



North Carolina Department of Environmental Quality
Division of Waste Management
Solid Waste Section

4-7-2020

**COMPOST FACILITY
TYPES 2, 3, AND 4
PERMIT APPLICATION GUIDANCE**

The N.C. Compost Rules are located in 15A NCAC 13B .1400 et seq., and can be viewed online on our compost webpage: <http://deq.nc.gov/about/divisions/waste-management/solid-waste-section/composting>. Other Solid Waste Section Rules and related General Statutes are also linked on the website, under Solid Waste Section/Rules.

The completion of an application is required for the permitting or approval of all compost facilities, with a few exceptions. Permits are not required for backyard composting, certain farming operations, and certain small compost operations (see [Rule .1402 \(f\) and \(g\)](#)).

If the majority (more than 50%) of the material to be composted, not including bulking material, is animal manure or wastewater treatment sludge, the permitting process is regulated through the Division of Water Resources (DWR), instead of the Solid Waste Section. Contact the Solid Waste Section for more information.

For compost facilities that require a permit, there are three types of permit actions:

A “new permit” means an application for a permit for a facility that has not been previously permitted by the Department. A significant expansion, change in the facility type, or change in the boundaries of a permitted facility may be considered a new permit.

A “permit amendment” means (1) an application for the ten-year renewal of a permit for a permitted facility, or (2) an application that proposes a change in ownership or corporate structure of a permitted facility.

A “permit modification” means an application for a change to the plans approved in a permit for a compost facility or the addition of new feedstock materials.

One paper copy and one electronic (pdf) copy of the application report should be submitted. The electronic copy can be sent by email, on a CD, or by online file share. The drawings must be included in the electronic copy. Applications should be sent or brought to the following address:

By Mail or Delivery Service:

NC DEQ, Division of Waste Management
Solid Waste Section
1646 Mail Service Center
Raleigh, NC 27699-1646

In Person:

NC DEQ, Division of Waste Management
Solid Waste Section
217 West Jones St.
Raleigh, NC 27603

An annual fee of \$500 is required for large compost facilities, not for small facilities (see Rule .1402 (e)(6) and (7) for definition). An application for a new permit for a large facility is \$50.

For a new permit application or permit amendment/renewal application, a compliance history review will be required of the owner and operator of the facility, in accordance with State statutes. After the application is submitted, the owner and operator will be sent a letter requesting compliance history information, and parent, subsidiary, or other affiliate information, which is required in order to complete the application.

Questions regarding an application should be directed to the Solid Waste Section, Phone 919-707-8200.

Please note that **new compost operator training requirements** became effective on November 1, 2019, for Large Type 2 and all Type 3 and Type 4 facilities. Compost facilities that were permitted before that date are required to meet the operator training requirement by no later than November 1, 2022. Operators of new sites permitted after November 1, 2019, are required to meet the rule within 18 months of permit issuance. See [Rule .1406 \(19\)](#) for more information.

An application for a new permit must address all Sections as listed below.

An application for a permit amendment (permit renewal) must address Sections 1, 3 (updated as necessary), 4, 5, 6, and other Sections as applicable (including drawings), in which any information contained in the original permit application is incomplete or has changed. A copy of the Site Plan drawing should be included with the application.

An application for a permit modification must address Sections 1, 3, 4, 5, 6, and other Sections as applicable (including drawings), in which any information contained in the original permit application has or will change due to the proposed modification.

Applications for a Large Type 3, Small Type 4, or Large Type 4 facility, or a facility proposed to be located over a closed-out disposal area, must be prepared and signed/sealed by a N.C. registered professional engineer.

For facilities not enclosed in a building, surface water run-off from the site will most likely require a stormwater and/or wastewater permit. It is important to contact the Division of Energy, Mineral, and Land Resources (DEMLR), early in the permitting process to determine if a permit is required, and to begin the stormwater/wastewater permitting process. You may contact Bethany Georgoulis at 919-807-6372 or bethany.georgoulis@ncdenr.gov or Rick Riddle at 919-807-6375 or rick.riddle@ncdenr.gov for permitting information.

Compost Facility Application Report Format and Contents

Cover letter, which states desired Department action (including whether the request is for a new permit, permit amendment, or permit modification)

Title page, signed and sealed by a professional engineer, if applicable

Table of Contents

Section 1 – General Information - Provide a narrative discussion, including the following:

1. The name of the facility or proposed facility. Street address of the facility. Include the facility type: large or small, and Type 2, 3, or 4.
2. Name, address, telephone number, and email address of the applicant/owner and contact person.

3. Name, address, telephone number, and email address of the landowner, if not the applicant. A landowner authorization form must be signed and notarized if the facility owner/operator is not the landowner (see attached form).
4. Name, address, telephone number, and email address of the engineer and/or composting consultant (if applicable).
5. Name, address, telephone number, and email address of person to receive permit fee invoices and annual fee invoices, if applicable.

Section 2 – Siting Requirements – Provide a narrative discussion that includes the following items:

1. Location of the facility. Include the county location, and proximity to nearest town or city. If the property was previously used for solid waste management activities, provide a description of the operation including permit information and a map with boundaries. Describe the history of any solid waste permits and approvals issued.
2. Provide a map showing the property parcel boundaries and parcel ID information (this can usually be obtained from the County's GIS website). Describe any other commercial or industrial use of the property.
3. Total acreage of the property and the size of the actual compost operations area. The operations area includes unloading areas, mixing/processing areas, composting and curing areas, and feedstock storage areas.
4. In an appendix, provide a legal description of the property and a complete copy of the current land deed. Also, provide a copy of any available current plats or survey drawings of the property. Reference these items in the text of this section.
5. Provide a copy of the USGS topographic quadrangle map of the area. The property boundaries of the site and the approximate composting and storage areas should be drawn onto the map. The map may be a high quality color photocopy and should show at least 0.5 mile surrounding the property boundary.
6. In an appendix, provide a letter from the appropriate City or County official confirming that the siting of the facility will be in conformance with all zoning and local laws, regulations, and ordinances, or that no such zoning, laws, regulations, or ordinances are applicable. Reference the letter in the text of this section.
7. Provide a copy of the FEMA Flood Insurance floodplains map for the area, with the site property marked on the map (appendix or within the section). Discuss compliance with Rule .1404 (a)(1).
8. For sites that potentially contain wetlands, provide a letter from the Army Corps of Engineers that addresses the wetlands determination for the property, and compliance with requirements, if applicable. Include letter in an appendix and reference the letter in the text of the section.
9. Discuss compliance with the buffer requirements of the Compost Rules, Section .1404 (a)(2) through (5), and (8). Buffer requirements apply to unloading areas, composting and curing areas, mixing/processing areas, and feedstock storage areas. Final product may be stored within the buffer. Provide distance from the compost boundary to the nearest offsite residence, and nearest perennial stream or water body.
10. Address compliance with Rule .1404 (a)(7), concerning sites located over a closed-out disposal area.

11. Address compliance with the soil texture requirements or pad requirements of Rule .1404 (a)(10)(B) through (D). For outdoor facilities, provide a soil evaluation of the site conducted by a soil scientist down to a depth of four feet, or to bedrock or evidence of a seasonal high water table, to evaluate all chemical and physical soil properties and depth of the seasonal high water table. Include the report in an appendix, and reference the report in the text of the Section.

Section 3 - Design Plan – Provide a narrative discussion, broken into appropriate sections, that includes the following items:

1. List the types of feedstocks, residuals, bulking materials, and amendments to be accepted (for example, yard waste, land clearing debris, pre-consumer food waste, post-consumer food waste, grease trap waste, agricultural waste, etc.). For each material, provide a description, list the sources, and indicate whether it will be accepted from the general public. Analytical data will be required for materials that could contain metals or other contaminants, such as commercial or industrial by-products. For Type 4 wastewater treatment plant sludge/biosolids, provide analytical analysis of total metals by SW-846 methods, for arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc, for each waste source.
2. Provide an estimate of the total amount of materials to be received at the facility per day, week, or month, in tons or cubic yards. Provide an approximate amount for each type of feedstock to be received, per day, week, or month. Describe any seasonal variation for any of the materials.
3. Provide the design capacity of the facility, best estimate. The site capacity is the incoming volume, or throughput, per year, and is based on the compost method, duration of the process, and the size of the facility. Show calculations for Large Type 3 and 4 facilities. This is for information purposes only, not to be used as a limit.
4. Provide a description and sizing of the storage areas or containers for feedstocks, amendment, recyclables, finished compost, and waste.
5. Describe and provide compost recipes.
 - a. For Type 2 operations, describe plan for balancing the carbon and nitrogen ratio (“browns” and “greens”).
 - b. For Type 3 and Type 4 operations, provide carbon to nitrogen ratio (C:N) testing and calculations. There are compost recipe calculators online that can assist with this, balancing density, moisture, and C:N ratio.
6. Describe methods used for measuring, shredding, mixing, and proportioning feedstock materials, to insure the proper ratios are met.
7. Provide a process flow diagram of the entire operation, including the type, size, and location of all major equipment, and feedstock flow streams. The flow streams should indicate the quantity of materials by weight and volume. Also include plans and specifications for the facility, including manufacturer's performance data for all equipment selected.
8. Provide the anticipated process duration for each stage of the process, including receiving, preparation, composting, curing, and distribution.
9. Describe the compost method (windrow, static aerated pile, in-vessel, etc.), and method for time and temperature monitoring.

10. For outdoor facilities, describe surface water control features, including run-on and run-off. Describe grading and sloping of site surface to prevent ponding of water. Describe plan for operation of the facility in wet weather. Surface water must be diverted from the operational, compost curing, and storage areas. For sites that will have run-off from the facility operation, a stormwater/wastewater permit will most likely be required (see page 2 for contact information).
11. Process water or contact water (water and liquid that has come in contact with compost or feedstocks) may either be collected and disposed of separately, or for some facilities, it may be approved for combining with clean surface water run-off for discharge from the site with a stormwater/wastewater permit. Describe the collection, storage, and disposal of process water. Disposal could involve connection with a sanitary sewer line, or collection in a holding tank, with the liquid periodically pumped and removed from the site for proper disposal. Process water may also be added back to the compost; however, time and temperature requirements to reduce pathogens must begin again, and the text should describe this.
12. Describe any amendments (lime, wood ash, gypsum, etc.) to be added to the finished compost, if applicable, including the amount. For wood ash, provide analytical data for total metals by methods in SW-846. Describe storage of the amendments, maximum pile size, and methods to prevent surface water run-on and run-off, if applicable. If wood ash is added, it should be stated that samples for required finished compost metals analysis will be taken from the compost after the ash is added.
13. Describe controls to address dust and other air emissions (example, a spray mist for dust). For indoor facilities, describe how particulates are minimized.
14. Describe any recycling or other material handling processes used at the facility.

Section 4 - Operation Plan – Provide a narrative discussion, broken into appropriate sections, that includes the following items:

1. Name and contact information for the person responsible for the operation of the facility.
2. A list and description of the equipment, scales, structures, unloading area, water source, hopper, and any other feedstock or compost management devices. Also describe equipment maintenance.
3. Site security and access control. Large sites must be secured by gates, chains, berms, fences, or other measures to prevent unauthorized entry. Include whether the site will receive feedstocks or residuals from the general public.
4. Confirm that an operator will be on duty at the site at all times while the facility is open for public use to ensure compliance with operational requirements.
5. Confirm that access roads will be of all-weather construction and maintained in good condition.
6. A schedule for operations, including days and hours of operation, preparations before opening, and procedures to be followed after closing for the day.
7. Signs to be posted at the entrance. Signs must provide a description of the types of wastes that may be received, the types of waste prohibited, operating hours, permit number, and emergency contact phone numbers. The sign should state that no hazardous waste, asbestos containing waste, or medical waste can be received at the site.

8. Permanent boundary markers may be required, depending on the layout of the site, to maintain the operation's required setbacks to the property line or to other nearby residences, wells, floodplains, etc. If natural or existing benchmarks don't exist, include a description of the boundary markers, installed at intervals to allow for line of sight from one marker to the next.
9. List of personnel required and the responsibilities of each position.
10. For Large Type 2, and all Type 3 and Type 4 facilities, describe compliance with the personnel training requirements described in Rule .1406 (19)(a) and (b), and .1406 (c). Existing facilities permitted before Nov. 1, 2019 are required to meet the requirements of .1406 (19)(a) by no later than Nov. 1, 2022. Operators of new sites permitted after November 1, 2019, are required to meet the rule within 18 months of permit issuance.
11. A narrative description of the compost process, from beginning to end, to include arrival of materials, unloading, processing, mixing, storage, composting, curing, testing, final product storage, and removal from site. Describe the location that each of the activities takes place, and the estimated time for composting and curing.
12. Method for screening loads for unacceptable waste. Describe plan for handling incoming loads that contain unacceptable waste. Describe storage of the unacceptable waste, the frequency of removal of the waste (at least weekly), and final disposition.
13. Any special feedstock or residual handling (e.g., odorous residuals, liquids, etc.).
14. Any amendment to be added to the compost, how it will be stored, and when it will be added. If wood ash is used, also provide total metals lab testing of the ash, and confirm that metals testing of the finished compost will be after ash is added.
15. Processing activities to prepare materials for composting, such as grinding.
16. Pile sizes for feedstock, composting, curing, and final product storage (width and height). Length is unlimited within the permitted boundary of each area. Describe distance between rows, to provide vehicular access in the event of a fire. Storage of wood debris, mulch, and finished compost should be in rows no larger than 50 feet wide and 30 feet high.
17. Describe compliance with the time, temperature, and turning requirements in Rule .1406 (11), (12), and (13), as appropriate for the feedstock and compost method. Describe location of and spacing of monitoring points, probe depth (at least 24 to 36 inches), monitoring frequency, and recordkeeping. Monitoring frequency during the time and temperature requirement period should be at least every other day, or Monday-Wednesday-Friday if the site is not open on weekends. If the site is operated to meet Rule (13)(a) for PFRP, then Rule (12) is automatically met for VAR.
18. Describe the probe thermometer to be used. Describe calibration of the thermometer at least once per year, to include written documentation of the calibration. Onsite calibration using ice water is an acceptable method.
19. Describe other monitoring, such as moisture content, oxygen level, porosity, carbon to nitrogen ratio testing, etc., including method and frequency.
20. The method of aeration provided, frequency, and the capacity of aeration equipment, for both composting and curing piles.
21. Describe compost testing and the method for collecting samples, in accordance with Rule .1407(b).

- a. The pathogens sample should be collected as a composite sample from finished compost onsite on the same day it is to be taken to the lab for analysis. The sample should be processed within the hold time required by the lab testing procedure, and this is usually 24 hours.
 - b. The sample that is collected for metals analysis is to be collected and composited over a six-month period (or every 20,000 tons produced) from each batch of compost. See Rule .1407(b)(4) for procedure.
22. Describe distribution and ultimate use of the finished compost. If agriculture nutrient claims are to be made for the compost, for fertilizer or soil additive, the owner is required to meet the requirements of the NC Department of Agriculture and Consumer Services, Plant Industry Division.
23. Describe method for removal from the site, and a contingency plan for disposal or alternative usage of residues or finished compost that cannot be used in the expected manner due to poor quality or change in market conditions.
24. Describe recordkeeping and annual reporting in accordance with Rule .1406 (1)(b), Rule .1406 (19)(c), and Rule .1408. Provide a copy of the temperature log forms and other recordkeeping forms.
25. Describe operational activities for surface water and process water control features (for example, drain covers, pipes, ponds, tanks). For onsite tanks, frequency of pumping and removal.
26. Provide documentation that the local fire protection agency has been notified of the site use as a compost facility.
27. Plan for fire prevention and actions to be taken in the event of an accidental fire. Describe equipment provided to control accidental fires. It should be stated that any fire will be reported to the Solid Waste Section within 24 hours, followed by a written notification of the details of the fire within 15 days of the incident.
28. Plan for maintaining facility property in a sanitary condition and actions to be taken to minimize noise, vectors, litter, dust, and other airborne particulates. It should be stated that at the end of each operating day, the unloading area will be clear and all feedstocks will be processed/mixed or properly stored. Describe procedures to prevent blowing litter and dust from leaving the compost area and from leaving the property.
29. Contingency plans for wind, heavy rain, snow, freezing weather and other extreme weather events, air pollution, equipment breakdown, spills, unusual traffic patterns, long-term power outages, cracks in concrete pads, etc.
30. Site safety procedures concerning onsite equipment (especially grinders), safety during unloading and loading of materials, and safety to address other possible site hazards to workers or the public.
31. Describe closure of the site when the site ceases operation, in accordance with Rule .1410.

Section 5 - Odor Control Plan

This section should describe site specific conditions, designed to minimize odors at the property boundary by means such as expanded buffers, consideration of topography and wind patterns, or process layout design. The plan should include the following:

1. Identification of all onsite potential odor sources on a map or diagram (examples, unloading area, mixing area, active compost windrows, etc.).
2. Description of onsite weather conditions that may affect odor migration, such as prevailing wind direction, topography, and seasonal variations.
3. Plan to monitor onsite odor and record odor data for the odor sources with the potential to migrate offsite. Data shall include date, time, site specific conditions, weather conditions, wind direction, and characteristics and intensity of odor.
4. Description of the facility's odor complaint protocol, including forms used, odor verification by operator both onsite and offsite, what the response will be, and who will be contacted.
5. Description of complaint record keeping.
6. Description of odor control design and operating best management practices to be used onsite, including:
 - a. Personnel training;
 - b. Feedstock characteristics;
 - c. The initial mixing of feedstocks to reach targeted carbon to nitrogen (C:N) ratios and moisture levels;
 - d. Procedure for handling incoming odorous feedstocks, to include prompt mixing of the waste with carbon material;
 - e. Maintenance of compost piles for moisture;
 - f. Aeration methods, frequency, and protocol;
 - g. Leachate and liquids management;
 - h. Weather monitoring and protocol;
 - i. Management of airborne emissions; and
 - j. Windrow covering, such as the application of 3 to 6 inches of finished compost cover over piles.
7. For indoor facilities, describe the design and operation of biofilters, if applicable, and procedures for equipment breakdown.

Section 6 – Signature Pages

Place signature page(s) at the end of the application text, before the appendices.

1. Applicant signature page (see attached).
2. If the landowner of the property is not the applicant, the attached certification form by the land owner is required.

Section 7 – Stormwater Discharge and Sedimentation and Erosion Control Plan

For new facilities or existing facilities with proposed construction modifications, provide:

1. A copy of the sedimentation and erosion control plan/stormwater discharge and permit as required by local governments and/or NC DEMLR. Calculation pages are not necessary.
2. A copy of the DEMLR stormwater/process discharge application and permit. Calculation pages are not necessary.

Section 8 –Drawings

Provide drawings for a new facility or an existing facility with proposed modifications that would change the previously submitted drawing(s). For Large Type 3, and all Type 4 facilities, engineering

drawings should be prepared and sealed by a NC professional engineer. Drawings should be drawn to scale and include:

1. An aerial photograph, where one inch is less than or equal to 400 feet, accurately showing the area within one-fourth mile of the proposed site's boundaries. It may be included in the Siting Requirements Section, if it can be appropriately sized 11x17. The following should be drawn onto the map:
 - a. Boundaries of entire property owned or leased by the person proposing the facility;
 - b. Location of all homes, wells, industrial buildings, public or private utilities, roads, streams, water bodies, intermittent streams/ditches, and other applicable information regarding the general topography within 500 feet of the facility.
2. Site plan drawing(s) where one inch is less than or equal to 100 feet that delineates the following:
 - a. Existing and proposed contours, at intervals appropriate to the topography.
 - b. Setbacks from the operations area to property lines, residences, wells, and perennial streams/rivers and water bodies. The operations area includes unloading, mixing, feedstock storage, composting, grinding/processing, and curing areas.
 - c. Access roads, existing and proposed, and gates/fences or other access control features.
 - d. Streams, water bodies, floodplains and wetlands located on the property.
 - e. Existing and proposed location and elevations of berms, ditches, basins, and other water control features for the diversion and management of surface water and process water, and sedimentation and erosion control.
 - f. Labeled areas for unloading, mixing, processing, composting, curing, material storage, and final product storage. Illustrate the location of all piles and windrows onsite, including feedstocks, active compost, curing, finished compost, and amendments. Drawings should show that all sides of storage areas for flammable feedstocks and compost will be clear and drivable, to provide vehicular access in the event of a fire.
 - g. Labeled ground cover (gravel, soil pad, concrete, asphalt, etc.).
 - h. Utilities and structures/buildings, existing and proposed.
 - i. Other physical characteristics of the site, as applicable.
3. If applicable, detail drawings of the following:
 - a. Compost bins, bays, or vessels.
 - b. For indoor operations, plan and profile drawings of the buildings, with areas and features labeled. Note whether walls or roof are open or partially open.
 - c. Other site specific features of the compost operation.

Certification by Land Owner (if different from Applicant):

I hereby certify that I have read and understand the application submitted by _____ for a permit to operate a compost facility on land owned by the undersigned located at (address) _____; (city) _____, NC, in _____ County, and described in Deed Book and Page(s) _____.

I specifically grant permission for the proposed compost facility planned for operation within the confines of the land, as indicated in the permit application. I understand that any permit will be issued in the names of both the operator and the owner of the facility/property. I acknowledge that ownership of land on which a solid waste management facility is located may subject me to cleanup of said property in the event that the operator defaults as well as to liability under the federal Comprehensive Environmental Responsibility, Compensation and Liability Act ("CERCLA"). Without accepting any fault or liability, I recognize that ownership of land on which a solid waste management facility is located may subject me to claims from persons who may be harmed in their persons or property caused by the solid waste management facility.

I am informed that North Carolina General Statute 130A-22 provides for administrative penalties of up to fifteen thousand dollars (\$15,000) per day per each violation of the Solid Waste Management Rules. I understand that the Solid Waste Management Rules may be revised or amended in the future, and that the siting and operation of the facility will be required to comply with any such revisions or amendments.

Signature

Date

Print name

NORTH CAROLINA

_____ County

I, _____, Notary Public for said County and State, do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official seal, this the _____ day of _____, 20__.

(Official Seal)

Notary Public

My commission expires _____.