MANSFIELD
CONNECTICUT

Town of Mansfield
Office of the Town Manager

Ryan J. Aylesworth
Town Manager

November 25, 2024

CT Department of Energy and Environmental Protection (DEEP)
79 Elm Street
Fourth Floor
Hartford, CT 06106-5127

Dear Colleagues,

In response to CT Department of Energy and Environmental Protection's (DEEP) Materials Management Infrastructure Grant Program, the Town of Mansfield is pleased to submit a proposal that will enable our municipality to increase the amount of food scraps that are composted in the Town's registered leaf compost pile. More specifically, we request $130,000 in funding to install an aerated static compost system that will compost food scraps collected curbside in Mansfield. We estimate that 134 tons of food scraps will be composted annually during the grant period. Over the course of five years (the maximum length of a CT DEEP demonstration project), 670 tons of food scraps will be diverted from the waste stream. We estimate that, through this project, Mansfield's residential solid waste stream will be reduced by about seven percent (7%).

Our project is shovel ready. With DEEP support, our intention is to continue this compost operation well past the demonstration project period through a permit that allows food scraps to be permanently incorporated into the registered leaf pile operations. If DEEP does create such a permit, the positive impact of the grant will increase with each additional year of composting food scraps.

Thank you for your consideration. If you have any questions, please contact Virginia Walton, Mansfield Recycling Coordinator at 860-429-3333 or **waltonvd@mansfieldct.org.**

Sincerely,

Ryan Aylesworth
Town Manager

Town of Mansfield Transfer Station Compost Project

Proposal Contents

Proposal

Project Description and Background

The Town of Mansfield seeks to expand food scrap composting operations in the registered leaf compost pile located on the Mansfield Transfer Station parcel at 221 Warrenville Road, Mansfield Center. This proposal aligns with the Connecticut Coalition for Sustainable Materials Management menu of priorities #8, *expand education, outreach, and support for composting of food scraps,* and #9, *curbside collection of food scraps*. Mansfield proposes to build an aerated static compost system in order to accept food scraps collected curbside from Mansfield's single-family residences, including condominiums and mobile home parks that are typically underserved by such programs.

The expanded compost project we propose will be part of a continuum of food waste prevention and reductions efforts in Mansfield. In the 1990s, K-8 schools began composting their lunchtime food scraps. Kitchen prep food scraps are now composted by our regional high school, E.O. Smith, as well. In 2023, Mansfield began a school food rescue initiative for all public schools, grades K-12. Monday through Friday, volunteers pick up school meal leftovers and deliver them to the Covenant Soup Kitchen in Willimantic. In 2025, our food rescue efforts will expand to include local restaurants and catering services.

Mansfield has promoted and supported backyard composting for decades. For example, we have hosted composting workshops, offering a discount on home compost bins in exchange for attendance. This program has reached several hundred households. Through a 2015 CT DEEP demonstration grant, residents can also compost their food scraps by bringing them to the Mansfield Transfer Station leaf pile. We estimate that 50 households contribute to these efforts annually. However, we believe that expanding access to composting through curbside collection will have a bigger impact. We estimate that Mansfield's residential solid waste stream will be reduced by about 7 percent. As is the current practice, town staff will operate the compost system using town equipment on town land. Mansfield has explored collaborating with other municipalities, but the size of our Transfer Station parcel constrains the amount of material that we can accept and manage. We also know that seeking out a regional location and coming to agreement would take considerable time. **Mansfield is ready to move on curbside collection today.**

Project Need

Mansfield has a registered leaf pile, Registration LCF-078-001, located at the Transfer Station on Warrenville Road. Currently, food scraps are added to the leaf pile through two demonstration projects. The first, approved in 2015, allows residents to bring in and place food scraps in the leaf pile. Around 50 households use the leaf pile regularly. The second demonstration project, approved in 2020, allows food scraps from the middle and elementary schools to be composted in the leaf pile. DEEP assessed that both projects met the threshold of concern after the demonstration period ended, allowing the Town to continue the practices.

Residential compost collection in Mansfield has not yet been implemented due to a lack of nearby infrastructure. In recent years, Coventry's Hytone Farm generated interest when they began an anaerobic digester operation, eight miles from Mansfield. The operators of the facility indicated that

they would be ready to accept Mansfield's residential food scraps once a contract for food scrap collection service was signed. Hytone Farm later decided to stay with liquids and manure processing for their digester operations and is not an outlet for the Town's food scraps. The next closest outlet for food scraps is the Quantum Biopower anaerobic digester in Southington. The long distance to Southington (about 45 miles) significantly reduces the environmental value of collecting food scraps.

When the Town went out to bid for single-family trash collection service in 2023, residential compost collection service was included in the specifications. The Town signed a food scrap collection contract with Blue Earth. Since 1990, Mansfield has been using a pay-as-you-throw trash service, offering different trash service sizes and charging by trash container size. The larger the trash container, the higher the cost of service. Since signing the contract with Blue Earth, we have not been able to enlist enough residents to opt into compost collection due to the added cost of $14.75 per month. Blue Earth has told us that, with a local compost outlet without a tipping fee, they are willing to reduce the cost per household. A lower cost would allow the Town to incorporate food scrap collection as part of the regular trash service, akin to how recycling collection is offered (e.g., built into the trash service fee). Regardless of their trash container size, every household receives recycle containers and weekly collection. Unlike recycle collection, households that compost at home will be able to opt out of food scrap collection. We believe that changing from *opting in* to compost collection to *opting out* will greatly increase participation. Our long-term goal is for compost collection to become cost neutral for households that reduce their trash service size.

In August 2024, Mansfield's Solid Waste Advisory Committee surveyed 2,800 households with single-family collection service to assess interest in curbside compost collection. Of the 366 responses we received, about half indicated that they have a backyard compost pile; about a third do not compost at all. Among those who do not compost, a majority expressed their interest in participating in curbside compost collection if it was free. We believe this response strongly supports our plan to incorporate compost collection into town trash service as long as it is cost neutral for residents.

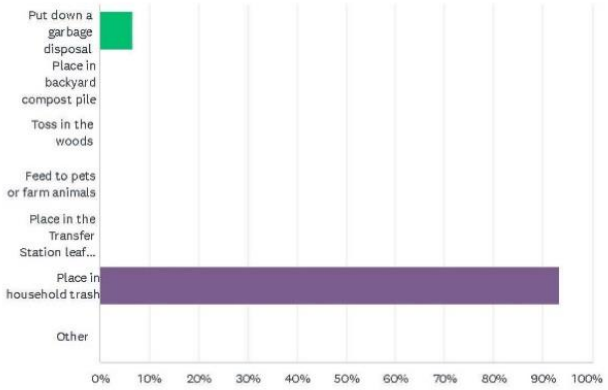
Figures 1-3, on the following pages, show resident responses to our compost survey.

Figure1-3: Survey Responses from Households That Do Not Compost

MANSFIELD COMPOST SURVEY

Q1 How do you handle food scraps (pits, peels, refrigerator spoilage, any food that is not going to be eaten) at home?

Answered: 121 Skipped: 0

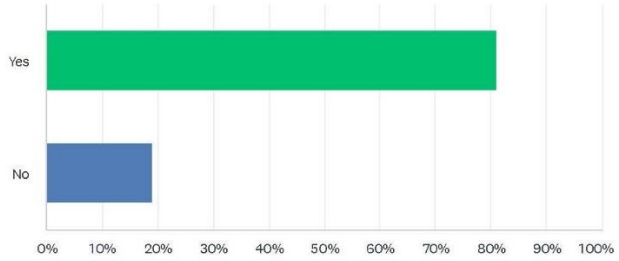


ANSWER CHOICES	RESPONSES	
Put down a garbage disposal	6.61%	8
Place in backyard compost pile	0.00%	0
Toss in the woods	0.00%	0
Feed to pets or farm animals	0.00%	0
Place in the Transfer Station leaf compost pile	0.00%	0
Place in household trash	93.39%	113
Other	0.00%	0
TOTAL		121

MANSFIELD COMPOST SURVEY

Q2 If the Town offered curbside compost collection for free, would you participate?

Answered: 121 Skipped: 0

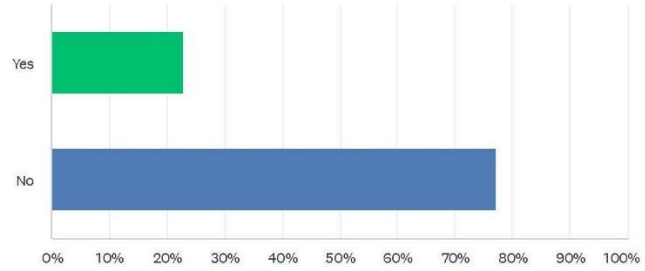


ANSWER CHOICES	RESPONSES	
Yes	80.99%	98
No	19.01%	23
Total Respondents: 121		

MANSFIELD COMPOST SURVEY

Q3 If the Town offered curbside collection, as part of trash collection service, for an additional cost of $8.20 per month, would you participate?

Answered: 118 Skipped: 3



ANSWER CHOICES	RESPONSES	
Yes	22.88%	27
No	77.12%	91
Total Respondents: 118		

Materials Diverted

The US Census lists 6,672 households in Mansfield, about half of which are multi-family residences. Single-family residences have the option to subscribe to curbside trash and recycle service or use the Transfer Station exclusively to drop off their trash. The Town has 3,211 households subscribed to single-family collection. This includes over 400 multi-family residences such as condominiums and mobile home parks that use curbside service rather than dumpsters. The project we propose incorporates all households with this kind of service.

We estimate that, on average, a household produces four pounds of food scraps per week (or 208 pounds per year). Estimating that 40 percent of households with collection service will participate in food scrap collection, about 134 tons of food scraps per year would be removed from the Mansfield solid waste stream. Last year 1,957 tons of solid waste was disposed through single-family collection service. By removing 134 tons of food scraps, we estimate the single-family waste stream will be reduced by 7 percent.

The Town will accept food scraps only for composting, in alignment with what is currently accepted from residents and schools who use the Transfer Station leaf pile. Examples of acceptable material includes:

- Vegetables and fruits;
- Bread, rice, cereals, and pasta;
- Dairy products;
- Small amounts of eggs, fish, shellfish, meat, and bones; and
- Coffee grounds and tea bags.

Paper products and “compostable” plastics have been and will continue to be excluded to assist in a cleaner sort.

Leaf and Wood Chip Measurements

The Town of Mansfield estimates an annual intake of 40 tons of leaves (DEEP annual report). A measurement of the Transfer Station leaf windrow taken on July 22, 2020 arrived at 188.6 cubic yards of leaves. Using 400 pounds per cubic yard for compacted, moist leaves to calculate the weight, *The On-Farm Composting Handbook*, page 113 (by Northeast Regional Agricultural Engineering Service, 152 Riley-Robb Hall, Cooperative Extension, Ithaca, NY 14853-5701, 607-255-7654), there were approximately 42 tons of leaves, confirming the estimate. The brush that is delivered to the Transfer Station amounts to approximately 2000 cubic yards of wood chips. The Town contracts wood grinding services once or twice a year. Wood chips will be the primary bulking material used for the aerated system.

Food Scrap Measurements

We estimate about four pounds of food scraps per household per week or 208 pounds per year. We estimate that as an opt-out collection service, 40% of households of the 3,211 households with curb service will participate.

4 pounds of food scraps per household x (3,211 single family households with curb service x 40% participation) x 52 weeks/2000 pounds = 134 tons of food scraps/year

According to an EPA Volume-to-Weight Conversion chart, https://archive.epa.gov/wastes/conserve/tools/rogo/web/pdf/volume-weight-conversions.pdf, food waste is 1,500 pounds per cubic yard and one ton of food equals 1.33 cubic yards.

134 tons of food scraps x 1.33 cubic yards = **178 cubic yards of residential food scraps per year**

Amount of bulking material needed for 178 cubic yards of food scraps

The “Best Management Practices for Incorporating Food Residuals into Existing Yard Waste Composting Operations” manual, page 3, suggests that 10-20% of the total volume of the compost pile can be food residuals. It is estimated that 712 cubic yards of leaves and wood chips will be used for a 20% food residual mix.

178 cy food scraps x 5 = 890 total cubic yards – 178 cy = **712 cubic yard leaves/wood chips**

Carbon Nitrogen Ratio

Using the Klickitat County Compost Mix Calculator, found at https://www.klickitatcounty.org/DocumentCenter/View/3523/Compost-Calculator, to verify that these quantities will have the correct carbon nitrogen ratio of 30:1, the following information was entered into the calculator:
“Food waste” 178 parts
“Wood Chips Softwood” 712 parts
C:N = 29.47 (an acceptable range)

Feasibility Evaluation

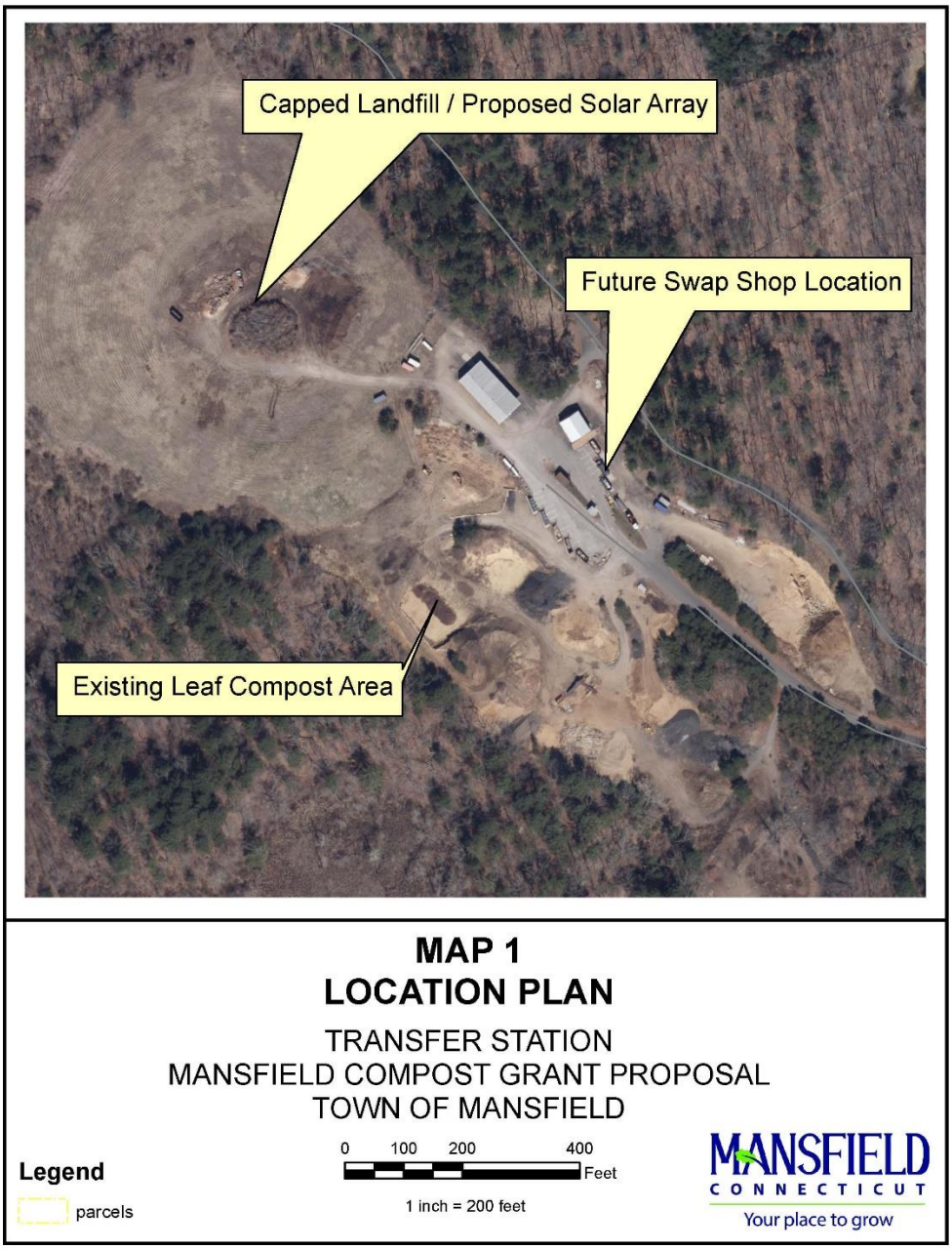
The current leaf composting operation is outside the 100-year flood zone. The distance from the Fenton River is 880 feet, with drainage to the river being over 1,000 feet. The nearest neighbors are 1,100 feet away, buffered entirely by a wooded area. Prevailing winds blow west to east. The Mansfield leaf pile is located in a gravel pit, surrounded by walls of earth that prevent surface water pollution. Mansfield's active composting area is 25,959 square feet or 0.6 acres, but this area will most likely be enlarged based on an engineered plan for an aerated static pile composting system. Staff of Mansfield Public Works have the capacity and equipment to make the reconfigurations we propose. The Town is currently working with Eversource to place a 1.8-megawatt solar array on the closed landfill, which is located northwest of the Transfer Station and its registered leaf pile. Once the array is functioning, the aerated system we propose will be solar powered!

This DEEP grant opportunity comes at an opportune time, as Mansfield continues to actively pursue decreasing the amount of waste flowing through our Transfer Station. Recently, our Town Council approved the use of surplus funds to build a separate and larger building used exclusively to recirculate usable items that would otherwise be discarded. Currently, the reuse area at the Transfer Station, called the Swap Shop, is tucked in the back corner of an equipment storage building. Expanding the Swap Shop, and making it more visible at the Transfer Station entrance, will underscore the importance Mansfield places on reuse. Though not a part of this proposal, we believe our plans to build a larger Swap Shop will allow the Town to divert more usable items, including electronics, furniture, lawn equipment, and building materials from the waste stream. The current Swap Shop has only enough room for small household items.

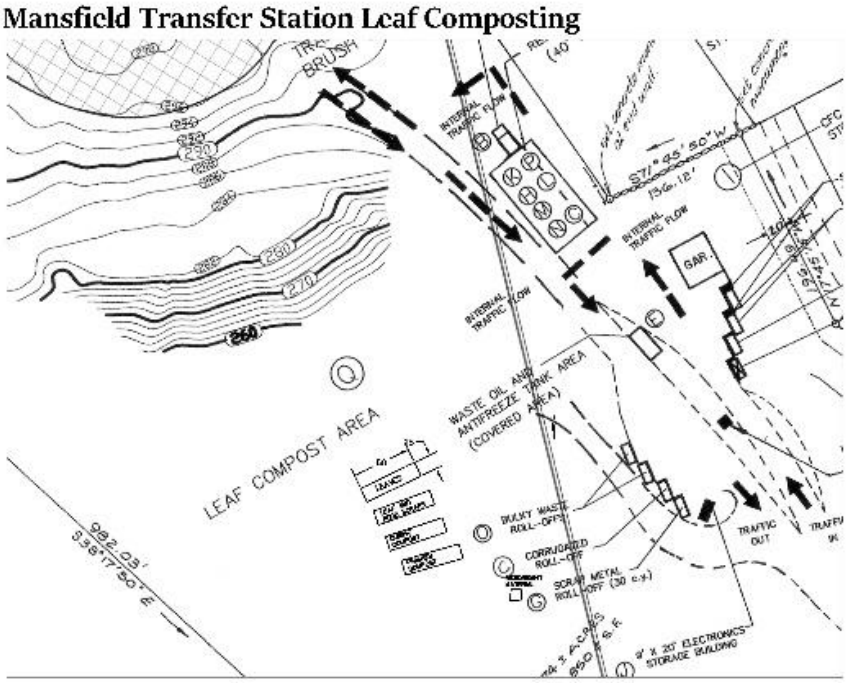
Figure 4: Mansfield Swap Shop

Site Plan

The aerated static compost system we propose will supersede the current windrow composting operation located at Mansfield's municipal transfer station (see aerial map below).



Schematic of Current Windrow Compost Operations



Projected Utilization

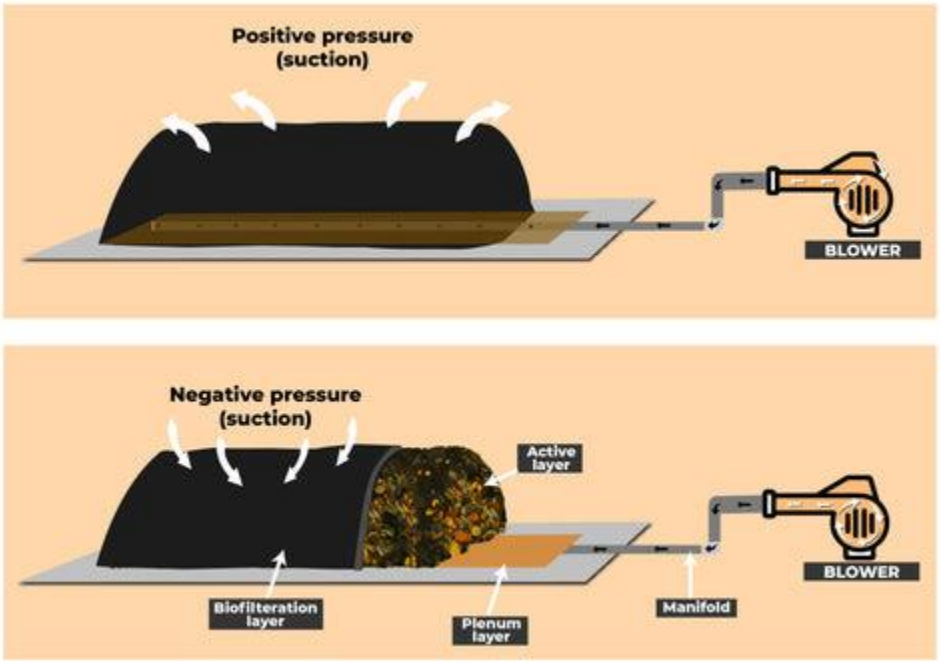
Mansfield residents transport their leaves and brush to the Transfer Station. Mansfield does not offer leaf collection services (bags, vacuum). The leaves go into composting and brush and logs (from Public Works tree care) are chipped once or twice per year. Between the leaves and wood chips, there should be enough bulking material for the increase in food scraps. Transfer station personnel will be responsible for managing the composting operations by mixing incoming food scraps with leaves or wood chips and using the loader to move materials and build the aerated compost pile. For the aerated static pile, an engineer will establish the size and configuration of the piles.

Under the current contract, Blue Earth will deliver curbside collected food scraps to the compost area, placing the materials in a receiving bunker. Transfer station staff will mix the food scraps with leaves and wood chips. Once there are approximately 60 cubic yards of incoming food/wood chip/leaf mixture, a windrow will be created on top of the aerated pipes and covered with 5 to 6 inches of a moist partially decomposed leaf/wood chip mix. This first batch will be left on the aerated pile for about 30 days. In order to know when to move the pile, the pile temperature will be monitored daily. When the compost pile can no longer maintain a temperature of 131 degrees, the material in the pile will be moved to a second set of aerated lines. After 10 to 15 days in the second aerated location, the compost will be moved to a curing bunker and a Gore-Tex compost cover will be placed over the pile for 30 days or more. Public Works staff will screen the compost and place in the finished compost bunker, where it will be available to residents. A Gore-Tex cover will be placed over the finished compost.

Staff will manage the piles and follow the Processes to Further Reduce Pathogens by monitoring temperature. Transfer Station staff will receive compost training to ensure proper management.
The following strategies will be employed to prevent odors:

1. Incoming food scraps will be mixed with one-part leaves and two parts wood chips the same day of delivery.
2. The food scrap/leaf/wood chip mixture placed on top of the aerated pipes will be covered with 5 to 6 inches of most partially decomposed leaves.
3. The pile will be moved to a second aerated pile using temperature as a guide.
4. If the pile begins to smells, a new layer of moist partially decomposed leaves will be added as covering.

Schematic of Aerated Static Compost System



Example of an Aerated Static Compost System, Ridgefield CT (right)

Number of Residents Impacted

Mansfield has 3,211 households currently subscribed to single-family curbside trash collection. The compost collection project we describe will be offered to all of these residents, including 1,100 low to moderate income households. Mansfield's total population is just under 26,000, which includes UCONN students who live on campus and do not subscribe to trash collection.

Environmental Justice

The 2020 Census puts Mansfield's population at 26,000, including UCONN students who live on campus. According to the Partnership for Strong Communities' 2020 Housing Data Profiles, 21 percent of the 3,450 single-family homes in Mansfield are rentals. Seven percent of Mansfield housing is subsidized and 42 percent of households are cost-burdened – spending more than 30 percent of their income on housing. Mansfield offers reduced trash service fees for households under a certain income level. We believe that providing a cost-neutral option for compost collection at mobile home parks, condominiums, and student-rented single-family housing, will allow lower-income residents to participate. Too often, ecologically sound practices such as composting are seen as actions only higher-income people can take to improve their communities. We estimate that the project described in this application will be available to 1,100 low to moderate income Mansfield households.

Data Gathering and Record Keeping

Food scrap weights and volumes will be recorded daily. The Transfer Station staff and Recycling Coordinator will keep dated records of the volume of leaves and wood chips that are added to the compost pile. Record keeping will include daily temperature readings of the compost pile, air temperature, dates of moving the piles, weather of particular note, outstanding observations, problems encountered and solutions, and finished compost test results. This information will be reported to Connecticut DEEP as required under the provisions of the grant contract and kept as a record for staff reference and guidance. Mansfield holds records for a minimum of three years.

Operating Costs

All solid waste activity in Mansfield is supported through Pay-As-You-Throw service fees and sale of recyclables. Transfer Station staff will manage the compost pile. The best estimate is that the compost system will involve three hours per week to manage. Mansfield Public Works staff will continue the weekly collection and composting of school food scraps. Electrical costs for the aerated pile will be incorporated into the Transfer Station electric bill. As soon as the solar array is functioning (anticipated in 2026), the compost system will be net zero energy. All Transfer Station staff assigned to manage compost operations will receive training on compost management through the Maine School of Composting, the United States Composting Council, or other organizations approved by Connecticut DEEP.

Budget

Budget Category	Item Description	Amount Requested ($)
Contractual		
Engineer	aerated compost system design	*30,000*
Electrician	Install electrical line to aerated system	*28,200*
Construction	labor and equipment for one week at $5,000/day x five days to build system	*25,000*
Materials		
Compost trammel screen	Remove non-compostable items from the cured compost, prior to placement of compost in the finished compost pile.	*28,000*
Concrete Blocks	2' x 2' x 6' blocks (90) @$65 per block	*6,000*
Blowers	Two blowers to aerate the compost pile	*5,000*
Pipes and Fittings	To connect blower to compost pile.	*5,000*
Compost covers	Two Gore-Tex covers to protect the Curing Pile and the Finished Compost Pile from excess rain and snow infiltration.	*2,000*
Temperature probe	To monitor the temperature of the compost pile and confirm that temperatures needed to destroy seeds and pathogens have been achieved.	*300*
Permit		
Demonstration Project Application	CT DEEP	*500*
		Total Request
		$130,000

Timeline

What will be done?	Who will do it?	When will it occur?
Go out to bid for the aerated static pile compost system design (engineer)	*Town of Mansfield, Department of Public Works*	Two months after project execution
Award contract and design system	*Town of Mansfield, Department of Public Works*	Five months after project execution
Request DEEP demonstration project permit	*Town of Mansfield, Department of Public Works*	We estimate six months, following identification and contracting of our engineer
Build system with electrical lines	*Town of Mansfield, Department of Public Works; engineer*	We estimate three months, following award of DEEP permit
Open and begin accepting compost	*Town of Mansfield, Department of Public Works*	We estimate that Mansfield will be ready to begin composting within 14 months after contract execution
Report to DEEP on project progress	*Town of Mansfield, Department of Public Works*	Quarterly after project execution

November 18, 2024

CT Department of Energy and Environmental Protection
79 Elm Street
Fourth Floor
Hartford, CT 06106-5127

RE: Support for Mansfield's Materials Management Infrastructure Grant (MMI) Application

Dear Grant Officer:

On behalf of Blue Earth Compost, Inc., I am writing to express our strong support for the Town of Mansfield's application for the Materials Management Infrastructure Grant. Mansfield's proposal to establish an aerated static compost system at its Transfer Station is a vital step forward in Connecticut's collective efforts to reduce municipal solid waste and enhance sustainable materials management.

Connecticut generates approximately 2.2 million tons of municipal solid waste annually, with food scraps accounting for over 22%. These organic materials are a leading contributor to landfill volume and methane emissions, which exacerbate climate change. Mansfield's initiative to process an estimated 134 tons of food scraps per year through this new system is precisely the type of localized infrastructure needed to address these challenges effectively.

Mansfield has a demonstrated history of innovation in waste management. The town's successful composting programs in schools, combined with the food rescue initiatives that serve local charities, highlight its commitment to sustainability and community well-being. This proposed project builds on that legacy, aiming to reduce the town's residential waste stream by 7%. By doing so, it will save resources, decrease reliance on out-of-state waste transport, and contribute to environmental preservation.

As a partner, Blue Earth Compost is deeply invested in Mansfield's success. We are currently contracted to provide curbside food scrap collection services, which underscores our capacity and expertise in the field. The integration of Mansfield's proposed composting facility into our operations would significantly reduce transportation costs and environmental impact, further incentivizing participation in composting programs. By lowering the cost of service, we can make food scrap collection accessible to a broader segment of the community.

Mansfield's project is also aligned with state goals, including those outlined by the Connecticut Coalition for Sustainable Materials Management and recent legislative initiatives like S.B. 191, which emphasizes food scrap diversion. The proposed system will not only divert waste but also produce high-quality compost for local use, creating a circular economy within the town.

Blue Earth Compost is prepared to provide ongoing support for this initiative, from the transportation of food scraps to operational collaboration and potentially investing in additional resources if required. Our company currently diverts thousands of tons of food scraps annually, transforming waste into valuable products. We are confident that our expertise will contribute to the success of Mansfield's innovative project.

The Town of Mansfield has laid out a well-thought-out plan, including using renewable energy sources like a planned solar array to power the aerated system. This initiative exemplifies the type of forward-thinking infrastructure investment that will benefit not only Mansfield but also serve as a model for communities across Connecticut.

We urge the CT Department of Energy and Environmental Protection to approve Mansfield's grant application and provide the funding necessary to bring this project to fruition. Blue Earth Compost is proud to stand with Mansfield in this endeavor and looks forward to collaborating to achieve its goals.

Should you have any questions or require additional information, please do not hesitate to contact me at (413) 824-6504 or via email at sam@blueearthcompost.com.

Sincerely,

Samuel King
CFO & Director of Business Development
Blue Earth Compost, Inc.
18 Midland Street
Hartford, CT 06120
Tel: 860-266-7346
info@blueearthcompost.com