ground and field over 100 ppm Bray P1 soil test are exempt and are always limited to applications less than or equal to 250 lbs/acre $P_2O_5$.

[5] Wet tons refers to the weight of the manure as it is applied – including solids and moisture weight.

Table 22. Most Limiting Manure Application Rates for Non-Tiled Fields

| Select the Most Limiting Application Rate Based on the Following Criteria | | | | | |
|---|---|---|---|---|---|
| Field Situation & Time of Year | Limiting Application Rate Criteria | | | | |
| | Nitrogen | $P_2O_5$ [4] | $K_2O$ | Tons/acre Gallons/acre | Available Water Capacity Table |
| Non Subsurface Drained (Tiled) Fields | | | | | |
| (Apr-Jun)<br>Not Subsurface Drained Pasture >20% or Cropland >15% | [1] Crop needs factoring N losses | Crop needs or crop removal <250 lbs/acre | Crop needs or crop removal <500 lbs/acre | [5] 10 wet tons, 5,000 gal/acre unless contoured strips or incorporated immediately | Upper 8” |
| (Jul-Sep)<br>Not Subsurface Drained | [1] Crop needs factoring N losses | Crop needs or crop removal <250 lbs/acre | Crop needs or crop removal <500 lbs/acre | | Upper 8” |
| (Jul-Sep)<br>Not Subsurface Drained Pasture >20% or Cropland >15% | [1] Crop needs factoring N losses | Crop needs or crop removal <250 lbs/acre | Crop needs or crop removal <500 lbs/acre | | Upper 8” |
| (Oct-Mar)<br>Not Subsurface Drained | [1] Crop needs factoring N losses | Crop needs or crop removal <250 lbs/acre | Crop needs or crop removal <500 lbs/acre | | Upper 8” |
| (Oct-Mar)<br>Not Subsurface Drained Pasture >20% or Cropland >15% | [1] Crop needs factoring N losses | Crop needs or crop removal <250 lbs/acre | Crop needs or crop removal <500 lbs/acre | [5] 10 wet tons, 5,000 gal/acre – unless contoured strips or incorporated immediately | Upper 8” |
| Frozen or Snow-Cover<br>Not Subsurface Drained | [1] Next year’s crop needs factoring N losses | Crop needs or crop removal <250 lbs/acre | Crop needs or crop removal < 500 lbs/acre | [5] 10 wet tons < 50% solids, 5 wet tons > 50% solids, liquid manure 5,000 gal/acre | |

[1] Crop needs factoring N losses – Maximum total nitrogen applied to meet the succeeding crop’s recommended nitrogen requirements for non-legume crops or 150 lbs/acre nitrogen for the succeeding legume crop. Considers loss of N through application method and time of year.

[4] Under special conditions and criteria the rate of $P_2O_5$ application can be increased to 500 lbs/acre (See Part VII, A, 4, h, (3), iii). Frozen or snow-covered ground and field over 100 ppm Bray P1 soil test are exempt and are always limited to applications less than or equal to 250 lbs/acre $P_2O_5$.

[5] Wet tons refers to the weight of the manure as it is applied – including solids and moisture weight.