



Permit Evaluation

Oregon Department of Environmental Quality
Northwest Region Office
700 NE Multnomah St, Suite 600
Portland, OR 97232

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To: Audrey O'Brien, Manager
Materials Management Program
DEQ NWR

From: Jeremy Fleming, Permit Manager
Materials Management Program
DEQ NWR

Subject: Permit Evaluation Report
Proposed Solid Waste Composting Permit #1433
Grimm's Fuel Company

Introduction:

Grimm's Fuel Company (Grimm's) owns and operates an existing compost facility which produces finished compost, landscape supplies and soil amendments. Grimm's composting facility is located at 18850 SW Cipole Road, Tualatin, Oregon. The facility received approximately 66,000 tons of incoming feedstock in 2017.

On May 1, 2014 DEQ issued Solid Waste Disposal Permit No. 1433. Grimm's appealed the permit as issued and requested a hearing. As a result of the appeal, the previous permit remained temporarily in effect. DEQ revised the permit and initiated a public comment period on June 2, 2015. DEQ issued the current permit on Nov. 20, 2015.

In 2017, Metro issued a request for proposal to perform a facility composting assessment for Grimm's and to provide alternatives/options to mitigate offsite odor conditions in surrounding neighborhoods. Green Mountain Technologies (GMT) was selected and performed on-site assessments in Jan. and Feb. 2018. GMT conducted multiple regulator and community interviews, took air measurements to evaluate odor potential, performed air dispersion modeling of odor events, evaluated alternative composting designs, described additional best management practices to be applied at Grimm's and compiled a list of regulatory recommendations related to aerobic composting and monitoring.

On Feb. 5, 2018 during a strong weather inversion, Grimm's began turning the compost pile. This turning process lasted several days, producing a large odor event with odors being detected up to 3 miles from the facility. DEQ received over 70 complaints through its formal complaint system during the month of Feb. 2018.

Partially in response to the large number of odor complaints received during the turning event, DEQ performed an environmental compliance inspection on Feb. 23, 2018. Several areas of concern were identified during the inspection, which were referred to the DEQ Office of Compliance and Enforcement and resulted in DEQ issuing a Notice of Civil Penalty Assessment and Order (Notice) on July 12, 2018. The Notice cited the following violations: 1) failing to collect leachate in a containment structure that has adequate capacity to collect and contain the leachate; 2) failing to conduct monitoring of the three active compost cells in compliance with the schedule prescribed in the facility's Operation Plan; 3) failure to report open burning to DEQ within 24 hours; 4) allowing the compost pile to exceed Oregon Fire Code height limit of 25 feet; and 5) turning the compost piles during the Feb. 2018 weather inversion.

Land Use Approval:

On file is a signed land use compatibility statement from the City of Tualatin Planning Department dated Feb. 12, 2010, indicating that the composting activity or use is compatible with the Land Conservation and Development Commission-acknowledged comprehensive plan or complies with the statewide planning goals.

Compost Operation Description:

Yard debris, horse manure, wood chips, rock, soils and concrete are accepted from a variety of retail and commercial sources including homeowners, landscape contractors and commercial haulers.

Each incoming load is visually inspected for prohibited items as it enters the facility at a scale house. Acceptable loads are directed to the concrete tipping area which is monitored by spotters on the pad as well as loader and plant operators working in the area. Once yard debris has been placed on the tipping floor, it is roughly ground and conveyed to the primary composting pile. The material remains in the pile for 180 to 270 days, during which the pile is turned and mixed three or four times. Oxygen is re-introduced into the static pile during these turning events, but the pile is otherwise not aerated, resulting in generally anaerobic conditions in the pile.

When primary composting is complete, the material is screened. Any physical contaminants, such as plastics, are removed via a series of vacuum separators and disposed of as solid waste. Organic material too large to pass through the 5/8" screen is re-mixed with incoming feedstocks and goes through the process once again.

Fine compost is then placed in the finished goods storage area for final curing. After curing, finished compost is periodically hauled to storage piles located on the lower lot and sold to the public for landscape products such as garden mulch, blended soil and soil amendments.

Environmental and Public Health Concerns:

Odor – Odor is the experience in the nose and brain of a recipient of an odorant at a concentration above their ability to detect it. Malodor is used to describe an odor that a recipient finds offensive. Odors can be fairly completely described using two concepts, intensity and character. Intensity is the strength of the odor, which is related to the concentration of odorant molecules in the air. The character of an odor is a description of an odor based on what the smell resembles such as “sweet” or “earthy”.

The biological degradation process that reduces organic matter (yard debris) to the earth-like material called hummus can occur in the presence of oxygen (aerobic composting) or in the absence of oxygen (anaerobic composting). These two processes incorporate different microorganisms and produce different by-product compounds and odors. If aerobic conditions are not maintained, anaerobic conditions will take place, and malodors will be generated. Malodorous compounds produced at a greater intensity during anaerobic composting include reduced sulfur compounds, volatile fatty acids, aromatic compounds and amines.

Aerobic compost organisms can survive in as little as 5 percent oxygen. However, if the oxygen level falls below 10 percent, parts of the compost pile can become anaerobic. GMT took compost pile air measurements as part of their facility assessment. They reported that conditions just 2 feet below the surface of the pile were predominantly anaerobic. Oxygen levels below the surface never exceeded 10 percent and commonly were found to be zero percent. Monthly oxygen monitoring performed by Grimm's reported O₂ levels mostly in the 2–7 percent range.

OAR 340-096-0070(4) is a performance standard pertaining to compost facilities that states: “All compost facilities must be designed, constructed and operated in a manner that, to the greatest extent practicable, consistent with proper facility design and operation, controls and minimizes odors that are likely to cause adverse impacts outside the boundaries of the facility.”

Based on the Metro funded GMT report and DEQ's observations at Grimm's in Feb. 2018, Grimm's current procedures to avoid anaerobic conditions are not adequate to minimize odors that are likely to cause impacts beyond its boundaries. DEQ agrees with the GMT report that significant operational processes and infrastructure construction must be undertaken at Grimm's to significantly increase the amount of oxygen in the active compost pile.

Fire – Excessive temperatures in compost can cause spontaneous combustion. Adequate aeration and moisture levels are the best preventative measures to avoid compost pile fires. Non-aerated static compost piles higher than 25 feet are doubly at risk due to the combustible conditions at the middle of the pile and the large volume of fuel.

From Jan. 2016 through Aug. 2017, Tualatin Valley Fire and Rescue (TVFR) responded to fires in the composting cell at Grimm's seven times.

TVFR informed Grimm's on May 2, 2018 that the facility must meet Oregon Fire Code Section 2808 and reduce the height of the active compost piles to not exceed 25 feet by April 30, 2018. In addition, OAR 340-093-0070 (9) requires "All composting facilities must comply with all other applicable laws and regulations." Grimm's is not in compliance with the Oregon Fire Code so is not in compliance with DEQ's compost rules.

Compliance History:

Grimm's has received one Notice of Civil Penalty Assessment and Order (Notice) on July 12, 2018. The facility has not received any previous enforcement actions from DEQ.

Proposed Permit Modifications:

The Solid Waste Composting Facility Permit for Grimm's covers a ten year period from the date of permit issuance. DEQ has not modified the permit expiration date with this permit modification. The permit requires that the permittee meet performance standards as stated in Oregon Administrative Rules 340-096-0070.

Sections 1 and 2 of the permit discuss allowable activities (authorizations and prohibitions); Sections 3-6 discuss operations and design (operating conditions, operations plan, record keeping and reporting, engineered design structure management); Sections 7-9 discuss general conditions (administration, permit modification requirements, site operations); and Sections 10 and 11 discuss compliance conditions (summary of due dates and when to notify DEQ).

DEQ proposes to revise Section 1.2 to remove the conditional authorization to receive food waste. Grimm's current permit allows for receipt of Type 3 feedstock that is curbside collected residential food waste mixed with yard debris. This is contingent upon completion of a food waste demonstration project and subsequent review and approval by DEQ, and approval from Metro to accept Type 3 feedstocks. Metro's license does not authorize Grimm's to accept food waste, therefore, DEQ considers a demonstration project premature and will require Grimm's to submit a permit modification to accept food waste after installation of the ASP system and evidence that the facility can meet performance standards.

1.2 Authorization to receive Feedstocks. This permit authorizes the facility to accept the following feedstocks (Note: a detailed list of authorized feedstocks is listed in the DEQ-approved Operations Plan for this site.):

A. Types 1 and 2 feedstocks.

DEQ proposes to remove Sections 1.1, 1.3 and 1.4 in their entirety.

DEQ proposes to revise Section 3.3.1 to include language that mirrors Section 4.4 of the permit which requires a minimum temperature of 131 degrees Fahrenheit to be maintained for 3 days throughout the active pile to achieve adequate human pathogen reduction.

3.3 Pathogen reduction. The permittee must operate the compost facility in conformance with OAR 340-096-0140, Special Rules Pertaining to Composting: Pathogen Reduction, including the following:

1. Process parameters:
 - a. Using the aerated static pile composting method, the temperature of the active composting piles must be maintained at 131 degrees Fahrenheit or higher for three consecutive days.
 - b. The permittee must monitor temperature daily at locations that are representative of the active piles.
 - c. The permittee must maintain sample results and must make the results available upon request.

DEQ proposes to remove Section 4.4 in its entirety.

DEQ proposes to add Section 9.17 which sets a timeline to reduce pile heights. Initially, the height must be reduced to 25 feet in accordance with current Oregon Fire Code. Ultimately, as recommended by GMT report, in order to achieve good aerated composting conditions, the height maximum will be further reduced to 14 feet. Lower pile heights are also likely to reduce offsite odor impacts and to mitigate fire hazards.

9.17 Material pile height reduction. The permittee must reduce and maintain all piles of yard debris feedstock, active compost, hog fuel and finished compost to a maximum height of 40 feet by Dec. 31, 2018 and to a maximum height of 25 feet by April 30, 2019. The facility must submit a plan for DEQ approval to achieve a maximum pile height of 14 feet for active compost piles within 60 days of permit issuance. Once the plan is approved by DEQ, the permittee must reduce and maintain a pile height of 14 feet or less for active compost piles by June 30, 2020. The permittee is additionally required to meet all other applicable Oregon Fire Code requirements

DEQ proposes to add Section 9.18 to require a cover on the active compost pile. The use of a cover to mitigate odors is a standard practice at composting facilities and was employed with success at Grimm's to minimize odors after the Feb. 2018 turning event.

9.18 Cover for active compost piles. Within 60 days of permit issuance, the permittee must apply a cover, such as porous covers and composted material, on all active compost piles for at least the first 15 days of composting. The permittee must describe in its operation plan how it will adequately maintain the cover. During the transition from static pile to ASP, the permittee will top all active compost piles with bio-cover.

DEQ proposes to add Section 9.19 to require the operation of an enclosure and bio-filter system to capture and treat odors released during the screening and handling of compost. The screening process is a contributor to odors at the facility. A negative pressure enclosure and bio-filter system for the trommel screen and conveyance system will reduce odors released during screening.

9.19 Capture and treatment of odors from screening and transfer process. The permittee must maintain an enclosure of the screening and conveyance system to capture the odors from the processing equipment. Captured air will be directed to a properly sized bio-filter with an irrigation system that is maintained to provide optimum filtering capability.

DEQ proposes to add Section 9.20 to require the construction of an aerated system to provide continuous aeration for the active compost piles. Adequate aeration to all materials in the active compost pile will ensure that optimum degradation occurs.

9.20 Aerated System. The permittee must build and operate a continuous aeration system that provides adequate aeration to maintain a minimum oxygen level of 10 percent in the active compost pile by June 30, 2020. Exhaust from the aerated system will be directed through a bio-filter or bio-cover system to ensure that, to the greatest extent possible, odors that are likely to cause adverse impacts outside of the facility boundaries are minimized.

DEQ proposes to add Section 9.21 – Oxygen, temperature and moisture monitoring.

9.21 Process Controls. Monitor and record the following processing parameters referenced in OAR 340-096-0090(6) at the frequency and location described below. Permittee must ensure that parameters are within the range listed herein.

- 1) Prior to conversion to ASP system on June 30, 2020, the permittee must ensure that parameters are within the range listed herein:
 - a) Oxygen level: Monitor at locations that are representative of the active piles weekly. Oxygen level within the active pile must be between 5–21 percent to ensure aerobic decomposition of feedstocks is occurring. Record of oxygen levels within the active piles shall be kept onsite and available to DEQ upon request.
 - b) Temperature: Monitor at locations that are representative of the active piles weekly. Temperature within the active piles must maintain a temperature range between 120 F to 180 F. Record of temperature within the active pile shall be kept onsite and available to DEQ upon request.
 - c) Moisture content: Monitor at locations that are representative of the active piles weekly. Moisture content within the active piles must be between 40-60 percent to ensure aerobic decomposition of feedstocks is occurring. Record of moisture content within the active piles shall be kept onsite and available to DEQ upon request.
 - d) Retention time: Record active composting time for each compost batch. Record of compost times shall be kept onsite and available to DEQ upon request.

- 2) After conversion to ASP system on June 30, 2020, the permittee must ensure that parameters are within the range listed herein:
 - a) Oxygen level: Monitor at locations that are representative of the active piles daily. Oxygen level within the active pile must be between 10-21 percent to ensure aerobic decomposition of feedstocks is occurring. Record of oxygen levels within the active piles shall be kept onsite and available to DEQ upon request.
 - b) Temperature: Monitor at locations that are representative of the active piles daily. Temperature within the active piles must maintain a minimum temperature of 131 F for three days to achieve adequate human pathogen reduction. Record of temperature within the active pile shall be kept onsite and available to DEQ upon request.
 - c) Moisture content: Monitor at locations that are representative of the active piles weekly. Moisture content within the active piles must be between 40-60 percent to ensure aerobic decomposition of feedstocks is occurring. Record of moisture content within the active piles shall be kept onsite and available to DEQ upon request.
 - d) Retention time: Record active composting time for each compost batch. Record of compost times shall be kept onsite and available to DEQ upon request.

Public Involvement:

On Jan, 21, 2019, DEQ issued a public notice requesting comment on the draft modification to DEQ solid waste composting permit for the Grimm's Fuel Company (Grimm's) composting facility. During a community meeting concerning Grimm's proposed permit modification that took place on Jan. 23, 2019, a commenter brought to DEQ's attention that there were two errors in the proposed permit. DEQ corrected permit conditions 9.20 and 10.1 to align with permit condition 9.21 and require that Grimm's maintains a minimum oxygen level of 10 percent in the aeration system to be built.

DEQ posted the public notice, proposed permit and permit evaluation report to DEQ's Public Notice webpage and DEQ's Grimm's facility webpage. DEQ also mailed the public notice to 1,865 neighbors and interested citizens located within a mile of the Grimm's facility. DEQ placed an advertisement announcing the public notice and public hearing in the Oregonian and the Tigard Tualatin Times. DEQ held a public hearing on Feb. 26, 2019 at the Juanita Pohl Center in Tualatin to receive verbal comments on the proposed modification to the DEQ solid waste permit for Grimm's Fuel. The public comment period closed at 5pm on March 4, 2019.

DEQ received six verbal comments during the public hearing and 53 written comments during the public comment period. DEQ summarized the comments received by topic, and drafted a response to each topic in the "Response to Comments" document that is appendix A to the issued Permit Modification.

Permit Changes Made After DEQ Review of Comments

1. **Section 9.21.2.c previously read:** "Moisture content: Monitor at locations that are representative of the active piles weekly."

Section 9.21.2.c now reads: "Moisture content: For each batch of material, monitor at locations that are representative of the active pile 4 times during the active composting phase. Permittee to take a moisture content measurement during the construction of the ASP (Day 1 and Day 15) and again during the deconstruction or flipping of the pile (Day 15 and Day 30)."

Rationale: DEQ proposes to revise the moisture monitoring conditions to allow for the ASP to be remain undisturbed during each 15-day compost period. It is best to add water to the pile during construction to ensure equal and consistent moisture within the pile.