

Town of Braintree

SOP 12 –Storage and Use of Pesticides and Fertilizers

Approved By:

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SOP 12: Storage and Use of Pesticides and Fertilizer

Introduction

The use and improper storage of pesticides, herbicides, and fertilizers can contribute to the discharge of nutrients and toxic compounds to the municipal storm drainage system and surface waters. The goal of this Standard Operating Procedure (SOP) is to provide guidance on municipal employees on proper handling and storage of pesticides, herbicides, and fertilizers to prevent the discharge of pollutants from the MS4.

Procedures

Below are procedures for the storage and use of fertilizers, pesticides, and herbicides by municipal employees. In this section, the term “pesticide” include products used as herbicides. Refer to SOP 4: Spill Response and Cleanup and SOP 17: Hazardous Materials Storage and Handling for information on and handling spills and hazardous materials.

Storage

- Pesticides and fertilizers should be stored in high, dry locations in accordance with the manufacturer’s specifications.
- Store in cool, well-ventilated, and insulated areas to protect against temperature extremes.
- Store in areas that have been constructed in accordance with local fire codes for storing flammable or combustible materials.
 - Flammable products should be stored separately from non-flammable products, preferably in a fire-proof cabinet.
 - Small quantities (less than 500 lbs. or 220 gallons) of pesticides can be stored in cabinets constructed of double-walled 18-gauge sheet metal.
 - Large quantities (greater than 500 lbs. or 220 gallons) of pesticides can be stored in a prefabricated Hazardous Material Storage building or in a purpose-built storage facility. It is not anticipated that many municipal facilities will store quantities in excess of 500 lbs. or 220 gallons of pesticides.
 - Building walls should have a two-hour fire rating and be impervious to the stored materials.
 - Floors should be watertight, impervious, and provide spill containment.
- Materials should be stored in an enclosed area or in covered, impervious containment, such as a locked cabinet. The cabinet should be located in a first story room or one that has direct access to the outdoors. Storage areas should be equipped with easily accessible spill cleanup materials and portable firefighting equipment. Regularly inspect storage areas for leaks and spills. Emergency eyewash stations and emergency drench showers should be located near the storage area.
- For pesticides, storage cabinets should be kept locked and the door to the storage area should contain a weather proof sign that warns of the existence and danger of the pesticides inside. The door should be kept locked. The sign should be visible at a distance of 25 feet and should read as follows:

DANGER
PESTICIDE STORAGE AREA
ALL UNAUTHORIZED PERSONS KEEP OUT
KEEP DOORS LOCKED WHEN NOT IN USE

The sign should be posted in both English and any other language used by maintenance workers.

- Pesticides should not be stored in the same place as ammonium nitrate fertilizer.
- Pesticides and fertilizers should be separated from other chemical storage and other flammable materials.
- Label all containers with date of purchase. Clearly label all secondary containers. Use older materials first.
- Order for delivery should be made as close to the time of use as possible to reduce the amount of chemicals stored at the facility.
- Only the amount of materials needed should be ordered to minimize excess or obsolete materials, which require storage and disposal.
- Unlabeled or unstable pesticides and fertilizers should not be left in uncontrolled locations.
- A current written inventory of all pesticides and fertilizers should be maintained at the storage site.
- Contaminated waste materials should be kept in designated containers and stored in labeled, designated, covered, and contained areas.
- Excess or obsolete pesticides/fertilizers and associated waste materials should be disposed of in accordance with the manufacturer's specification and all applicable regulations.

Use and Application of Fertilizers

- All applications of plant nutrients should comply with Massachusetts Plant Nutrient Regulations for Non-Agricultural Turf and Lawns. See Attachment 1
- All fertilizer products manufactured or distributed in the State of Massachusetts must be registered with the Department of Agricultural Resources.
- Perform soil testing before choosing a fertilizer. The quantity of available nutrients already present in the soil will determine the type and amount of fertilizer that is recommended. The soil test will also determine the soil pH, humic matter, texture, and exchangeable acidity, which will indicate whether pH adjustment is required for fertilizer to work efficiently. A soil test should be completed at each facility, as soil type can vary widely within a single community.
 - Soil tests are recommended every 3-4 years for turf and plantings (more frequently for problem or newly planted areas) and every year for soil where phosphorus-containing fertilizers are used. Soil pH tests should be conducted every year for all sites.
 - When collecting soil samples, take multiple samples for each target area at a four-inch depth; mix the samples together in a container and properly label the sample with property information and site use type. Separately sample areas that have discoloration, abnormal plant growth, or other problems. Take the sample at approximately the same time every year. If the area has been fertilized, wait eight weeks after fertilizing to test the soil to ensure nutrients have been absorbed.
- When selecting the optimal type of fertilizer to use on an area, consider the soil test results, type of turf, and type of turf use. Slow-use fertilizer should be used for turf grass.

- Calibrate application equipment regularly to ensure proper application and loading rates.
- Mix fertilizers using clean application equipment under cover in an area where accidental spills will not enter surface water or groundwater and will not contaminate the soil.
- Fertilizers shall only be applied by properly trained personnel.
- Never apply fertilizers in quantities exceeding the manufacturer's instructions. Instead, apply small amounts throughout the growing season.
- Time fertilizer application methods for maximum plant uptake, usually in the fall and spring (e.g., between April 15 and October 15). When applying at the beginning and end of planting season, take into consideration the slower uptake rate of fertilizer by plants and adjust the fertilizer application accordingly.
- Never apply fertilizer during a drought, when the soil is dry or frozen, when it is raining, or immediately before expected rain.
- Fertilizer should be applied when the ground temperature is above 55° F.
- Apply fertilizers in amounts appropriate for the type of vegetation to minimize losses to surface water and groundwater. Use the results of the soil test to determine optimal fertilizer timing and application rates.
- Where applicable, till fertilizers into the soil rather than dumping or broadcasting (proper application techniques will depend on the type of soil and vegetation).
- Do not hose down paved areas after fertilizer application if drainage will enter into an engineered storm drain system or drainage ditch.
- Limit irrigation after fertilizer application to prevent runoff (approximately ½ inch of water per application for a week following application).
- Turn off irrigation systems during periods of adequate rainfall.
- Do not over-apply fertilizer in late fall to “use it up” before winter. The effectiveness of fertilizer does not reduce when stored.
- If phosphorus fertilizer is used when re-seeding, mix the phosphorus into the root zone. Do not apply directly to the soil surface.
- Combined products such as “weed and feed,” which do not target specific problems at the appropriate time, will not be used.
- Pursuant to 330 CMR 31.05 *Limitations on the Application of Phosphorous Containing Fertilizer; Requirements for the Application of Plant Nutrients and Phosphorous Containing Fertilizer to Non-Agricultural Turf and Lawns*
 - (2) The following shall apply to Animal Manure, Fertilizer, Organic Compost, Natural Organic Fertilizer, Biosolids, Agricultural Byproducts, Digestate, or combination thereof:
 - (a) The amount of nitrogen and phosphorus must be known and accounted for;
 - (b) A Soil Test is taken prior to the initial application;
 - (c) Application of these materials shall not exceed the maintenance phosphorus rates for Non-agricultural Turf or Lawn as specified in UMass Guidelines; and
 - (d) The requirement in 330 CMR 31.05(2)(a), (b), and (c) shall not apply to:
 - 1. A single application made within a 12 month period at an application rate not to exceed 0.25lbs of P O per 1,000 square feet; or 25
 - 2. Any product used containing 0.67% or less available P O .25

(3) In addition to the requirements of 330 CMR 31.00, any application of Biosolids to Non-agricultural Turf and Lawns shall comply with the requirements of 310 CMR 32.00: Land Application of Sludge and Septage.

(4) For applications of Plant Nutrients, including Phosphorus Containing Fertilizer, to Non-agricultural Turf and Lawns, no applications shall be made:

- (a) To Frozen Soil, Snow Covered Soil, Saturated Soil, Frequently Flooded Soils, or soils when flooding is expected. An expectation of flooding includes, but is not limited to a prediction of Heavy Rain;
- (b) Within 20 feet of Surface Waters, if using a broadcast application method,
- (c) Within ten feet of Surface Waters, if using a drop spreader or rotary spreader with a deflector or a targeted spray;
- (d) Within a Zone I of a Public Water Supply Well;
- (e) Within 100 feet of Surface Waters that are used for public water supplies;
- (f) In an amount that is inconsistent with the annual recommended rate established by the UMass Guidelines for turf;
- (g) To any Impervious Surface, including parking lots, roadways, and sidewalks, by means of direct application, spills, overspray, or run-off to impervious areas;
 1. if such direct application, spills, overspray, or run-off occurs, the product material must be cleaned completely from the surface and be either:
 2. contained or disposed of legally; or
 3. applied to Non-agricultural Turf or Lawn as allowed.
- (h) For the purpose of de-icing Impervious Surfaces; or
- (i) To drought dormant, cold dormant, inactive or otherwise brown turf.

Use and Application of Pesticides and Herbicides

The State of Massachusetts has a stringent program for registration of pesticides and certification of those authorized to apply them. Once a pesticide has been approved for use by the USEPA, it must be registered by the Massachusetts Pesticide Board Subcommittee prior to being distributed, purchased, or used in Massachusetts. Pesticide classification in Massachusetts is based on the potential adverse effects the pesticide may have on humans or the environment. “Restricted Use” pesticides can only be sold by Licensed Dealers to Certified Applicators, while “State Limited Use” pesticides may be restricted to use by certain individuals or require written permission from the Department of Agricultural Resources prior to use. Legal application of pesticides must be performed by an individual licensed or certified by the Massachusetts Department of Agricultural Resources. A Commercial Applicator License is required for applying general use pesticides, and a Commercial Applicator Certification is required for applying restricted and state limited use products.

Use and Application of Pesticides

- Pesticides should only be applied by licensed or certified applicators.

- Calibrate application equipment regularly to ensure proper application and loading rates.
- Ensure that pesticide application equipment is capable of immediate shutoff in case of emergency.
- Conduct spray applications according to specific label directions and applicable local regulations.
- Never apply pesticides in quantities exceeding the manufacturer's instructions.
- Apply pesticides at the life stage when the pest is most vulnerable.
- Never apply pesticides if it is raining or immediately before expected rain unless otherwise specified on the label
- Establish setback distances from pavement, storm drains, and waterbodies, which act as buffers from pesticide application, with disease-resistant plants and minimal mowing.
- Do not apply pesticides within 100 feet of open waters or of drainage channels.
- Pesticides applied within 10 ft. of open waters or of drainage channels must be aquatically safe.
- Spot treat infected areas instead of the entire location.
- Mix pesticides and clean application equipment under cover in an area where accidental spills will not enter surface water or groundwater and will not contaminate soil.
- Do not hose down paved areas after pesticide application to a storm drain or drainage ditch.
- Recycle rinsate from equipment cleaning back into product.
- Choose the least toxic pesticide that is still capable of reducing the infestation to acceptable levels.
- Use alternatives to pesticides, such as manual weed control, biological controls, and Integrated Pest Management strategies (learn more at: <https://www.mass.gov/files/documents/2016/08/wk/ipm-kit-for-bldg-mgrs.pdf>).
- For the use of herbicides, reduce seed release of weeds by timing cutting and pesticide application at seed set. Select vegetation and landscaping that is low-maintenance in order to tolerate low levels of weeds without interfering with aesthetics.

Employee Training

- Employees who handle pesticides, fertilizers, and herbicides should be trained once per year in the spring on proper handling and storage procedures. Such training will be coordinated by the Stormwater Division.
- Employees should also be trained on stormwater pollution prevention, illicit discharge detection and elimination (IDDE) procedures, and spill and response procedures.
- If services are contracted, the contractor should be given a copy of this and any applicable SOPs to ensure compliance with MS4 regulations.

Attachments

1. 330 CMR 31 Plant Nutrient Regulations

Related Standard Operating Procedures

- SOP 4: Spill Response and Cleanup
- SOP 17: Hazardous Materials Storage and Handling

Attachment 1
330 CMR 31 Plant Nutrient
Regulations

330 CMR 31.00: PLANT NUTRIENT APPLICATION REQUIREMENTS FOR AGRICULTURAL LAND AND NON-AGRICULTURAL TURF AND LAWNS

Section

- 31.01: Purpose
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31.01: Purpose

330 CMR 31.00 establishes limitations on the application of plant nutrients to lawns and non-agricultural turf to prevent these non-point source pollutants from entering the surface and groundwater resources of the Commonwealth of Massachusetts. These state-wide limitations on plant nutrient applications will enhance the ability of municipalities to maximize the credits provided in the National Pollution Discharge Elimination System permits issued by the United States Environmental Protection Agency. 330 CMR 31.00 further ensure that plant nutrients are applied to agricultural land in an effective manner to provide sufficient nutrients for plant growth while minimizing the impacts of the nutrients on water resources in order to protect human health and the environment.

31.02: Definitions

As used throughout 330 CMR 31.00, the following terms shall have the following meanings, unless the context clearly indicates otherwise:

Agricultural Byproducts. Secondary organic materials produced from the raising of animals and crops as part of agronomic, horticultural, silvicultural, or livestock operations including, but not limited to, animal manure, liquid manure, bedding materials, plant stalks, leaves, and other vegetative matter and byproducts from the on-farm processing of fruits, vegetables, dairy and other food products.

Agricultural Land. Land used for agriculture or farming as defined in M.G.L. c. 128, § 1A.

Agricultural Operation. A business engaged in agriculture or farming as defined in M.G.L. c. 128, § 1A. For the purposes of 330 CMR 31.00, an agricultural operation shall include all operations, whether conducted on one or more parcels of land within the Commonwealth, which are owned or operated by the same person.

Agricultural Process Water. Process water that is generated as a byproduct from Agricultural Operation activities and processing of agricultural products. Agricultural Process Water includes, but is not limited to, water generated as a byproduct in a milking parlor, milkhouse, or bottling operation.

Animal Manure. Animal excrement which is produced at an agricultural operation. Animal Manure includes materials such as bedding, milking parlor process water, milkhouse process water and other materials after commingling with that excrement.

31.02: continued

Applicator. A person who applies any type of plant nutrient whether for hire or as the owner or operator of the agricultural operation or land.

Biosolids. Any thickened liquid, suspended or settled solid, or dried residue extracted from sewage at a sewage treatment plant, including domestic sewage, that:

- (a) contains recognized plant nutrients, or liquid byproducts, that meet federal and state regulations for beneficial use by land application or other methods; and
- (b) is regulated as sewage sludge and septage pursuant to 310 CMR 32.00: *Land Application of Sludge and Septage*.

Bottling Process Water. Process water that is generated with the washing and rinsing associated with the bottling of agricultural products. Bottling process water does not include process water from bottling operations not directly associated with, and located on the same property of, the agricultural operation performing the bottling, or stand alone bottling operations.

Buffer or Vegetated Buffer. A 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 from leaving the field and reaching surface waters.

Coarse Textured Soil. A soil identified by the United States Department of Agriculture as having textures of loamy fine sand, loamy sand, or sand.

Crop Nutrient Needs. The primary nutrient requirements of a crop determined as pounds of nitrogen (N), phosphorus (P₂O₅), and potassium (K₂O) required for production of a crop yield unit.

Department. The Massachusetts Department of Agricultural Resources.

Digestate. The material remaining after the anaerobic digestion process comprised of undigested solids and the liquid fraction of the input material.

Fertilizer. Commercially produced fertilizers used as soil and plant amendments, containing a guaranteed analysis of primary nutrients; does not include a product blended from organic compost or natural organic fertilizer.

Frequently Flooded Soils. A frequency class in which flooding, ponding, or saturation is likely to occur often under usual weather conditions (more than 50% chance in any year, or more than 50 times in 100 years).

Frozen Soil. Soil that is frozen at least two inches deep.

Gravelly Soil. Soil containing material that is 15% to 50%, by volume, rounded or angular rock fragments, not prominently flattened, up to three inches in diameter.

Growing Season. The part of the year during which climatic conditions allow plants to grow in an outdoor environment. This period of time may not exceed 12 months from the date of an application of Phosphorus Containing Fertilizer.

Heavy Rain. Rainfall greater than or equal to two inches in a 24 hour period and the weather forecast keyword is "likely".

Impervious Surface. Any structure, surface, or improvement that reduces or prevents absorption of storm water into land, and includes concrete, asphalt, paver blocks, gravel, decks, patios, elevated structures, and other similar structures, surfaces, or improvements.

Incorporation. The mixing of fertilizer or other materials with the surface soil using standard agricultural practices, such as tillage.

31.02: continued

In-field Stacking. The practice of stacking solid animal manure or agricultural byproducts on cropland, hayland and pasture areas to be applied at a later time to the agricultural land as plant nutrients.

Label. The display of all written, printed, or graphic matter on the immediate container or a statement accompanying a fertilizer or soil conditioner.

Lawn Patch Product. A premixed blend of grass seed, fertilizer, and mulch.

Management Unit. An area sharing common characteristics, including soil type, nutrient content, and plant type or crop produced, so that nutrients can be recommended and managed in a uniform and consistent manner.

Milkhouse Process Water. Residual milk and wash water that is generated with the normal operation of a milkhouse. Milkhouse process water does not include the process water containing large volumes of milk or contamination resulting from bulk tank failure or other operation failures, which shall not be land applied.

Natural Organic Fertilizer. A fertilizer product that is derived from either a plant or animal product containing one or more elements, other than carbon, hydrogen and oxygen, which are essential for plant growth. These materials may be subject to biological degradation processes under normal conditions of aging, rainfall, sun-curing, air drying, composting, rotting, enzymatic or anaerobic or aerobic bacterial action or any combination of those conditions. These materials shall not be mixed with synthetic materials or changed in any physical or chemical manner from the material's initial state except by manipulations such as drying, cooking, chopping, grinding, shredding, hydrolysis or pelleting.

Non-agricultural Turf or Lawn. Any non-agricultural land area that is covered by any grass species, excluding flower or vegetable gardens, pasture, hay land, trees, shrubs, turf grown on turf farms or any form of agricultural production or use.

Non-professional. Any person who applies a plant nutrient and is not for-hire or does not perform the application as part of his or her employment.

NRCS. The Natural Resources Conservation Services of the United States Department of Agriculture.

Nutrient Application Rate. The quantity of primary nutrients, expressed as total nitrogen (N), available phosphate (P_2O_5), and soluble potash (K_2O) used to supply crop or plant nutrient needs.

Nutrient Content. The percentage by weight of any primary nutrient, expressed as total nitrogen (N), available phosphate (P_2O_5), or soluble potash (K_2O), in any type or source of plant nutrients.

Operator. A person who manages and/or owns an agricultural operation.

Organic Compost. The biologically stable humus-like material derived from composting or the aerobic, thermophilic decomposition of organic matter.

Person. Any individual, partnership, corporation, firm, association, authority, trust or group, including, but not limited to, a municipality, county, the Commonwealth and its agencies, and the federal government.

Phosphorus Containing Fertilizer. Fertilizer labeled for use on lawn or non-agricultural turf in which the available phosphate content is greater than 0.67% by weight, excluding organic compost and natural organic fertilizer.

Plan or Nutrient Management Plan. A written plan to manage the amount, placement, timing, and application of plant nutrient materials in order to minimize nutrient loss or runoff and to maintain the productivity of soil when growing agricultural products.

31.02: continued

Plant Nutrient. Substance that contains one or more of the primary nutrients of nitrogen, phosphorus, or potassium, including but not limited to, animal manure, fertilizer, organic compost, natural organic fertilizer, agricultural byproducts, digestate, biosolids or combinations thereof.

Primary Nutrient. The macronutrients elements for plant growth which are total nitrogen (N), phosphorus (P), and potassium (K).

Retailer. Any person who sells fertilizer.

Renovation. The process of replacing the turf plants on a site without making changes to the soil or grade, which does not normally include total removal of existing vegetation, but may include eradication of the existing stand with non-selective herbicides or extended covering. Renovation may include the use of superficial cultivation with aeration, dethatching, overseeding or similar pieces of equipment to insure good seed to soil contact and enhance the renovation process

Saturated Soil. Soil soaked with moisture to the point that it cannot absorb any more liquid.

Snow Covered Soil. Soil covered by one inch or more of snow or by ½ inch or more of ice.

Soil Test. A technical analysis of soil conducted by a laboratory using methods and procedures recommended by the University of Massachusetts Amherst Extension as appropriate for Commonwealth soils.

Stackable Agricultural Byproduct. Agricultural byproducts material with equal or less than 60% moisture content.

Surface Waters. As defined by 314 CMR. 4.00: *Massachusetts Surface Water Quality Standards*, all waters other than groundwaters within the jurisdiction of the Commonwealth, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters and vernal pools. For the purpose of 330 CMR 31.00, Surface waters shall not include areas where the sole purpose is to grow crops, including but not limited to, interior ditches, channels, canals, irrigation ponds or tailwater recovery ponds, provided that the application of plant nutrients are done in accordance with *UMass Guidelines* for such crop growing system.

UMass. The University of Massachusetts Amherst Extension.

UMass Guidelines. The University of Massachusetts Amherst Extension published guidelines and/or materials developed by UMass for agricultural crops, Animal Manure management, Plant Nutrient use and application, and turf, which have been established by the University of Massachusetts Amherst Extension.

USDA. United States Department of Agriculture.

Waters of the Commonwealth. All waters within the jurisdiction of the Commonwealth, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters, ground waters, and vernal pools, as defined by 314 CMR 5.00: *Ground Water Discharge Permit Program*.

Zone A. The land area between the surface water source and the upper boundary of the bank; the land area within a 400 foot lateral distance from the upper boundary of the bank of a Class A surface water source, as defined in 314 CMR 4.05(3)(a): *Class A*; and the land area within a 200 foot lateral distance from the upper boundary of the bank of a tributary or associated surface water body, as defined by 310 CMR 22.00: *Drinking Water*.

31.02: continued

Zone I of a Public Water Supply Well. The protective radius required around a public water supply well or wellfield regulated by 310 CMR 22.00: *Drinking Water*. For public water system wells with approved yields of 100,000 gpd or greater, the protective radius is 400 feet. Tubular wellfields require a 250-foot protective radius. Protective radii for all other public water system wells are determined by the following equation: Zone I radius in feet = (150 x log of pumping rate in gpd) - 350. This equation is equivalent to the chart in the Guidelines and Policies for Public Water Systems. A default Zone I radius or a Zone I radius otherwise computed and determined by the Department shall be applied to transient non-community (TNC) and non-transient non-community (NTNC) wells when there is no metered rate of withdrawal or no approved pumping rate. In no case shall the Zone I radius be less than 100 feet.

31.03: Plant Nutrient Application Requirements for Agricultural Land

(1) Any Person who applies, or authorizes any Person by way of service contract or other arrangement to apply, Plant Nutrients to Agricultural Land shall:

- (a) Apply Plant Nutrients according to *UMass Guidelines*, if available;
- (b) Not apply Plant Nutrients directly to Surface Water;
- (c) Not apply Plant Nutrients to Saturated Soil unless normal operation requires activities to take place at a time when such a condition exists;
- (d) Not apply to Frequently Flooded Soils during a period when flooding is expected;
- (e) Not apply Plant Nutrients to Frozen Soil or Snow Covered Soil, except for the conditions outlined in 330 CMR 31:03(3); and
- (f) In addition to the requirements of 330 CMR 31.00, applications of Biosolids must be made in accordance with the requirements of 310 CMR 32.00: *Land Application of Sludge and Septage*.

(2) Application Setbacks.

- (a) No application of Plant Nutrients shall be made:
 1. within 100 feet of Surface Waters used for public water supplies;
 2. in a Zone I of a Public Water Supply Well;
 3. using a broadcast method either with or without Incorporation within 50 feet from Surface Waters unless a Vegetated Buffer is present, in which case a setback of 25 feet applies;
 4. by band or side dress application or Injection of Plant Nutrients within ten feet from Surface Waters; or
 5. on pastures and hayfields within ten feet from Surface Waters.
- (b) Except for the application setback in a Zone I, the setbacks in 330 CMR 31.03(2)(a) shall not apply to crop growing systems that operationally require proximity to Surface Waters, provided such applications are done in accordance with *UMass Guidelines* for such crop growing systems.
- (c) These application setbacks shall not prevent activities that are allowed as Normal Maintenance of Land in Agricultural Use, as defined by the Massachusetts Wetlands Protection Act M.G.L. c. 131, § 40 and 310 CMR 10.00: *Wetlands Protection*.

(3) Limitations on the Applications of Agricultural Byproducts or Agricultural Process Water to Frozen Soil or Snow Covered Soil.

- (a) Applications of Agricultural Byproducts and Agricultural Process Water to Frozen Soil or Snow Covered Soil shall only be made if:
 1. the Agricultural Operation has inadequate storage and anticipates exceeding the available storage capacity limit during the time of the year that Frozen Soils and Snow Covered Soils typically occur;
 2. the Agricultural Byproduct is not a Stackable Agricultural Byproduct; and
 3. there is no other reasonable management option.
- (b) All applications of Agricultural Byproduct or Agricultural Process Water to Frozen Soil or Snow Covered Soil shall:
 1. not be made to areas where slopes are greater than 7% when applying solid materials;
 2. not be made to areas where slopes are greater than 2% when applying liquid materials;

31.03: continued

3. not be made within 200 feet of Surface Waters;
 4. minimize the rates of application and available acreage used to the greatest extent practical; and
 5. not be made unless there is at least 30% crop residue or a vegetative cover present in the field receiving the application.
- (c) The restrictions set forth in 330 CMR 31.03(3)(a) shall not apply to:
1. Animal Manure deposited directly by livestock; or
 2. a livestock operation generating less than 50,000 gallons of Animal Manure or less than 270 cubic yards of solid Animal Manure, which corresponds to estimated Animal Manure production of 15 lactating dairy cows housed in a barn for 6½ months per year.
- (4) Temporary In-field Stacking of Stackable Agricultural Byproduct as a part of land application of this material is permissible throughout the year provided the following conditions are met:
- (a) Animal Manure stacked in a temporary field stockpile shall be land applied in the first spring season following the placement of the stockpile; and
 - (b) The stacks shall be constructed using *UMass Guidelines*, or if none are available, then the following conditions must be met:
 1. placed on appropriate soils, excluding Coarse Textured Soils or Gravelly Soils;
 2. at least 100 feet from any Surface Waters or, if a Vegetated Buffer is in place, at least 35 feet from Surface Waters;
 3. outside the Zone I of a Public Water Supply well;
 4. at least 200 feet from any residence not owned or leased by the Operator;
 5. outside of Frequently Flooded Soils;
 6. of shape and size that minimizes absorption of rainfall; and
 7. covered when placed in a Zone A to minimize runoff.
- (5) Should *UMass Guidelines* not be available when referenced in this 330 CMR 31.00, the applicator or operator must follow the equivalent extension service standards or standard industry practices until such time that *UMass Guidelines* become available.

31.04: Requirements for Nutrient Management Plan and Testing for Agricultural Land

- (1) Regardless of the number of acres, any Person who applies Plant Nutrients to Agricultural Land shall comply with the Plan guidance set forth within the *UMass Guidelines* for the agricultural commodity. This may include multiple *UMass Guidelines* specific to the commodity being grown. The information maintained as part of any *UMass Guideline* recommendation shall constitute the Plan for the Agricultural Operation.
- (2) In the event that *UMass Guidelines* are not available, a Plan containing the information shall be maintained by the Operator of the Agricultural Operation for all Plant Nutrient applications made to ten or more acres of Agricultural Land:
- (a) Plan identification, which shall include:
 1. Operator name and address;
 2. location of all land under the Plan;
 3. date the Plan was prepared or updated;
 4. period of time the Plan covers; and
 5. name and contact information of the Person responsible for the Plan development.
 - (b) Map or aerial photograph, which shall include:
 1. one or more maps or aerial photographs that identify the location and boundaries of fields or Management Unit;
 2. field or Management Unit number or identifier;
 3. acreage of each field or Management Unit;
 4. location of Surface Waters, Zone A, if present, and Zone I of Public Water Supply Wells, if present; and
 5. identification of the areas where Plant Nutrient applications are restricted based on setbacks set forth in 330 CMR 31.03.

31.04: continued

- (c) If applicable, an inventory of generated and stored Agricultural Byproducts and Agricultural Process Water to be land-applied must be kept. A determination of available Plant Nutrients from these sources should be based on sample analysis results of Plant Nutrient in stored Agricultural Byproducts and Agricultural Process Water or book values for Plant Nutrient content in Agricultural Byproducts and process waters as published in the *UMass Guidelines*.
- (d) Current and/or planned crop and crop rotation for each field or Management Unit.
- (e) Determination of the planned Plant Nutrient Application Rates on individual fields or Management Units, which shall be based on:
 1. Crop Nutrient Needs based on crop removal rate and yield goals;
 2. Soil Test or plant tissue test results;
 3. application of all sources of Plant Nutrients;
 4. results of phosphorus soil level assessment, if applicable;
 5. nutrient credits from previous crops and Animal Manure applications, if applicable;
 6. environmental factors such as setbacks and Buffers;
 7. *UMass Guidelines*; and
 8. the best information available at the time a Plan is prepared.
- (f) If applicable, determination of whether a Nutrient Application Rate should be based on nitrogen or phosphorus as a limiting factor.
 1. high, above optimum or excessive phosphorus soils: Recommendations for fields with soils containing a high, above optimum or excessive phosphorus level shall follow *UMass Guidelines* for high-phosphorus soils.
 2. optimum or less than optimum phosphorus soils: Nutrient Application Rates on fields with soil phosphorus levels that are optimum or less may be based on nitrogen;
- (g) Application records shall include the following:
 1. Soil Test results and recommended Nutrient Application Rates;
 2. quantities, analyses, and sources of Plant Nutrients applied;
 3. dates and method(s) of nutrient application;
 4. crops planted and estimated yields; and
 5. all activities or protocols recommended or required by the Plan.
- (h) Guidance for implementation, operation and maintenance, and record keeping.

(3) Record Keeping for Agricultural Land under ten acres and for which no *UMass Guidelines* are available. The following must be kept by any Operator or Person that does not meet the Plan requirements set forth in 330 CMR 31.04(1) or (2). Records shall be maintained by the Operator or Person and shall include:

- (a) Soil Test results and recommended Nutrient Application Rates;
- (b) Quantities, analyses, and sources of Plant Nutrients applied;
- (c) Dates and method(s) of Plant Nutrient application; and
- (d) Crops planted and estimated yields.

(4) Plan Updates and Revisions. For Agricultural Operations that are required to keep a plan, updates and revisions of a Plan shall be made based on review of crop-year specific information and operation specific information. Information used to develop crop-year specific field-based plans shall be reviewed and updated annually, if necessary. Operation-specific information shall be reviewed and updated every three years, or as necessary when changes occur, including, but not limited to, the following:

- (a) If the planned crop or cropping rotation, or introduction of a new crop is not currently addressed in an existing Plan, unless the new crop will have fertility management similar to that crop originally planned;
- (b) If nutrient source or Soil Test results indicate a change in nutrient recommendations;
- (c) If 10% or greater change in acreage managed, or 30 acres, whichever is less; or
- (d) If a change in Animal Manure production is 10% or greater, and will require significant management adjustments.

(5) All testing of soils, plant tissue, Agricultural Byproducts, and Agricultural Process Water done in accordance with 330 CMR 31.04 shall comply with the following:

31.04: continued

(a) Each field, or group of fields with similar soils and crops and history of lime and Fertilizer applications, shall be Soil Tested at least every three years. Soil Tests shall include analyses for phosphorus, potassium, pH, and soil organic matter. Standard Soil Test analyses shall be conducted in accordance with *UMass Guidelines*;

(b) Sampling and testing of Agricultural Byproducts and Agricultural Process Water shall comply with the following, unless *UMass Guidelines* require an alternative sampling and testing requirement:

1. materials shall be analyzed for nitrogen (total nitrogen, and ammonia-N), total phosphorus, total potassium, percent solids;
2. if there is no prior sampling history, testing shall be done annually for a minimum of three consecutive years. The average of the results shall be used as a basis for nutrient allocation to fields. Materials shall then be tested every three years;
3. samples of these materials shall be collected, prepared, stored, shipped and tested following *UMass Guidelines*; and
4. tests shall be performed whenever there is a significant change in animal numbers, species, diet, storage method, bedding materials, or additions of other Agricultural Byproducts, including those from offsite.

(c) Plant tissue testing shall be done in accordance with *UMass Guidelines*.

(6) All Plan and record keeping information required under 333 CMR 31.04 shall be kept for three years in either electronic or hard copy format and shall be made available for inspection by the Department upon request.

(7) The application of Plant Nutrients must follow any Plan required by 330 CMR 31.04.

(8) Should *UMass Guidelines* not be available when referenced in 330 CMR 31.00, the Applicator or Operator must follow the equivalent extension service standards or standard industry practices until such time that *UMass Guidelines* have become available.

31.05: Limitations on the Application of Phosphorus Containing Fertilizer; Requirements for the Application of Plant Nutrients and Phosphorus Containing Fertilizer to Non-agricultural Turf and Lawns

(1) The following shall apply to Phosphorus Containing Fertilizer:

(a) No Person may purchase and apply, or authorize any Person, by way of service contract or other arrangement, to apply any Phosphorus Containing Fertilizer on Non-agricultural Turf or Lawns except under the following conditions:

1. Soil Test, taken not more than three years before the application, indicates that additional phosphorus is needed for growth; or
2. The Phosphorus Containing Fertilizer is used to establish new Lawn or new Non-agricultural Turf area.

A new Lawn or Non-agricultural Turf area shall be defined as bare ground or as part of a Renovation. The use of phosphorus for these purposes shall be limited to the first growing season.

(2) The following shall apply to Animal Manure, Fertilizer, Organic Compost, Natural Organic Fertilizer, Biosolids, Agricultural Byproducts, Digestate, or combination thereof:

- (a) The amount of nitrogen and phosphorus must be known and accounted for;
- (b) A Soil Test is taken prior to the initial application;
- (c) Application of these materials shall not exceed the maintenance phosphorus rates for Non-agricultural Turf or Lawn as specified in *UMass Guidelines*; and
- (d) The requirement in 330 CMR 31.05(2)(a), (b), and (c) shall not apply to:
 1. A single application made within a 12 month period at an application rate not to exceed 0.25lbs of P₂O₅ per 1,000 square feet; or
 2. Any product used containing 0.67% or less available P₂O₅.

(3) In addition to the requirements of 330 CMR 31.00, any application of Biosolids to

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Non-agricultural Turf and Lawns shall comply with the requirements of 310 CMR 32.00: *Land Application of Sludge and Septage*.

31.05: continued

(4) For applications of Plant Nutrients, including Phosphorus Containing Fertilizer, to Non-agricultural Turf and Lawns, no applications shall be made:

- (a) To Frozen Soil, Snow Covered Soil, Saturated Soil, Frequently Flooded Soils, or soils when flooding is expected. An expectation of flooding includes, but is not limited to a prediction of Heavy Rain;
- (b) Within 20 feet of Surface Waters, if using a broadcast application method,
- (c) Within ten feet of Surface Waters, if using a drop spreader or rotary spreader with a deflector or a targeted spray;
- (d) Within a Zone I of a Public Water Supply Well;
- (e) Within 100 feet of Surface Waters that are used for public water supplies;
- (f) In an amount that is inconsistent with the annual recommended rate established by the *UMass Guidelines* for turf;
- (g) To any Impervious Surface, including parking lots, roadways, and sidewalks, by means of direct application, spills, overspray, or run-off to impervious areas;
 1. if such direct application, spills, overspray, or run-off occurs, the product material must be cleaned completely from the surface and be either:
 2. contained or disposed of legally; or
 3. applied to Non-agricultural Turf or Lawn as allowed.
- (h) For the purpose of de-icing Impervious Surfaces; or
- (i) To drought dormant, cold dormant, inactive or otherwise brown turf.

(5) Should *UMass Guidelines* not be available when referenced in 330 CMR 31.00, the applicator or operator must follow the equivalent extension service standards or standard industry practices until such time that *UMass Guidelines* become available.

31.06: Soil Testing for the Application of Plant Nutrients, Including Phosphorus Containing Fertilizer, to Non-agricultural Turf and Lawns

(1) Soil Tests shall be valid for three years and only for the Management Unit on which the sample was collected. Any subsequent phosphorus applications to the same Management Unit shall be based on the results of a valid Soil Test.

(2) Standard Soil Test analyses shall be conducted by a laboratory using methods and procedures recommended by *UMass Guidelines*.

31.07: Record Keeping Requirements for Applications of Plant Nutrients or Phosphorus Containing Fertilizer to Non-agricultural Turf and Lawns

(1) Any Person who applies Plant Nutrients or Phosphorus Containing Fertilizer to Non-agricultural Turf or Lawns shall maintain records of each application. The following information shall be recorded electronically or *via* hard copy:

- (a) Name of Applicator;
- (b) Date of application;
- (c) Address or location description of the application site;
- (d) Soil Test results for the property or Management Unit;
- (e) Name of product applied;
- (f) Size of the area on which the application is made;
- (g) Representative nutrient value or analyzed values, or guaranteed analysis;
- (h) Method and rate of application; and
- (i) Total amount used.

(2) Records shall be kept for at least three years, may be kept electronically or in hard copy format, and shall be made available for inspection by the Department upon request.

(3) The record keeping requirements in 330 CMR 31.07 shall not apply to any Person making Non-professional applications of Plant Nutrients.

31.08: Retailer Requirements

Any Retailer who sells, or offers for sale, Phosphorus Containing Fertilizer shall:

- (a) Display the product separately from non-phosphorus Plant Nutrients; and
- (b) Post in a location where Phosphorus Containing Fertilizer is displayed a clearly visible sign, at least 11" x 17" in dimension, which reads as follows: "PHOSPHORUS RUNOFF POSES A THREAT TO WATER QUALITY. THEREFORE, UNDER MASSACHUSETTS LAW, PHOSPHORUS CONTAINING FERTILIZER MAY ONLY BE APPLIED TO LAWN OR NON-AGRICULTURAL TURF WHEN (I) A SOIL TEST INDICATES THAT ADDITIONAL PHOSPHORUS IS NEEDED FOR THE GROWTH OF THAT LAWN OR NON-AGRICULTURAL TURF; OR (II) IS USED FOR NEWLY ESTABLISHED LAWN OR NON-AGRICULTURAL TURF DURING THE FIRST GROWING SEASON."

31.09: Enforcement; Assessment of Civil Penalty

(1) The Department may impose a fine on any Person who violates any provision of 330 CMR 31.00 as follows:

- (a) Not more than \$250 for a first violation, \$500 for a second violation, and \$1,000 for a third or subsequent violation; and
- (b) Each day a violation occurs under 330 CMR 31.00 is a separate violation.

(2) In assessing a fine imposed under 330 CMR 31.09(1), the Department shall give consideration to the following:

- (a) The willfulness of the violation, the extent to which the existence of the violation was known to the violator, but uncorrected by the violator, and the extent to which the violator exercised reasonable care;
- (b) Any actual harm to human health and safety or to the environment, including injury to, or impairment of, the use of the waters or the natural resources of the Commonwealth;
- (c) The nature and degree of injury to, or interference with, general welfare, health, and property;
- (d) The extent to which the location of the violation, including location near areas of human population, creates the potential for harm to the environment or to human health and safety; and
- (e) The extent to which the current violation is part of a recurrent pattern of the same or similar type of violation committed by the violator.

31.10: Appeal

Any Person aggrieved by any decision of the Department over the assessment of a fine imposed under 330 CMR 31.00 may appeal by filing a notice of appeal with the division of administrative law appeals within ten days of receipt of the notice of the fine pursuant to the provisions set forth in M.G.L. c. 128, § 2(k).

31.11: Exemptions

Educational institutions and researchers may apply to the Department for an exemption to 330 CMR 31.00 for research, education, and demonstration purposes.

REGULATORY AUTHORITY

330 CMR 31.00: M.G.L. c. 128, §§ 2(k) and 65(A).