Waste Options

Solving Environmental Problems

January 9, 2008

Elena Tkacz
Delaware Natural Resources Environmental Control
Delaware Land Use Planning Office
Office of the Secretary
89 Kings Highway
Dover, DE 19901

Re: Revised Application For A Coastal Zone Act Permit
Proposed Composting Facility Operation
Peninsula Compost Company, LLC
601 Christiana Avenue, Wilmington, DE, 19801

Dear Ms. Tkacz:

Pursuant to our phone conversation, please find enclosed eight (8) hard copies and one electronic copy of a revised Application For A Coastal Zone Act Permit to site a proposed composting facility operation at the location referenced above. This application is a revision of the application submitted May 16, 2007.

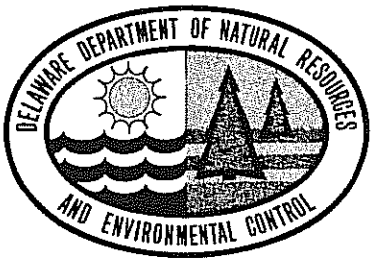
The application has been revised to address comments on the original application included in DNREC letters addressed to the under signed, dated June 25, 2007 and August 21, 2007.

Should you have any questions or require further information related to this Application, please contact us at (508)-238-4044.

Sincerely,

Whitney Hall
Agent For Peninsula Compost Company, LLC

Waste Options Nantucket, LLC
50 Oliver Street, Suite 215
N. Easton, Massachusetts 02356
508/ 238-4044 • 508/ 238-4144 fax
www.wasteoptions.com



APPLICATION FOR A COASTAL ZONE ACT PERMIT

Amended March 2005

State of Delaware
Department of Natural Resources & Environmental Control
Office of the Secretary

Table of Contents

Permit Application Instructions

1. Complete all parts of the application. For sections which are not applicable to your project, do not leave blank; present a statement to that effect and clearly state why the section is not applicable to your project.

2. Where sufficient space is not provided on the application form for requested information, attach extra pages referencing each answer by the appropriate part and question number.

3. Submit three complete copies of the permit application to:

   Department of Natural Resources & Environmental Control
   89 Kings Highway
   Dover, DE 19901

4. Comply if required, or as requested by the DNREC Secretary, with 7 Delaware Code, Chapter 79, Section 7902. If requested, but not made part of your application it will not be considered administratively complete until this form is reviewed.

5. Be sure to include your permit application fee of $3,000; otherwise the application will not be considered administratively complete. Make checks payable to "State of Delaware."

6. This application for a Coastal Zone Act Permit is a public document. Do not include information that you do not wish the public to review. If this application requires you to place confidential information or data in the application to make it administratively complete, note the Delaware Freedom of Information Act, Section 5 (Requests for Confidentiality), for the proper procedure in requesting confidentiality.

7. On the last page of text in this application, the applicant shall clearly print their name.

PART 1

APPLICANT AND SITE IDENTIFICATION

1.1 Identification of the permit applicant:

Name: **Peninsula Compost Company LLC**

Address: **801 N. Shipley Street**

Wilmington, DE 19801

Telephone No.: **(570) 587-2830**

:Fax No:

1.2 Authorized agent (if any):

Name:**Whitney Hall**

Address:**Waste Options**

50 Oliver Street

N. Easton, MA 02356

Telephone No.:**508-238-4044**

Fax No.:**509-238-4144**

Include written authorization from client for being authorized agent for this application. **Authorization is attached in Appendix 1**

1.3 Project property location (street address):

601 Christiana Avenue

Wilmington, DE 19801

1.4 Provide a general map of appropriate scale to clearly show project site:

See site location map included as Appendix 2

PART 2

EVIDENCE OF LOCAL ZONING AND PLANNING APPROVAL

I, _____,for_**The City of Wilmington**_____
(Name of County, City of Town)

do hereby affirm that the project proposed by_**Peninsula Compost Company**
(Name of Applicant)

located at _**601 Christiana Avenue, Wilmington, DE 19801**_____, in
(Address)

the _**M-2**_____ zoning district is in
full compliance with the zoning code as it applies to this project.

The above named applicant's project is in compliance with the adopted comprehensive development plan for the geographic area within which the project will be located.

_____
(Signature)

_____
(Title)

_____
(Date)

This part is essential for a complete Permit Application. No application will be considered administratively complete without it. While the applicant is strongly advised to use this form, the local zoning jurisdiction may utilize another form or document than this one to demonstrate "evidence of local zoning approval," but such documents must be signed and dated by the proper official.

PART 3

PROJECT PROPERTY RECORD

3.1 Name and address of project premises owner(s) of record:

Alma Properties LLC
529 Terminal Avenue
New Castle, DE 19720

3.2 Name and address of project premises equitable owner(s):

Same as 3.1 above

3.3 Name and address of lessee(s):

Peninsula Compost Company LLC
801 N. Shipley Street
Wilmington, DE 19801

3.4 Is the project premises under option by permit applicant?

No

3.5 What is the present zoning of the land for this entire project site?

M-2 – Light Manufacturing

PART 4
PROJECT OPERATIONS

4.1 Describe the characteristics of the manufactured product and all the process and/or assembly operations utilized by the proposed project. Include in the description (Use attachments if necessary):

a. the raw materials, intermediate products, by-products and final products and characteristics of each. Review any materials' risk of carcinogenicity, toxicity, mutagenicity and/or the potential to contribute to the formation of smog. Provide material safety data sheets (MSDS) if available;

The raw materials will consist of clean source separated food materials generated by importers, fast food restaurants, diners, cafeterias, universities and schools, sports venues, prisons, hospitals etc. Additionally, tree parts, brush, yard waste and untreated wood products (e.g., wood pallets, lumber, etc.) will be accepted as a carbon source, bulking agent and to adjust moisture content of the material to be composted. A total of 160,000 tons per year of raw material will be accepted for composting.

The raw materials will be blended and composted in an enclosed in vessel system for eight weeks to produce compost. During the composting process, blowers provide air to the composting materials. The raw materials particularly the food material has a high moisture content. As such, it is not expected that any water will be added to the compost material. After eight weeks of curing, the finished compost is screened and sold as compost or blended with other soils to produce a topsoil.

The entire composting operation will be detailed in a Facility Operating Plan that is subject to approval under the Delaware Regulations Governing Solid Waste (DRGSW) (Section 2.E). This approved Plan will include procedures for the inspection and qualification of materials managed under this process.

b. the step-by-step procedures or processes for manufacturing and/or assembling the product(s). Provide a flow diagram to illustrate procedures;

The proposed facility is modeled on the successful Cedar Grove Composting Facility located in Everett, Washington.

The facility will consist of an enclosed receiving building and forced aeration outdoor windrow composting. The proposed facility will be designed to accept 640 tons per day of various organic materials. In bound materials will be delivered primarily in 100 cy walking floor trailers, 35 cy self contained packers, and 16 cy rear load vehicles. It is expected that 35 trucks per day will deliver the in bound food and wood materials. An additional 5 trucks per day will deliver soils for

blending with compost to produce topsoil. Trucks will not pass through residential areas.

The receiving building will be 100 feet by 150 feet. The building will be a fully enclosed pre engineered metal building. The building will include grinding equipment and mixing equipment to size and blend the materials for rapid composting. Material movement will be by front end loader and the building design will include push walls to facilitate the movement of the material. A biofilter will be provided to provide odor control at the receiving building.

Once the materials have been sized and blended the material is composted in forced aeration windrows. Composting is proposed in three phases, Phase 1, High Rate Composting, Phase 2, Stabilization, and Phase 3, Curing. The composting process will utilize technology developed and supplied by W.L. Gore & Associates that utilizes a cover system for the windrows in order to accelerate composting while controlling odor.

Phase 1 consists of 27 windrows. Each windrow is approximately 185 feet long, 26 feet wide and 10 feet high and contains approximately 1,000 cubic yards of blended material. Phase 1 composting lasts 4 weeks. The windrow is covered with a Gore fabric and air is forced into the windrow to provide the necessary oxygen required by the composting process.

Phase 2 consists of 14 windrows with each windrow of the same size as the windrows used for Phase 1 composting. After 4 weeks of Phase 1 composting, the material is moved from Phase 1 area to the Phase 2 area by front end loader. The movement of material at this stage restores the porosity necessary to promote composting. It is not expected that water will be added to the compost. However, if the compost were to become too dry, water will be applied to the composting material. The source of this water will be storm water from on site basins. During drought conditions, water from the municipal water system will be used as necessary. Once the windrow has been built it is again covered with the Gore fabric and air is added by forced aeration. The material remains in Phase 2 for two weeks.

Phase 3 consists of 13 windrows with each windrow of the same size as the windrows used in Phases 1 and 2. After 2 weeks of Phase 2 composting, the material is moved from Phase 2 area to the Phase 3 area by front end loader. By this point in the process, the compost is sufficiently stable that the Gore cover is not required. The material is uncovered in Phase 3 but has forced aeration of the windrows. The material remains in Phase 3 for 2 weeks. After 2 weeks in Phase 3 the material is screened in a trommel screen with ½" screen size. Wood material greater than ½", after screening are returned to the Tipping Building for use as a bulking agent in the material being blended for composting. It is expected that outbound vehicles will consist of 30 cy

triaxle trucks and 50 cy dump trailers. An average of 25 to 30 outbound truck trips per day is expected.

c. the nature of the materials mentioned above in 4.1 (a) as to whether or not the materials require special means of storage or handling;

The only materials included in the process are food materials, other organic materials and water. The plant design (biofilter and W.L. Gore System) are designed to control odor release due to the composting process. Movement of materials through the process is by the use of front end loaders.

d. list the machinery (new and/or existing) to be utilized by this project;

One tub grinder
One shredder/mixer
One track excavator with grapple
Four front end loaders with 7 cy buckets
Two 8 ft diameter by 30 ft long trommel screens
Pickup truck
Maintenance truck
Skid steer with sweeper

Please note that all fixed process equipment (i.e., the tub grinder, the shredder/mixer and trommel screens) will be powered by electric motors. No diesel fired motors will be needed for this equipment.

e. list any new buildings or other facilities;

The project will include a new 100 ft by 150 ft metal building and associated biofilter. After blending, composting will occur on a composting pad based on the design by W. L. Gore. The composting pad will consist of an impervious pad constructed of concrete and asphalt. Trenches cast in the concrete pad will duct air by forced aeration into the compost windrows and will also collect any excess water coming from the composting material. Any water collected off of the compost pile and from the biofilter will be piped to the municipal sanitary sewer system. The project layout is shown on Appendix 3.

The site is subject to an environmental covenant prepared by DNREC. Any invasive activities associated with construction of the facility will not be conducted until approval has been received from DNREC.

f. if this project represents a totally new facility at a new or existing facility, what will be the new rate of maximum production, and;

The facility will produce 250,000 cy of compost and topsoil annually

g. if this project represents a totally new facility at a new or existing facility, what will be the maximum production rate?

800 cy per day (average), 950 cy per day maximum

4.2 Describe daily hours of plant operations and the number of operating shifts.

The facility will be operational from 6 AM to 5 PM from Monday through Saturday. The times material will be accepted will vary depending on production rates.

4.3 Provide a site plan of this project with:

a. a north arrow;

b. a scale of not less than one inch to 200 feet;

c. identity of the person responsible for the plan, including any licenses and their numbers;

d. the acreage of the applicant's entire property and acreage of the proposed project;

e. property lines of entire property;

f. lines designating the proposed project area for which application is being made clearly distinguished from present facilities and operating areas (if any);

g. existing and proposed roads, railroads, parking and loading areas, piers, wharfs, and other transportation facilities;

h. existing water bodies and wetlands and proposed dredge and fill areas, and;

i. existing and proposed drainage ways, gas, electric, sewer, water, roads, and other rights-of-way.

See Appendix 3

4.4 How many acres of land in total are required for this proposed project, both existing, utilized, developed land (if any), and new land?

Existing land: __**18**_____acres.
New land: _____**0**_____acres.

PART 5A

ENVIRONMENTAL IMPACTS

Air Quality

5.1 Describe project emissions (new and/or increased over current) by type and amount under maximum operating conditions:

Emissions from operations will mainly result from material handling in the form of particulate matter (PM) and emissions in the form of carbon dioxide and water vapor from the compost process. Particulate matter emissions are not expected to be generated from the operations related to Phase 1 and 2 of the composting process (see Section 4.1 above) since the moisture content of the material is sufficiently high that particle emissions will be negligible. However, PM will be generated from the following aspects of the operation:

- **Movement of the blended Phase 2 material into windrows for the Phase 3 curing process;**
- **Movement of material from Phase 3 windrows into the screening equipment for final sorting and blending with soil (as necessary);**
- **Discharge of the material from the screening equipment;**
- **Movement of the final screened material into the Finished Product storage pile; and**
- **Outloading of the Finished Product into trucks for removal from the site.**

There are no factors that have been developed by US EPA or the industry in general to characterize emissions associated with handling this type of material. It has been assumed, therefore, that Section 13.2.4 (11/06 ed.) for aggregate handing and stockpiling most closely models the emissions under consideration.

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(Please note that mobile equipment (i.e. - front-end loaders, tracked excavator, etc.) will be utilized at the site for material movement and loading/unloading operations. These mobile units are typically in use at numerous existing operations within the coastal zone and are not included in this analysis as unique to the manufacturing process.)

The above modeling resulted in an estimate of the following amounts and types of emissions:

		Emissions per Handling Operation		Total Estimated Annual Emissions
Air Pollutant	k	Lbs/Yr	Ton/Year	Ton/Year
PM		0.39	3.95	0.39
VOC		0.34	8.24	1.5[1]
CO_2 (equivalent)				-23,351[2]

[1] VOC emissions are expected to be extremely overstated and were estimated based on an upset condition leading to unusually long storage in the tipping building (see Environmental Offset Plan, Appendix 8)

[2] Carbon Dioxide equivalents are estimated based on the use of EPA's Waste Reduction Model (WARM) which address emission from the complete management of food waste in the compost process.

Based on the design and operation of the composting facility and the use of the Gore windrow storage system, there are no other quantifiable emissions expected to be generated from the proposed process. In addition, potential fugitive odors from the proposed operations are substantially abated and limited by the Gore System and are not expected to produce any odors offsite that would create a nuisance. Details of the Gore System of composting and odor control are included in Appendix 4.

5.2 Describe how the above emissions change in the event of a mechanical malfunction or human error.

The only equipment onsite that could cause difficulties in the event of malfunction are the shredding and blending equipment (one piece) and the blowers for air supply to the windrows. In the event of mechanical malfunction of the shredding and blending operation, additional material will not be accepted at the facility until repairs are made. If the air supply equipment malfunctions, there will be a window of time where no action will be necessary which will allow the repairs to be made, since the loss of air supply will not immediately impact the composting process. However, in the event of an extended malfunction the loaders on site can be used to turn the windrows if necessary.

5.3 Describe any pollution control measures to be utilized to control emissions to the levels cited above in 5.1.

The emissions discussed in 5.1 above are related to fugitive dusts that may be generated as a result of site operations. The materials being handled are expected to contain significant moisture content which will reduce overall PM emissions substantially. In addition, the facility will take appropriate measures, such as use of sweepers, water trucks and covers for storage areas, to minimize the potential generation of dusts resulting from roadway use or storage piles.

5.4 Show evidence that applicant has, or will have, the ability to maintain and utilize this equipment listed in 5.3 in a consistently proper and efficient manner. (For example, provide college transcripts and/or records of training courses and summary of experience with this pollution control equipment of person(s) responsible for pollution control equipment, and/or provide copies of contracts with pollution control firms to be responsible for maintaining and utilizing this equipment.)

Employees will be trained in the proper use and maintenance of sweepers, water trucks, and all other equipment used on site to minimize environmental impacts. Annual training records will also be kept to ensure all employees receive the necessary job specific training.

Water Quality

5.5 Describe any new wastewater discharge or increase over current discharge levels due to this proposed project:

There will be no process wastewater generated from this facility. The water that is collected inside the building, from the active curing compost and any excess rainfall on the biofilter will drain in to the municipal sanitary sewer. There are no underground or above ground tanks required or proposed for this facility.

5.6 Describe the current method of employee sanitary wastewater disposal and any proposed changes to that system due to this proposed project.

Currently, there are no employee sanitary wastewater facilities onsite. The proposed tipping building will contain sanitary facilities connected to the municipal sanitary sewer line located along Christiana Avenue.

5.7 Identify the number, location, and name of receiving water outfall(s) of any and all process wastewater discharge (new or current) affected by this proposed project.

Not applicable. No process wastewater will be generated by this facility.

5.8 If any effluent is discharged into a public sewer system, is there any pretreatment program? If so, describe the program.

Water going to the sewer system is defined in section 5.5. There is no pretreatment.

5.9 Identify the number, location, and name of receiving waters of stormwater discharges:
Christina River

a. describe the source of stormwater run-off (roofs, storage piles, parking lots, etc.;

Stormwater will be generated at the site by runoff from the rooftop of the tipping building and the paved areas of the compost facility. The building will be 100' x 150' and the paved area will encompass approximately 16 acres. The paved area will contain compost windrows that will be covered with impermeable material manufactured by W.L. Gore. There will also be some windrows that are exposed that will contain stabilized material going through the final curing process. There will also be a compost storage area that will contain exposed compost awaiting shipment offsite.

b. describe the pollutants likely to be in the stormwater;

The pollutants likely to be in the stormwater include fine particles that remain on the paved area that are not captured by sweeping operations at the facility. A relatively small amount of chemical oxygen demand may be present in the runoff from the site that passes through the retention ponds. Wood chips may also be present in the stormwater. Preventative measures are being implemented that are capable of eliminating the impact from these pollutants.

c. describe any pollution control device(s) or management technique(s) to be used to reduce the amount of stormwater generated and devices to improve the quality of the stormwater run-off prior to discharge;

BMP for Stormwater Runoff

- **Divert stormwater around storage areas**
- **Practice good housekeeping measures such as frequent cleanup of composting area following material transfer.**
- **Control dust by keeping traffic on paved areas and using a water truck and street sweeper as necessary.**

- **Outfit manholes with treatment technology that will intercept particulates and wood chips migrating from the operation.**
- **Install aerators in sediment ponds to oxidize dissolved chemical oxygen demand in stormwater.**
- **Silt fence installed between the compost screening and storage area to trap particles conveyed by stormwater.**
- **Excess liquid drainage from the actively composting windrows will be collected from depressed areas on the composting pad to eliminate potential stormwater contamination. This water will be segregated in the site piping and stored in a holding tank. It will be applied in fresh compost mix as process water to add proper moisture.**

The treatment technologies that will be installed in the manholes and the retention ponds will improve the runoff quality as compared to the existing site condition. The improvements will be realized by removing sediment from the compost site in filters installed in the manholes, whereas the present site has uncontrolled runoff over the packed gravel surface that discharges to the retention ponds.

There are a number of alternatives that can be used to treat stormwater entering manholes, such as filter inserts, vortex separation, leaving "dead space" at the bottom of manholes for solids storage, etc. During the site design, an appropriate treatment technology for the compost particulates will be selected and implemented to treat the stormwater passing through the manoles.

Sediment leaving the site is likely retained in the ponds, but with the filters installed in the manholes, the sediment will be intercepted before having a chance to enter the retention ponds. Also, for chemical oxygen demand that may be present in the water, the retention ponds will be fitted with an aerator for oxidation to remove the chemical oxygen demand from the retention ponds. With the aerators running constantly, there will be an improvement in water quality to the retention ponds by inducing higher dissolved oxygen levels in the ponds. The will consequently enable improvement to the Christina River through discharges of water with enhanced dissolved oxygen.

d. what amount of stormwater run-off increase over current levels will result from this proposed project;

There will be an increase in the stormwater runoff over current levels by changing the surface of a portion of the site from packed gravel to asphalt. The present drainage pattern splits the flow between two retention ponds located on opposite ends of the site. Thus, the

increased flow will not be realized in one area, but will be split between the two ponds.

A comparison of the design storm peak discharge values for the pre and post development condition are summarized as follows;

Design Storm Peak Discharge Summary

Runoff Condition	Design Storm Peak Discharge (cfs)		
	2 YR	10 YR	100 YR
Pre-Development	43.5	77.32	114.42
Post - Development	54.97	87.2	122.87
Increase (cfs)	11.47	9.88	8.45
% Increase	26%	13%	7%

e. describe any new or improved stormwater drainage system required to safely carry off stormwater without flooding project site or neighboring areas down gradient.

The stormwater discharge is into a tidal stream with inherent adequate capacity to accept the stormwater discharge and attenuate the peak generated by storm events without causing onsite flooding or neighboring areas for storms less than the 100 year event.

5.10 Will this project use a new water intake device, or increase the use (flow) from an existing intake device? If, yes, please state:

No.

a. the volume of water to withdrawn, and;

Not applicable. See above.

b. describe what will be done to prevent entrainment and/or entrapment of aquatic life by the intake device.

Not applicable. See above.

5.11 Will this proposed project result in a thermal discharge of water, or an increase in the flow or temperature of a current thermal discharge? If yes, state:

No.

a. the volume of the new flow or increase from the existing thermal discharge both in flow and amount of heat;

Not applicable. See above.

b. after all cooling water mechanisms have been applied to the hot water, how warm will the water be when it is discharged into a receiving waterway, discharge canal, or ditch and what will be the difference in discharge temperature and ambient temperature (delta T) at various seasons of the year?

Not applicable. See above.

c. what equipment and/or management techniques will be used to reduce the thermal load of the discharge water?

Not applicable. See above.

5.12 Will any proposed (new) discharge or change in existing discharge cause, or have potential to cause, or contribute to the exceedence of applicable criteria appearing in the State of Delaware Surface Water Quality Standards?

No. There is a possibility that wood chips and small particles of cured compost may enter surface water. As a means of preventing migration of wood chips and fine particles from the facility, manholes at the facility will be oversized and equipped with solids storage capacity at the bottom of the manhole to trap settleable solids during storm events. The outlets of the manholes will also be fitted with a hood to trap floating wood chips and prevent discharging floating debris to surface waters.

The finished product storage and screening area will have a silt fence barrier installed between the paved area and the retention pond. The silt fence will provide protection from wood chips and cured compost particles migrating from the storage area to the retention pond.

5.13 Describe any oils discharged to surface waters due to this proposed project.

None. This process will not generate any oils; therefore, no oils will be discharged to surface waters.

5.14 Describe any settleable or floating solid wastes discharged to surface waters due to this project.

See Item 5.12 above.

5.15 Show evidence that the applicant has, or will have, the ability to maintain and utilize any water pollution control equipment listed in questions 5.5 through 5.14 in a consistently proper and efficient manner. (For example, provide college transcripts and/or training courses and summary of prior experience with this pollution control equipment of person(s) responsible for pollution control equipment, and/or provide copies of contracts with pollution control firms.)

BMPs will be utilized to control water quality. These controls do not require advanced education for operation and maintenance.

Water Quantity

5.16 Identify the source of water needed for the proposed project, including potable water supplies.

City of Wilmington public water supply.

5.17 If wells are to be used, identify the aquifer to be pumped and the depth, size and pumping capacity of the wells and state whether or not a permit has been applied for.

Not applicable. No wells are going to be used on this project. Wells are not permitted on this site.

5.18 Estimate the amount of water to be used for every purpose, including cooling water. State daily and maximum water use in the unit of gallons per day. State if water use will vary with the seasons, time of day or other factors.

Water usage is approximately 500 gallons per day. The projected use of city water is based on supply only to the sanitary facilities on site.

During drought conditions, potable water may have to be used to adjust the moisture content of the compost material.

5.19 How close is the proposed well(s) to any well on adjacent lands?

Not applicable. Wells are not permitted on this site.

Solid Waste

5.20 Describe each type and volume of any solid waste (inc. biowastes) generated by this project and the means used to transport, store, and dispose of the waste(s).

Other than commercial waste from the offices, there will be approximately 7 tons per day of waste process (primarily plastic packaging waste) and reject material that will be separated from the finished compost by screening. This material will be placed in containers and removed from the site for proper disposal at an appropriately permitted facility. Refuse containers will have lids to keep debris inside.

The proposed facility provides an alternative to landfill disposal. The food and other organic matter is converted into compost which is beneficially used in landscaping and agricultural applications. The proposed composting system includes forced aeration of the compost piles, precluding the formation of methane. This is significant when impacts on greenhouse gas emissions are considered.

Landfills are the nation's largest emitter of methane and food materials produce more methane per ton than most other material sent to landfills. Each pound of methane gas traps 23 times as much heat as carbon dioxide. A paper analyzing the impact of food waste diversion on greenhouse gas emissions for Portland, Oregon is attached as Appendix 5.

It is expected that the proposed facility will process approximately 120,000 tons per year of food materials. We estimate that initially 60% of the source separated food materials and 100% of the tree parts, brush and yard waste will come from Delaware sources. Marketing efforts by Peninsula will concentrate on Delaware sources. Reduced transportation costs due to the proximity to the facility will make use of this facility attractive for Delaware users. It is expected that marketing efforts will be successful in increasing the percentage of food materials from Delaware sources from 60% to 80%. This facility will provide a financially attractive disposal option for materials subject to the January 2008 ban on landfill disposal of yard waste.

Of the 60% initial waste stream that is drawn from Delaware generator sources, 80% of that waste would have been disposed of at

the Delaware Solid Waste Authority Cherry Island Landfill (which is in the Coastal Zone). The EPA estimates that composting food materials (as opposed to landfill disposal) produces a net decrease of 0.82 metric tons of carbon dioxide equivalent per ton of food waste. See the separate Proposed Offset Plan for a detailed discussion of the impacts of the proposed composting facility.

5.21 Will there be any on-site recycling, re-use, or reclamation of solid wastes generated by this project?

This facility will convert waste food products, i.e. overripe fruits and vegetables, and wood into compost suitable for gardening and crop purposes.

5.22 Will any waste material generated by this project be destroyed on-site? If so, how would that be done?

No waste material generated by this project will be destroyed onsite.

Hazardous Waste

5.23 Will this proposed project result in the generation of any hazardous waste as defined by the "Delaware Regulations Governing Hazardous Waste?"

No. The project will not result in the generation of any hazardous waste as defined by the "Delaware Regulations Governing Hazardous Waste"

Metal halide lighting will be used. Any oils or oil filters from equipment used on site will be collected and properly disposed.

5.24 If so, identify which hazardous waste, the amount of each, and how it is generated.

Not applicable. See 5.23 above.

5.25 Describe the transport of any hazardous waste and list the permitted hazardous waste haulers to be utilized.

Not applicable. See 5.23 above.

5.26 Will the proposed project cause the applicant to store, treat, and/or dispose of hazardous waste?

No.

5.27 Does the applicant currently generate any hazardous waste at this site?

No.

Habitat Protection

5.28 What is the current use of the land that is to be used for the proposed project?

The land is currently being used to receive, store and ship bulk and break bulk material. In addition, it has been used to store new automobiles, various bulk materials, and a concrete recycling operation. These operations will be relocated to accommodate the proposed project.

5.29 Will the proposed project result in the loss of any wetland habitat? If so, answer the following:

All of the construction associated with the proposed facility will be performed in areas that were previously developed as part of the Potts Remediation Project. These developed areas are part of the cover and cap remedy for the site. No wetlands will be impacted by the proposed facility.

A portion of the subject property was also developed as part of the Halby Superfund Site Remediation Project. During this remediation, approximately 8 acres of wetlands were impacted and subsequently mitigated at an off-site location. The impacted wetlands, formerly located on the south east portion of the site, were replaced by the existing rip-rap lined drainage channelswill any wastewater and/or stormwater be discharged into a wetland, and;

Not applicable.

a. if so, will the discharge water be of the same salinity as the receiving wetlands?

Not applicable.

5.30 Will the proposed project result in the loss of any undisturbed natural habitat or public use of tidal waters? If so, how many acres?

All of the construction associated with the proposed facility will be performed in areas that were previously developed as part of the Potts Remediation Project. These developed areas are part of the cover and cap

remedy for the site. No wetlands will be impacted by the proposed facility.

A portion of the subject property was also developed as part of the Halby Superfund Site Remediation Project. During this remediation, approximately 8 acres of wetlands were impacted and subsequently mitigated at an off-site location. The impacted wetlands, formerly located on the south east portion of the site, were replaced by the existing rip-rap lined drainage channels.

5.31 Do threatened or endangered species (as defined by the DNREC and/or the Federal Endangered Species Act) exist at the site of the proposed project, or immediately adjacent to it? If so, list them.

There are no threatened or endangered species on or immediately adjacent to the site. A letter dated January 2, 2006 from DNREC addressing this issue for this site is enclosed in Appendix 6.

5.32 Will this proposed project have any effect on these threatened or endangered species (as defined by the DNREC and/or the Federal Endangered Species Act).

Not applicable.

5.33 What assurances can be made that no threatened or endangered species exist on the site of the proposed project site?

Not applicable.

5.34 Describe any filling, dredging, or draining that may affect nearby wetlands or waterways.

Filling on the site will be limited to leveling the site to raise the property above the 100 year flood plain and to provide for proper site drainage in compliance with the DNREC Guidelines for Yard Waste Composting Facilities. These guidelines are included as Appendix 7. The authorization for placing this fill material will be obtained through the appropriate authorities with the City of Wilmington and the DNREC – Site Investigation and Restoration Branch.

5.35 If dredging is proposed, how much will occur and where will the dredged materials go for disposal?

There will be no dredging.

Other Environmental Effects

5.36 Describe any effects noticeable of the proposed project site including: heat, glare, noise, vibration, radiation, electromagnetic interference, and odors.

It is possible that some odors will be present at the site as a result of spoiled incoming food received at the tipping building. There is also a possibility of some odors emanating from the windrows as they are composting. Those odors should not travel past the property boundary in sufficient strength to cause any unreasonable interference with the enjoyment of life or property. The facility located in Everett, Washington uses the same technology and has experienced no odor problems.

5.37 Describe what will be done to minimize and monitor such effects.

The potentially odorous air will be directed through a biofilter prior to being allowed to be emitted to the atmosphere to remove offensive odors from these sources.

Details of the Gore Composting System and the odor control mechanisms included in the design are included in Appendix 4.

5.38 Describe any effect this proposed project will have on public access to tidal waters.

This project will have no effect on public access to tidal waters.

5.39 Provide a thorough scenario of the proposed project's potential to pollute should a major equipment malfunction or human error occur, including a description of backup controls and safety provisions planned for this project to minimize any accidents.

Please see 5.2, above.

5.40 Describe how the air, water, solid and hazardous waste streams, emissions, or discharge change in the event of a major mechanical malfunction or human error.

Due to the nature of the composting process, any major mechanical malfunction will not have an adverse impact on the air, water or solid waste streams. The time necessary to adversely affect these waste streams is greater than that necessary for repairs. If considered necessary, the incoming stream of waste materials can be stopped until repairs are affected. Materials already on site can be managed with other equipment on site.

PART 5B

ENVIRONMENTAL OFFSET PROPOSAL REDUCTION CLAIM

Is applicant claiming the right to have a reduced offset proposal due to past voluntary improvements as defined in the Regulations Governing Delaware's Coastal Zone?

Circle one below

YES

(NO)

If yes, provide an attachment to the application presenting sufficient tangible documentation to support your claim.

PART 5C

ENVIRONMENTAL OFFSET PROPOSAL

If the applicant or the Department finds that an Environmental Offset Proposal is required, the proposed offset project shall include all the information needed to clearly establish:

A. A qualitative and quantitative description of how the offset project will more than offset the negative impacts from the proposed project.

B. How the offset project will be carried out and in what period of time.

C. What the environmental benefits will be and when they will be achieved.

D. What scientific evidence there is concerning the efficacy of the offset project in producing its intended results.

E. How the success or failure of the offset project will be measured in the short and long term.

F. What, if any, negative impacts are associated with the offset project.

G. How the offset will impact the attainment of the Department's environmental goals for the Coastal Zone and the environmental indicators used to assess long-term environmental quality within the Coastal Zone.

The offset proposals must clearly and demonstrably* more than offset any new pollution from the applicant's proposed project. The applicant can claim (with documentation) evidence of past voluntary environmental investments (as defined in the Regulations) implemented prior to the time of application. Where the Department concurs with the applicant that such has occurred, the positive environmental improvement of the offset proposal against the new negative impact can be somewhat reduced.

The applicant must complete the Coastal Zone Environmental Impact Offset Matrix. This matrix can be found on the same web site as this application. The matrix is found at 'CZA Matrix' just below this site. On page one, the applicant must list <u>all</u> environmental impacts in the column labeled "Describe Environmental Impacts". In the column to the immediate right, the applicant should reference the page number of the application or attachment which documents each impact listed. In the "Describe Environmental Offset Proposal" column, applicant must state what action is offsetting the impact. The offset action shall be referenced by page number in the column to the right to show how the offset will work.. The applicant shall not utilize the far right column.

In the above, the entire offset proposal, including the matrix, shall be available to the public, as well as the evidence of past voluntary environmental enhancements.

* For purposes of this requirement, the DNREC will interpret the phrase "clearly and demonstrably" to mean an offset proposal that is obviously so beneficial without detailed technical argument or debate. The positive environmental benefits must be obviously more beneficial to the environment than the new pollution that minimal technical review is required by the Department and the public to confirm such. The total project must have a positive environmental impact. The burden of proof is on the applicant.

5C.1 – General

The operation will receive raw materials, move materials to different individual phases within the operation; and, outload finished compost for shipment offsite. Expected environmental impacts include deferral of a large amount of solid waste from management at landfills and a small amount of air emissions from material handling activities associated with the proposed operations. Estimated air emissions using US Environmental Protection Agency (EPA) AP-42 emission factors are presented as attachments to this application.

5C.2 – Offsetting Approach

The Proposed Offset Plan, provided as Appendix 8 to this application, includes two main components:

a. **Relocation of an existing operation from the site to another site within the Coastal Zone resulting in a reduction in air emissions from current permitted levels.**
b. **Removal of a solid waste stream from Delaware's solid waste management system and production of a material which can be beneficially reused.**

In addition, to assert Peninsula's commitment to the continued enhancement of Delaware's Coastal Zone, Peninsula proposes a one time contribution to the South Wilmington Special Area Management Plan. The contribution will be made in the amount of $2,500.00 within 60 days of receipt by Peninsula of the final approval Coastal Zone Permit. This aspect of the proposed offset proposal will be implemented under the authority of DNRC in accordance with the

aforementioned schedule. No negative impacts are anticipated in associated with this one time donation. New plantings of native landscape trees at the site are also included in this proposed project for increased aesthetics and to improve the integration of the facility into the environmental setting of the coastal zone.

5C.3 – Potential Negative Impacts of Proposed Project

The proposed project will result in slight increases in the amount and rate of runoff from the site. However, the site has retention basins in place proximate to the stretch of roadway proposed for paving. These basins are specifically engineered to control the rate at which runoff is discharged from the site.

5C.4 – Attainment of Coastal Zone Environmental Goals

The proposed offsetting measure is permanent and can be expected to furnish benefits to air and water quality for the long term. The significance that the Department, as well as the local community, append to mitigating fugitive dust problems in this area is embodied in a letter issued by the Department on January 25, 2007 from Nancy Terranova, Program Manager, Air Engineering and Compliance Branch (Attached as Appendix 9). This letter summarizes issues with respect to ambient fugitive dust identified by the Department and stakeholders in the general vicinity of the Port of Wilmington. This letter also delineates paving of unpaved roadway surfaces, as well as several of the best management practices identified in this application, as key to significantly mitigating perceived fugitive dust problems. It is felt that on-going monitoring performed by the Department and stakeholders in the Port area will disclose the benefits of the proposed offset measures.

5C.8 – Affirmation of Negative Impacts

The following is to affirm that Peninsula expects no "offsetting" will be necessary to the following media.

5.C.8a – Water Quality

5.C.8.a.1 – Surface water

Peninsula expects no adverse impacts to proximate surface waters. In fact, , Peninsula expects that the offsetting measures proposed will enhance surface water quality proximate to the site.

5.C.8.a.2 – Ground Water

Peninsula expects no adverse impacts to proximate ground water.

5.C.8b – Water Use

5.C.8.b.1 – Process water

Peninsula will require no process water from outside sources. Water needed for the composting process will be available from collected stormwater. During drought conditions, water from the municipal water system will be used as necessary. No offsetting necessary.

5.C.8.b.2 – Cooling Water

Peninsula will require no cooling water. No offsetting necessary.

5.C.8.b.3 – Effluent Water

Peninsula will discharge no effluent water. No offsetting necessary.

5.C.8.c – Solid Waste

Peninsula's operation will produce no solid waste. In fact, the project will compost materials that would otherwise end up in a solid waste landfill thereby reducing the total amount of solid waste managed in this manner. No offsetting necessary.

5.C.8.d – Hazardous Waste

Peninsula's operation will produce no hazardous waste. No offsetting necessary.

5.C.8.e – Habitat

5.C.8.e.1 – Wetlands

The implementation of Peninsula's project will impact no wetlands proximate to the site. No offsetting necessary.

5.C.8.e.2 – Flora and Fauna

The implementation of Peninsula's project will impact no flora and fauna proximate to the site. No offsetting necessary.

5.C.8.f – Drainage/Flood Control

Marginal increase in the amount and rate of runoff from the proposed offsetting project will be accommodated by existing engineering controls on the site. No offsetting required.

5.C.8.g – Erosion

The proposed offsetting measure will actually mitigate erosion by reducing the amount of bare roadway surface subject to incident precipitation. No offsetting required. Additionally, implementation

of the project will involve the creation of an extensive, impermeable composting "pad" that will be installed in an area that is presently bare earth. It is anticipated that this will substantially reduce erosion from precipitation and wind enhancing proximate surface water and air quality.

5.C.8.h – Land Use Effects

5.C.8.h.1 – Glare

The implementation of Peninsula's project will produce no glare impacts. No offsetting necessary.

5.C.8.h.2 – Glare

The implementation of Peninsula's project will produce no glare impacts. No offsetting necessary.

5.C.8.h.3 – Heat

The implementation of Peninsula's project will produce no heat impacts. No offsetting necessary.

5.C.8.h.4 – Noise

The implementation of Peninsula's project will produce no noise impacts. No offsetting necessary.

5.C.8.h.5 – Odors

The implementation of Peninsula's project will produce no odor impacts. The addition of a biofilter and the Gore covers over the composting windrows will contain any fugitive odors. No offsetting necessary.

5.C.8.h.6 – Vibration

The implementation of Peninsula's project will produce no vibration impacts. No offsetting necessary.

5.C.8.h.7 – Radiation

The implementation of Peninsula's project will produce no radiation impacts. No offsetting necessary.

5.C.8.h.8 – Electro-magnetic Interference

The implementation of Peninsula's project will produce no electro-magnetic interference impacts. No offsetting necessary.

5.C.8.h.9 – Other Effects

It is not expected that Peninsula's project will produce any additional impacts other than those specifically stated in this application.

5.C.8.i – Threatened and Endangered Species

It is not expected that Peninsula's project will not impact any threatened or endangered species. No offsetting required.

5.C.8.j – Impacts from Process Materials

It is not expected that Peninsula's project will utilize any raw materials or produce any intermediate or finished materials that will cause any adverse impacts. Therefore, no offsetting is required.

PART 6

ECONOMIC EFFECTS

Construction

6.1 Estimate the total number of workers for project construction and the number to be hired in Delaware.

20

6.2 Estimate the weekly construction payroll.

$20,000

6.3 Estimate the value of construction supplies and services to be purchased in Delaware.

$12,000,000

6.4 State the expected dates of construction initiation and completion.

Construction Start: **May 1, 2008**
Construction Complete: **November 1, 2008**

6.5 Estimate the economic impact from loss of natural habitat or any adverse economic effects degraded water or air quality will have on individuals indirectly or directly dependent on that habitat or air or water quality (e.g. commercial fishermen, waterfowl guides, trappers, fishing guides, and charter or head boat operators and bait and tackle dealers.

None

Operations

6.6 State the number of new employees to be hired as a direct result of this proposed project and how many of them will be existing Delaware residents and how many will be transferred in from other states.

10 new employees all hired locally.

Peninsula has executed the first Community Benefits Agreement in the State of Delaware with a coalition of 13 community groups in the South Wilmington neighborhood represented by Arther Boswell and Marvin Thomas at the Neighborhood House in the Southbridge Community in which Peninsula commits to minority hiring and subcontracting goals and neighborhood outreach programs.

6.7 If employment attributable to the proposed project will vary on a seasonal or periodic basis, explain the variation and estimate the number of employees involved.

Employment levels will be constant

6.8 Estimate the percent distribution of annual wages and salaries (based on regular working hours) for employees attributable to this project:

Wage/salary	Percent of employees
$12,001-20,000	
$20,001-29,000	**10**
$29,001 -39,000	**80**
$39,001 and over	**10**

6.9 Estimate the annual taxes to be paid in Delaware attributable to this proposed project:

State personal income taxes **$15,300**
State corporate income taxes: **$0 (see below)**
County and School District taxes: **$41,885**
Municipal taxes: **$36,319**

As a LLC taxed as a partnership, state tax flows to individuals. Individual state tax is estimated as $150,000 per year.

PART 7

SUPPORTING FACILITIES REQUIREMENTS

Describe the number and type of new supporting facilities and services that will be required as a result of the proposed project including, but not limited to:

Roads -

None

Bridges

None

Piers and/or docks

None

Railroads

None

Microwave towers

None

Special fire protection services not now available

None

Traffic signals

None

Sewer expansion

None

Energy related facilities expansion

None

Pipelines

None

PART 8

AESTHETIC EFFECTS

8.1 Describe whether the proposed project will be located on a site readily visible from a public road, residential area, public park, or other public meeting place (such as schools or cultural centers).

The proposed project is on a site readily visible from Christiana Avenue and the I-495 bridge. There are no residential areas, public parks or other public meeting places within this area.

Peninsula Composting will plant trees along the property line to buffer any visual impacts.

8.2 Is the project site location within half a mile of a place of historic or scenic value?

No. This project site is not within half a mile of any historic or scenic areas.

8.3 Describe any planned attempt to make the proposed facility aesthetically compatible with its neighboring land uses. Include schematic plans and/or drawings of the proposed project after it is complete, including any landscaping and screening.

The neighboring land uses for this site are also zoned M-2, Light Manufacturing, and consist of a mulching operation, a lumber yard and the Port of Wilmington marine terminal operations. The proposed facility would be compatible with its neighboring land uses.

PART 9

EFFECTS ON NEIGHBORING LAND USES

9.1 How close is the nearest year-round residence to the site of this proposed project?

Approximately 0.25 miles.

9.2 Will this proposed project interfere with the public's use of existing public or private recreational facilities or resources?

No.

9.3 Will the proposed project utilize or interfere with agricultural areas?

No.

9.4 Is there any possibility that the proposed project could interfere with a nearby existing business, commercial or manufacturing use?

No.

If applicable, the applicant needs to comply with 7 Del. Code, Chapter 79, as part of this application.

CERTIFICATION BY APPLICANT

I hereby certify that all the information contained in this Permit Application and in any attachments is true and complete to the best of my belief.

I hereby acknowledge that any falsification or withholding of information will be grounds for denial of a Coastal Zone Permit.

I also hereby acknowledge that all information in this application will be public information subject to the Delaware Freedom of Information Act except for clearly identified proprietary information agreed to by the Secretary of the Department of Natural Resources & Environmental Control .

Peninsula Compost Company LLC
Print Name of Applicant

Signature of Applicant

Authorized Agent: Whitney W Hall
Title

January 9, 2008

Appendix 1

Agent Authorization

Peninsula Compost Company
801 N. Shipley Street
Wilmington, Delaware 19801

May 9, 2007

Department of Natural Resources & Environmental Control
89 Kings Highway
Dover, DE 19901

Re: Authorized Agent

Please be advised that with regard to Peninsula Compost Company's Application For A Coastal Zone Act Permit, our authorized agent will be:

Whitney Hall
Waste Options Nantucket LLC
50 Oliver Street
North Easton, MA 02356

Should you have any questions, please call me at 401-413-2683.

Sincerely

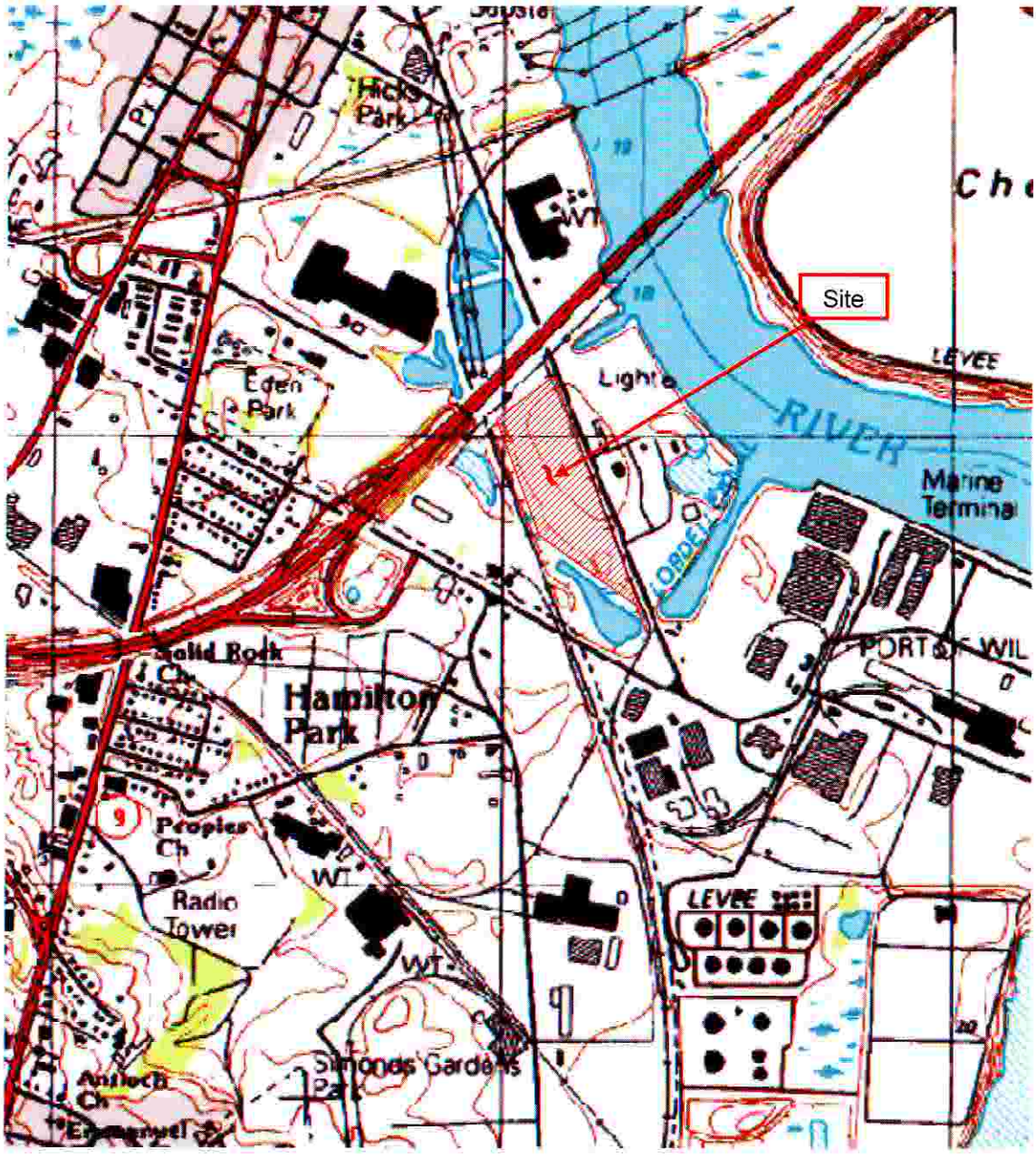
Charles H. Gifford III
Manager

Appendix 2

Site Location Map

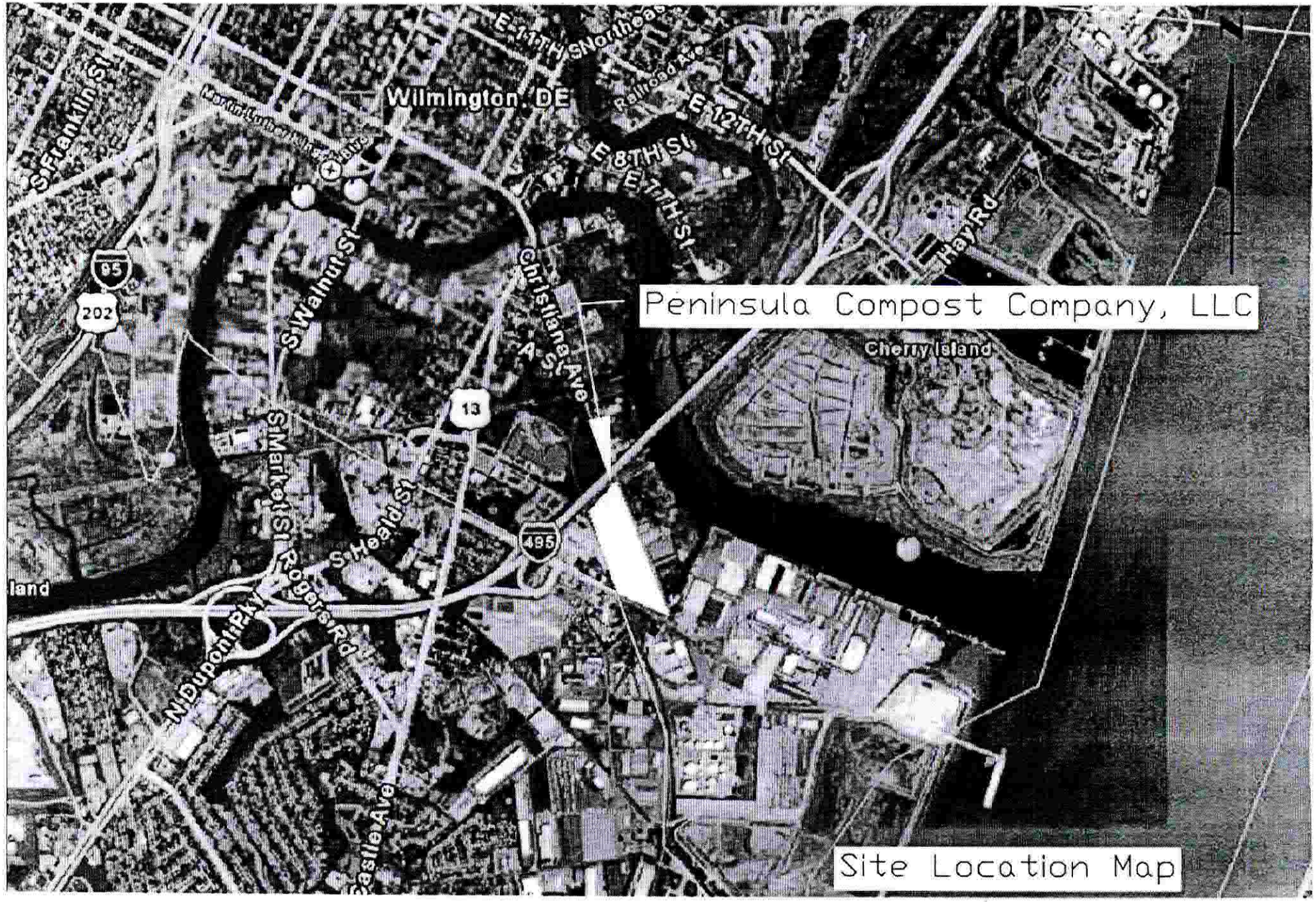
TOPOGRAPHIC LOCATION MAP

Peninsula Compost Company, LLC
601 Christiana Avenue
Wilmington, DE 19801



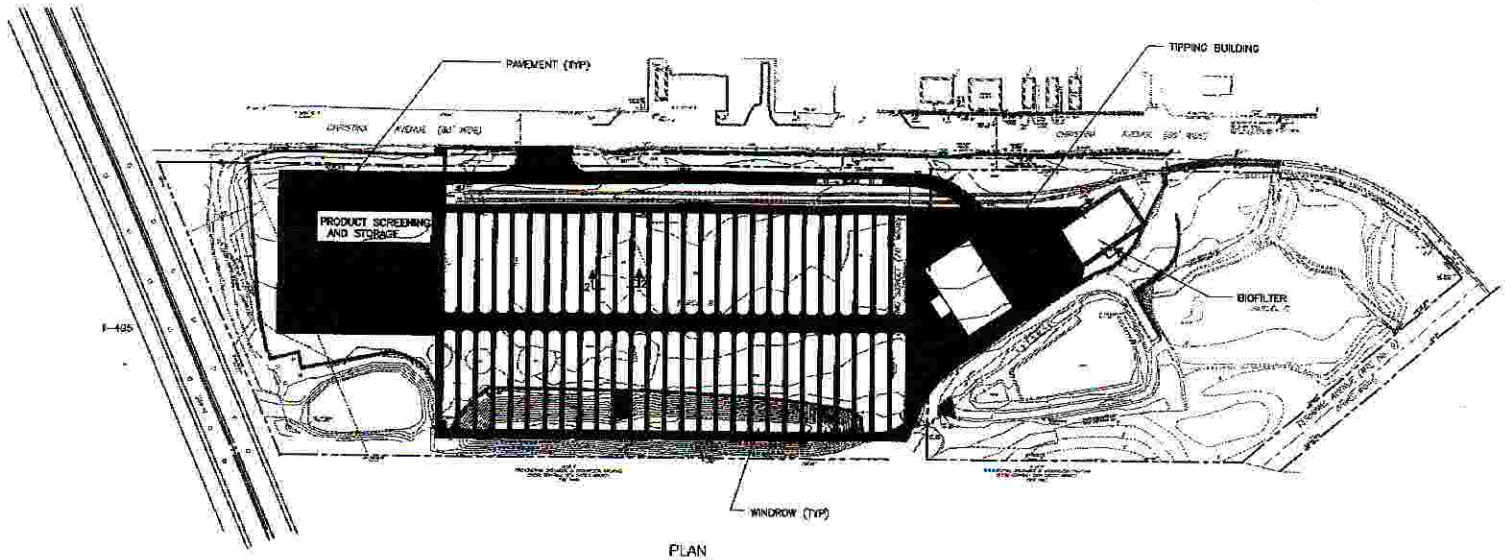
USGS TOPOGRAPHIC MAP OF Wilmington, D.E.	**SCALE:** 1:25,000	**Date:** May, 2007
	PROJECT NO: 0240 . 0407 . 01	**File Name:** Peninsula Compost Company, LLC

Compliance Plus Services
120 Gibraltar Road, Suite 210
Horsham, PA 19044
215-734-1414


Peninsula Compost Company, LLC
Site Location Map
Wilmington, DE
Cherry Island
S Franklin St
S Walnut St
Christiana Ave
E 11TH St
E 8TH St
E 7TH St
E 12TH St
Hay Rd
Railroad Ave
Martin Luther King Jr Blvd
N Dupont Pkwy
Rogers Rd
S Market St
S Pleasant St
Castle Ave
95
202
13
495

Appendix 3

Project Layout



PLAN
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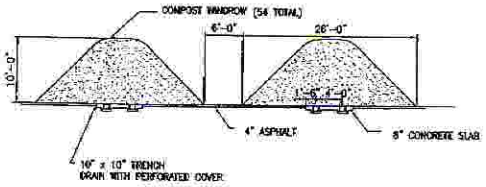

SECTION 2-2
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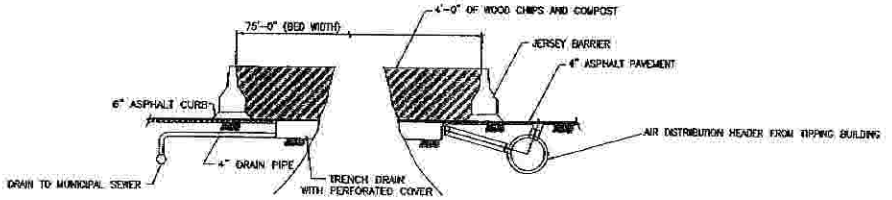


SECTION 1-1
1"=50'

REV	REVISION RECORD	DESIGN	CHKD	APPV'D	DATE
A					

PENINSULA COMPOST COMPANY

160,000 TPY COMPOST FACILITY

SITE PLAN

DATE	SCALE: AS NOTED
DRAWN BY	CHECKED BY / APPROVED BY

DWG NO: FIGURE 1 REV

Appendix 4

W. L. Gore Product Information

THE PRINCIPLE OF WASTE TREATMENT WITH GORE™ COVER

Take just as much favourably priced nature as possible and as much intelligent technology as necessary. Or more precisely: GORE™ Cover technology.

It consists essentially of three components: aeration, control, and a tarpaulin. Brought together in a perfect balance, the three components interact to produce a unique, economical and reliable composting system. In order to provide the essential basic requirements for the aerobic microorganisms, medium pressure aerators are connected to either on-floor aeration pipes or to in-floor aeration ducts. The bigger the throughput of the plant, the more worthwhile the investment in aeration channels, allowing vehicular access and saving on staffing costs.

The aerators are controlled by means of oxygen and temperature parameters, for which the necessary data is obtained directly from the main body of the heap using stainless steel probes. The data is fed into the computer and stored there, documenting the course of the operation. Radio-remote monitoring of the controlled composting process is possible.

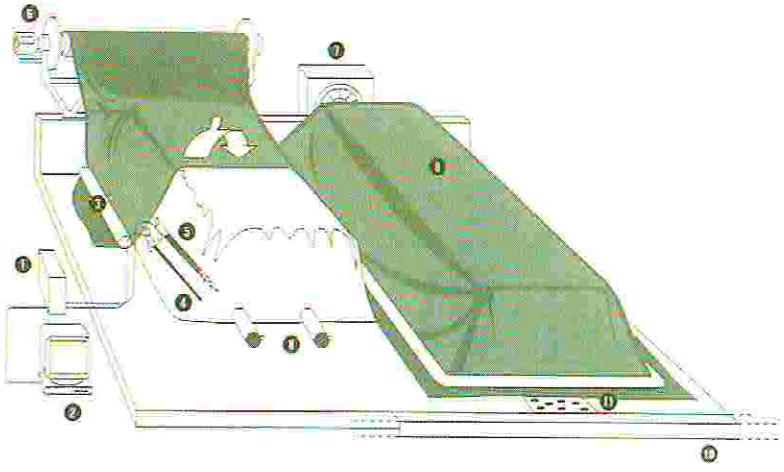
The material is first mechanically prepared and homogenised before being laid on the aeration using wheel loaders. The probes are then sunk into the material to be composted and then the GORE™ Cover is immediately pulled over the body of the heap e.g. by a winch. Various handling aids are available to make this action easier. It now remains only to fill the fire hose at the edge of the tarpaulin with water to fix it in position and within a few minutes an enclosed system is functioning.

Without the cost of any further technical maintenance and without producing any conspicuous odours or microorganisms, Nature now sets to work. It is inexpensive and it is in perfect tune ecologically. Three to four weeks later you can open up the heap to find its contents have been thoroughly decomposed. All you have to do is roll back the tarpaulin onto the winding gear by radio remote control, remove the measuring probes, if necessary withdraw the aeration pipes using the wheel loader, and place the material on the maturation field to continue biodegradation. With the right equipment and our expertise you can save yourself the bother of watering, turning – and trouble with the neighbours.

DIAGRAM OF A PLANT: COMPOSTING TECHNOLOGY WITH GORE™ COVER AND AERATION (ON-FLOOR AND IN-FLOOR)

Intelligent technology allows rapid organic decomposition with integrated protection against the weather and emissions. A plant of this kind can be installed anywhere in the world within just six weeks.

1. Control unit
2. PE
3. Tarpaulin retainer
4. Temperature profile probe
5. Oxygen/temperature probe
6. Winding gear
7. Ventilation station
8. On-floor aeration pipes
9. GORE™ Cover
10. Drainage system
11. In-floor aeration channels



W.L. GORE & ASSOCIATES GMBH, TEXTILE TECHNOLOGIES DEPARTMENT, HERMANN-OBERTH-STRASSE 24, 85640 PUTZBRUNN NEAR MÜNCHEN, TEL. +49 (0)89 46120, GORECOVER_DE@WLGORE.COM

MINIMISING ODOURS WITH GORE™ COVER

Based on the total emissions produced, waste treatment plants with GORE™ Cover are fully comparable with established technology – even without buildings and filtering installations.

Oxygen-controlled aeration ensures a supply of oxygen that corresponds exactly to process requirements, plus pressurisation inside the composting material. Oxygen from the air is ideally dispersed through the material, reliably preventing the build-up of odours caused by anaerobes.

The even distribution of moisture and temperature within the composting material prevents overly damp or wet "pockets" forming. This means that the formation of channels and anaerobic zones, which can lead to increased odour emissions, can be excluded. As odours cannot be completely avoided during composting, secondary measures are required to reduce them. One of the outstanding qualities of GORE™ Cover lies in its capacity to suppress odours when they form. Numerous studies have already extensively examined the way GORE™ Cover functions in composting procedures.

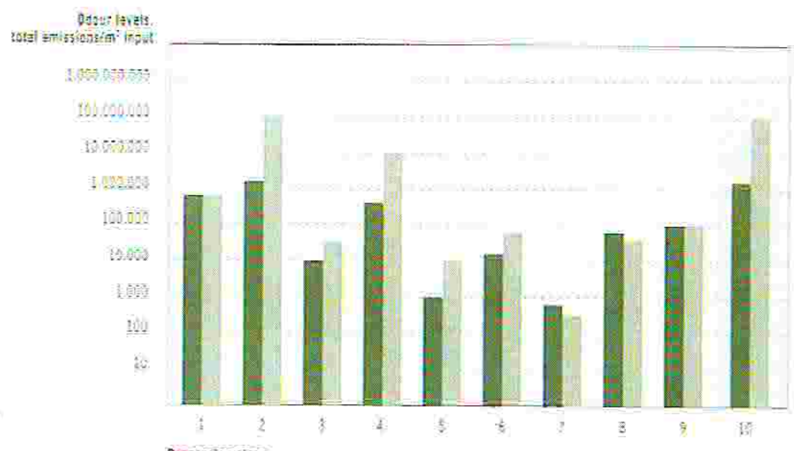
Based on the values established, definite figures can be drawn up for the odour levels produced over a specific area making it possible to extrapolate the total emissions given off from a plant. By using GORE™ Cover, a reduction of up to 97% in odour concentrations can be achieved. An average level of 11 odour units/m³ input and second has been determined. By comparison, a figure averaging 52 odour units/m³ input and second for the first three weeks of composting has been established for composting in open windrows.

Result: compared with encapsulated plants, GORE Laminates demonstrate equal levels of efficiency in reducing total odour freight to those obtained by cleaning exhaust air with a biofilter.

* M. Kömmer et al.: Kompostierung unter semipermeablen Planenabdeckungen als emissionsarmes "Low-Tech" und "Low-Cost"-Verfahren (Composting under semi-permeable tarpaulin covers as a low emission "low-tech" and "low cost" process), Stuttgart, April 2000.

REDUCING ODOUR WITH GORE LAMINATE

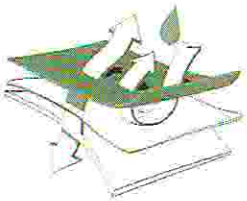
By using GORE™ Cover with aeration in the first six weeks of composting, it has been possible to reduce total odour emissions by more than 97% compared with open composting in heaps without aeration.



covered, aerated

1 Preparation
2 Intensive composting
3 Turning
4 Secondary composting
5 Turning
6 1st stage of maturation
7 Turning
8 2nd stage of maturation
9 Storage
10 Total

THE GORE™ COVER PRINCIPLE



GORE™ Covers perform better than steel container walls and better than a concrete shed or pit wall.

The waste covers consist of a specially developed GORE-TEX® membrane, laminated between two highly robust polyester layers. Because the membrane has just the right pore structure, GORE™ Cover offers more than just storage cover – it is possible to selectively influence the treatment process. The membranes used in waste treatment protect the composting material from the penetration of rainwater and yet allow CO_2 produced during the composting process to escape.

Even so, odours are extensively retained. GORE™ Covers act as a physical barrier against gaseous substances escaping from the rotting material. In addition, a fine film of condensation develops on the inside of the tarpaulin covers during the composting procedure, suppressing odours and other gaseous substances. These gases are partly dissolved in the film of water and drop back into the composting material where they continue to be broken down by bacteria.

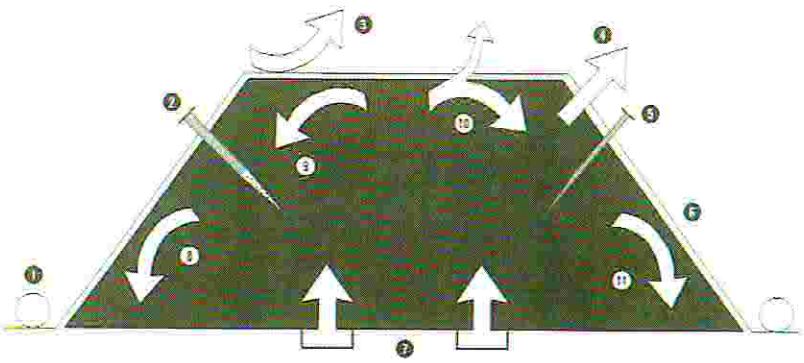
The right choice of membrane influences the extraction of moisture during composting. It prevents the final product being too wet, yet at the same time ensures that there is sufficient moisture retained to allow the material to be decomposed – particularly important in arid zones. The micro-porous structure of the GORE-TEX® membrane means that it is practically impossible for microbes to penetrate.

Numerous microbiological tests have proved that microbes can be reduced by > 99%, thus guaranteeing that workers and nearby residents are protected and safe. The insulating effect of GORE™ Cover and the pressurisation by which the system ensures even temperature distribution mean that achieving the necessary temperature for sanitising the material across the entire cross-section of the heap can be guaranteed – even during the winter months. Pathogenic micro-organisms are safely destroyed throughout the entire composting material.

PRINCIPLE OF A HEAP ENCLOSED IN GORE™ COVER AND WITH CONTROLLED PRESSURISED AERATION

GORE™ Cover improve the composting process and satisfy all requirements for certification as an efficient and controlled composting technology.

1 Tarpaulin retainer
2 O_2-measuring probe
3 Weather impact
4 CO_2
5 Temperature profile measuring probe
6 GORE™ Cover
7 Air
8 Heat
9 Odour
10 Moisture
11 Micro-organisms



W.L. GORE & ASSOCIATES GMBH, TEXTILE TECHNOLOGIES, DEPARTMENT, HERMANN-OBERTH-STRASSE 24, 85640 PUTZBRUNN NEAR MÜNCHEN, TEL. +49 (0)89 46120, GORECOVER_DE@WLGORE.COM

COMPOSTING BIOLOGICAL AND YARD WASTE WITH MEMBRANE TEXTILES

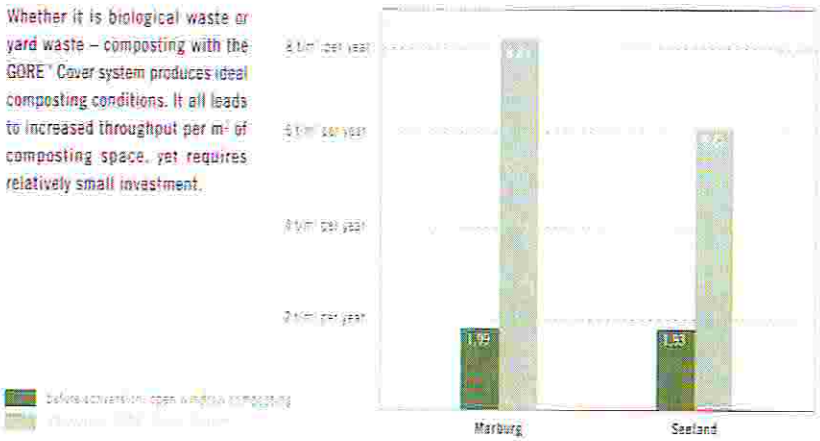
Composting with GORE™ Cover means using the most up-to-date technology available, because it brings together various technologies that have hitherto appeared incompatible. Composting with GORE™ Cover is almost as economical as composting with open heaps, and yet it is as safe to manage as enclosed systems using highly technological structures and complies equally with the requirements of most licensing authorities. This is precisely what makes it ideal for treating biological waste and yard waste where a first-class final product is required. The authorising bodies of many European countries accept GORE™ Cover as an enclosed system. Even the German authorities, generally recognised as strict, have classified the GORE™ Cover composting system as an enclosed system when it comes to handling domestic waste.

As a result there are currently not only plants with a smaller throughput of 6,500 t/a operating with our technology, but also much bigger plants licensed to operate in accordance with the Federal Emission Protection Law. The combination of a membrane cover and controlled aeration allows a reliable process. A sufficient supply of oxygen and a proper temperature management are achieved by pressurised aeration, while at the same time minimising odour and microbial emissions. Ultimately that leads to trouble-free operation of the plant even where the composition of the input varies – and in all weather conditions. Ideal composting conditions with minimum efforts lead to reduced composting times, saving the operator space, effort and considerable cost. In this way, our technology has brought about considerable increases in throughput for many plants, yet using the same space.

Using GORE™ Cover to compost biological waste and yard waste offers compliance with licensing requirements, operating safety, and cost efficiency, all in one!

INCREASES IN THROUGHPUT BY GORE™ COVER COMPOSTING TECHNOLOGY

Whether it is biological waste or yard waste – composting with the GORE™ Cover system produces ideal composting conditions. It all leads to increased throughput per m² of composting space, yet requires relatively small investment.



Appendix 5

Greenhouse Gas Emissions

Food Waste Diversion Greenhouse Gas Analysis: Portland, Oregon

Prepared for

City of Portland
Office of Sustainable Development
Solid Waste and Recycling Division

By

Dana Visse
Portland State University
School of Urban Studies and Planning

January 2004

Abstract

The purpose of this report is to determine the environmental impacts of diverting food waste, generated in Portland and discarded at Columbia Ridge landfill in Arlington, to a composting facility at Three Mile Canyon Farm in Boardman. The findings suggest diverting food waste from landfill would result in:

- no significant change in the carbon dioxide emissions from transportation
- **a remarkable decrease of 0.1 % to 0.4% per year of Multnomah County's total greenhouse gas emissions**

Assumptions

- Each pound of methane gas traps 23 times as much heat as a pound of carbon dioxide[1].
- The Arlington or Columbia Ridge (CR) landfill is 151 miles from the Metro transfer station.
- Three Mile Canyon (TMC) is 159 miles from the Metro transfer station.
- A truck carrying food waste will need to drive an extra 8.75 miles to TMC.

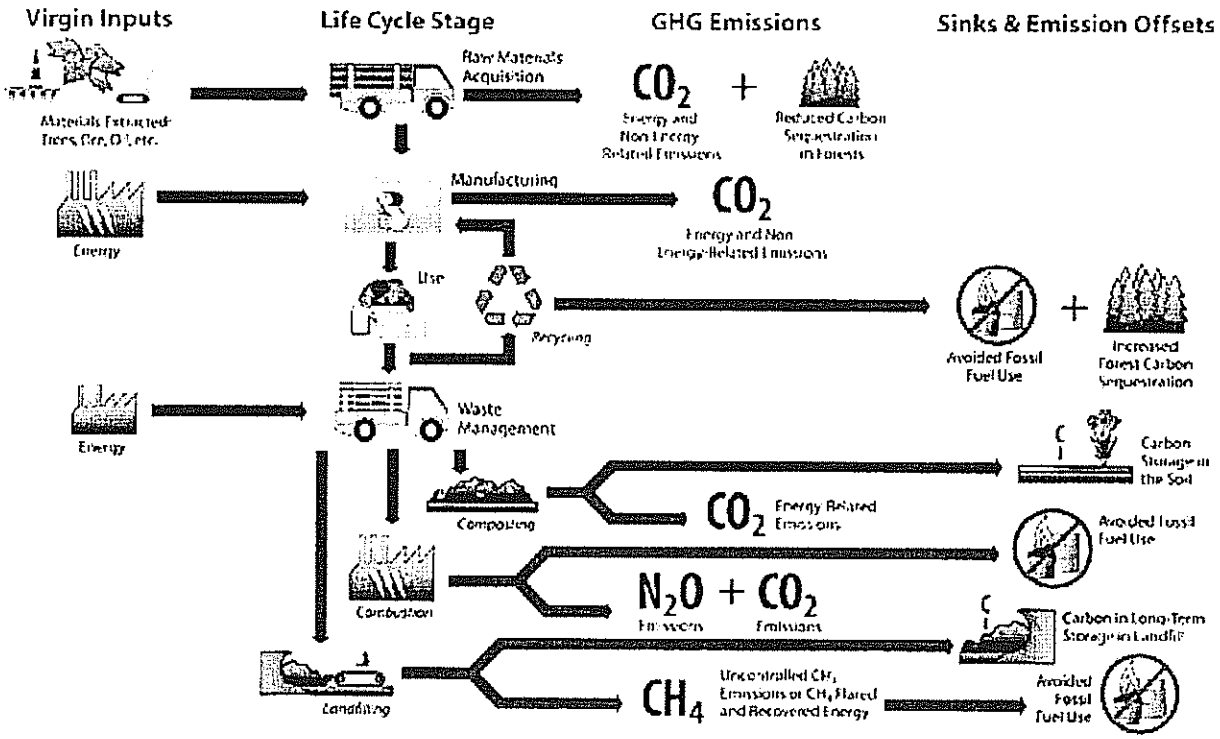
[1] U.S. Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2001, Final Version*, April 2003.

Food Waste and Greenhouse Gas Generation

The U.S. Environmental Protection Agency (EPA) has performed the most complete national study on climate change emissions and sinks from solid waste management practices[2]. In 2000, the United States generated 232 million tons of municipal solid waste (MSW), indicating an increase of 13% over 1990 generation levels, and a 53% increase over 1980 generation levels[3]. Nationally, food discards represent approximately 11.2% of total MSW. In Portland, approximately 15.6% of the total commercial and residential MSW is comprised of food waste[4].

Virtually every step in the life cycle of MSW produces greenhouse gas (GHG) emissions. GHG emissions such as carbon dioxide (CO_2) and methane are produced during the collection, transfer, disposal, and management of MSW (see EPA diagram below).

Diagram 1. Greenhouse Gas Sources and Sinks Associated with the Material Life Cycle



[2] U.S. Environmental Protection Agency, *Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks*, June 2002.
[3] U.S. EPA Office of Solid Waste, *Municipal Solid Waste in the United States: 2000 Facts and Figures*, EPA (2002), p.2.
[4] Metro 2002.

Landfills are the nation's largest emitter of methane, a gas that is 23 times more potent than CO_2 as a GHG. Landfill methane production is due primarily to the anaerobic decomposition of organic matter in municipal solid waste. Certain materials within mixed solid waste, such as food discards and office paper, produce more methane per wet ton than most other MSW materials. For example, one wet ton of food discards produces 16.2% more methane per wet ton than the average wet ton of mixed solid waste. While food waste produces more methane per wet ton decomposing in a landfill scenario, the EPA concludes from available information, interviews with composting experts, and data from the U.S. Department of Agriculture that methane generation (CH_4) from centralized compost piles is essentially zero[5].

After a careful review of current literature, existing empirical data, and consultations with leading compost soil scientists, the EPA estimates that composting food waste diverted from the landfill actually produces a net decrease of 0.82 metric tons of carbon dioxide equivalent (CO_2E) per ton of food waste [6]. This figure again assumes zero net emissions from composting, while landfill methane generation estimates embedded in the calculation reflect a projected national average for landfill methane recovery in 2002. Therefore, according to the EPA, removing food waste from landfill through composting can produce a net decrease in total methane emissions.

Amount of Methane Produced at Columbia Ridge

Methane recovery systems installed at landfills, as well as the emerging technology of bioreactors, present opportunities for energy recovery at landfills. In the case of bioreactors, current research suggests there is the possibility for a net increase in energy generation through recovery[7]. Bioreactors are a technology that may present opportunities for energy generation in the future, but are currently not a reality at Columbia Ridge. Currently, Columbia Ridge has a landfill gas (LFG) recovery system in place that flares methane. During the flare process all energy recovery potential is lost through the burning of methane into an end product (primarily CO_2) where the methane's GHG effect has been mitigated.

Manufacturers of LFG systems claim 70-75% of the methane produced at a landfill can be recovered.

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[5] U.S. Environmental Protection Agency, *Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks*, June 2002, section 5.1.1, pg. 66.

[6] U.S. Environmental Protection Agency, *Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks*, June 2002. "Carbon dioxide equivalent," or CO_2E, is a measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). Carbon dioxide equivalents are commonly expressed as "million metric tons of carbon dioxide equivalents ($MMTCO_2E$)" or "million short tons of carbon dioxide equivalents ($MSTCO_2E$)." The CO_2E for a quantity of gas is derived by multiplying the mass of the gas by the associated GWP. For example, the GWP for methane is 24.5. This means that emissions of one million metric tons of methane make the same contribution to global warming as emissions of 24.5 million metric tons of CO_2.

[7] Morton A. Barlaz, P. Ozge Kaplan, S. Ranji Ranjithan and Robert Rynk. "Evaluating Environmental Impacts of Solid Waste Management Alternatives", Biocycle, October 2003, p. 52-56.

While several cells at Columbia Ridge landfill have the LFG system in place, many other open cells do not, resulting in what appears to be a significantly lower recovery rate at the Arlington site compared to the average rate for recovery systems that EPA assumes in its modeling[8].

Estimates of how much methane is produced by the landfill have increased over the last five years. In a June *1997 Landfill Gas Collection and Control System Design Plan* submitted to DEQ by Columbia Ridge Landfill, it was estimated that 18.5 million cubic meters of methane emissions would be produced in the year 2003. More recently, SCS Engineers, an engineering consulting firm that manages Columbia Ridge for Waste Management (WM), estimated that in 2003 the landfill would release 23.7 million cubic meters of methane [9]. Finally, this researcher was told that when WM recently submitted a report to DEQ for permitting purposes, it estimated that Columbia Ridge would produce 25.5 million cubic meters of methane in 2003[10].

DEQ and EPA rules and regulations for methane recovery systems require computerized readings and reports to monitor the amount of methane being captured. WM recently estimated that 70-75% of the methane produced at the Columbia Ridge landfill is captured[11]. However, data provided for the amount of methane captured in their LFG system suggest a lower capture rate. Figure 1 shows the figures from February-July 2003 for methane recaptured in million cubic feet.

Figure 1.
Amount of methane captured in million cubic feet at the CR landfill facility by month in 2003.

Month	**CH4 captured in million cubic feet**
February	15.8
March	18
April	17
May	17.4
June	16.5
July	17
Ave. per month	**16.95**

Source: WM, 2003 conversation with Phil Kovacs 10/16/03

The monthly average from Figure 1 of 16.95 million cubic feet of methane captured at Columbia Ridge converts to 5,762,040 cubic meters per year, or 5.8 million cubic meters. When compared to the most current estimate of methane production at the landfill (25.5 million cubic meters) it appears that only 22.6% of the total methane is being captured. This is far from the 70-75% methane recovery estimate provided by WM.

[8] U.S. Environmental Protection Agency, *Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks*, June 2002.
[9] Personal communication of Dana Visse with Phil Kovacs, WM, 10/16/03.
[10] ibid.
[11] ibid.

In 2002, DEQ reported that WM collected 450-550 cubic feet per minute of methane from landfill in their recapturing system[12]. When converted to cubic meters and estimated for one year, this figure represents only a 26.2% capture rate when compared to the 25.5 million cubic meters of methane produced[13].

Table 1 shows the total estimated amount of methane produced in 2003 and the amounts recovered under varying recovery rates. These amounts have been converted into equivalent metric tons of CO_2.

Table 1. Methane Production and Recovery at Columbia Ridge Landfill in CO_2E

	Total	75% LFG recovery	26% LFG recovery	22% LFG recovery
Methane (million m^3)	25,500,000	19,125,000	6,700,000	5,800,000
CO_2E (metric tons)	418,856	314,142	110,052	95,269

The DEQ permit for the Columbia Ridge landfill is currently under review. WM has been asked by DEQ to resubmit its permit application due to errors in calculating other aspects of the air quality impacts of the site. Given the low performance of the gas recovery system at the landfill, DEQ is working with WM on a plan to increase the recovery system's effectiveness with the aim of reaching a 70-75% methane capture rate[14].

Measuring Greenhouse Gas Savings from Food Waste Diversion

While the EPA predicts an average decrease of methane emissions when diverting food waste from landfill to compost, it is important to look more specifically at Portland's situation to adequately estimate the likely environmental impacts.

The City of Portland's goal is to divert at least 40%-60% of the 37,000 tons of food waste sent to landfill each year. Metro, the regional government, plans to eventually divert 45,000 tons of food waste each year from the 23-city area in Metro's jurisdiction, of which Portland is the largest by population. Each of these diversion scenarios will be assessed in comparing food waste composting to landfilling.

A model developed by the EPA provides the most credible and site-specific estimate of the net change in methane emissions when diverting food waste from landfill to a composting facility.

[12] Email correspondence from John Straughan of DEQ to Michael Armstrong at City of Portland, Office of Sustainable Development, November 5, 2002.

[13] While the data for recaptured methane come from 2002 and the estimate of methane production is for 2003, together they provide the most favorable estimate of capture rate that can be derived from available data.

[14] Current EPA regulations under the Clean Air Act require many larger landfills to collect and combust LFG. There are several compliance options, including flaring the gas, or installing an LFG use system.

Food Waste Diversion Greenhouse Gas Analysis: Portland, Oregon

The Waste Reduction Model (WARM) was developed to help solid waste planners and organizations track and voluntarily report GHG emissions reductions from several different waste management practices. The WARM model compares two different waste management strategies -- a baseline generation and management strategy such as landfilling food waste with an alternative management scenario such as composting food waste. The WARM model calculates the probable GHG emissions or sinks in CO_2E that result from a makeup of different variables, including:

- distance to landfill,
- distance to compost facility,
- tons of MSW disposed,
- presence of a gas recovery system at the landfill, and, if there is a gas recovery system, whether it is for flaring or recapturing energy, and
- percentage of efficiency at which the gas recovery system operates.

The GHG emission factors embedded in the WARM model were developed following a life-cycle assessment methodology using estimation techniques developed for national inventories of GHG emissions. EPA's report *Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks* describes the methodology in detail[15].

For the Columbia Ridge case, the following variables were used in the WARM model:

Baseline Management Scenario to Landfill from City of Portland

- Distance to landfill = 151 miles
- Food scraps = 14,800 tons/ year at a 40% diversion rate, 22,200 tons/year at a 60% diversion rate, and 45,000 tons/year under Metro goals
- Flare landfill gas recovery system in place
- Landfill gas recovery system estimated at 26%[16] and 75%

Alternative Management Scenario to Compost Facility from City of Portland

- Distance to compost facility = 159 miles
- Food scraps = 14,800 tons/ year at a 40% diversion rate, 22,200 tons/year at a 60% diversion rate, and 45,000 tons/year under Metro goals
- Food scraps sent to compost facility

The results of the WARM model indicate savings in CO_2E at both current and projected landfill gas recovery rates, as shown in Tables 2 and 3. With current operations at the landfill, diverting the food waste to compost would save roughly between 14,500 and 44,000 tons CO_2E. Even with the landfill gas recovery system at Columbia Ridge operating at the desired 75% capture rate, there are significant savings in CO_2E by composting the food scraps.

[15] Report: EPA 530-R-02-006. Free copies are available at http://www.epa.gov/epaoswer/non-hw/muncpl/ghg/greengas.pdf or call EPA's RCRA hotline at (800) 424-9346.

[16] This figure is rounded from the estimate of capture rate discussed in footnote 13.

Table 2. GHG Savings from Composting Food Waste: 26% LFG Capture Efficiency		
Portland Diversion Rate	GHG Savings*	Net Decrease Mult. Co. emissions**
40%	14,493	0.14%
60%	21,638	0.22%
Metro Goal of 45,000 tons	44,167	0.44%
* in metric tons of carbon dioxide equivalent		
**Multnomah County currently emits 10 million metric tons of carbon dioxide equivalent		

Table 3. GHG Savings from Composting Food Waste: 75% LFG Capture Efficiency		
Portland Diversion Rate	GHG Savings*	Net Decrease Mult. Co. emissions**
40%	6,514	0.07%
60%	9,771	0.10%
Metro Goal of 45,000 tons	19,805	0.20%
* in metric tons of carbon dioxide equivalent		
**Multnomah County currently emits 10 million metric tons of carbon dioxide equivalent		

GHG Considerations of Transporting Food Waste to Compost Facility

Each day, roughly 70 to 80 full trailers of MSW travel one-way from the Metro transfer station to Arlington, five days a week. The seven-axle tractor-trailers carry 48 tons gross weight. The maximum tonnage payload allowable (not counting the tractor) is 32 tons. Metro reports an average of 30.5 tons per payload. Each truck gets roughly 5 to 5.5 gallons per mile[17]. Approximately 22.4 pounds of CO_2 are emitted per gallon of diesel gas consumed[18].

Jennifer Erickson at Metro's Solid Waste and Recycling division stated that the type of truck planned for the transfer of food waste is yet to be determined and will depend on decisions made by the company contracted to haul the material. However, she estimates they will likely use a smaller five-axle tractor trailer, estimated at 40 tons gross weight with an allowable 26 ton payload. Metro estimates in the beginning of the food waste program that five trucks a week will travel to Three Mile Canyon carrying 26 tons each, for a total of roughly 130 tons per week. Eventually, Metro hopes to divert 45,000 tons of food waste per year. To account for the likely increase in diversion over time, it is appropriate to compare the difference between one truck that heads to landfill against one truck that heads to the compost facility.

[17] Personal communication of Dana Visse with Jennifer Erickson, Metro, 10/23/03.
[18] *Emissions Factors, Global Warming Potentials, Unit Conversions, Emissions, and Related Facts.* Compiled by ICF Consulting, 1999.

A truck carrying food waste is estimated to receive a slightly better fuel efficiency of 6 miles per gallon due to its lighter gross weight and payload size. If one truck carries 26 tons of food waste to a compost facility, this is roughly equivalent to 85% (at 30.5 tons) of a typical MSW truck headed to Columbia Ridge. For calculation purposes for every food waste truck driven to Columbia Ridge landfill, roughly 1/0.85 a truck heads to Three Mile Canyon.

Scenario 1: Transporting Food Waste to Columbia Ridge Landfill
1 truck x 2(151 miles) x 22.4 lbs. CO_2/gallon x 1/5.5 mpg x 1 metric ton/2205 lbs. = 0.56 metric tons of CO_2 emitted per truck/ per roundtrip

Scenario 2: Transporting Food Waste to Three Mile Canyon Compost Facility
1 truck x 2(159 miles) x 22.4lbs. CO_2/gallon x 1/6 mpg x 1 metric ton/2205 lbs. = 0.54/ 0.85 (to account for smaller capacity of food waste trucks) = 0.64 metric tons of CO_2 emitted per truck/ per roundtrip

Carbon Dioxide from 1 Truck to Landfill – Carbon Dioxide from 1 Truck to Compost = - (0.08 CO_2)

Transportation GHG Emissions Findings
For every truck headed to the compost facility, there is a net *increase* in carbon dioxide by .08 CO_2 based on transportation emissions. Diverting 40% of Portland's food waste will require 570 trips to the composting facility each year, resulting in a net increase in CO_2 emissions by 46 metric tons per year. This figure is dwarfed by the estimated greenhouse gas *savings* of approximately 6,500- 14,500[19] metric tons achieved when diverting the food waste from the landfill. Moreover, this figure does not take into account the potential for back haul, whereby, for every truck of food waste delivered to Three Mile Canyon a full truck of compost could return to Portland. Currently, Three Mile Canyon sends trucks to Portland each week full of finished compost generated by their yard debris composting operation. Alternatively, for every truck of food waste delivered to Columbia Ridge, an empty truck returns to Portland.

In considering the management choice of diverting food waste from landfill to a compost facility, the impact in transporting food waste to the compost facility therefore does not have a significant impact on the overall greenhouse gas benefits.

If Metro achieves its goal of diverting 45,000 tons of food waste, there would be a net increase in CO_2 emissions of just 138 metric tons attributable to transportation changes, as compared to a potential savings of approximately 44,000 tons CO_2E from diverting that amount of food waste from landfill.

[19] 6,500 metric tons saved with landfill gas recovery efficiency at 26%, 14,500 metric tons saved with landfill gas recovery efficiency at 75%. See Tables 5 and 6.

The level of landfill gas recovery affects the potential savings of CO_2E. As the methane recovery rate improves in the future, as is expected with DEQ oversight of the site's permit, the benefits of diverting food for composting still exist but at reduced levels. Tables 5 and 6 summarize the reduction in GHG under current and projected gas recovery rates and show the equivalent savings in:

- Taking cars off the road each year[20]
- The amount of GHG produced by vehicle miles driven each year
- The CO_2 absorption benefit provided by trees each year[21]

Table 5.
Annual GHG Reduction at Current Estimated LFG Efficiency (26%)

	GHG's saved (metric tons)	Cars off road per year	Vehicle miles reduced per year	Equivalent trees planted per year
40% diversion rate	14,493	2,663	31,957,065	2,458,236
60% diversion rate	21,638	3,976	47,711,790	3,670,138
Metro goal: 45,000 tons	44,167	8,116	97,388,235	7,491,403

Table 6.
Annual GHG Reduction at Projected LFG Efficiency (75%)

	GHG's saved (metric tons)	Cars off road per year	Vehicle miles reduced per year	Equivalent trees planted per year
40% diversion rate	6,514	1,197	14,363,370	1,104,875
60% diversion rate	9,771	1,795	21,545,055	1,657,312
Metro goal: 45,000 tons	19,805	3,639	43,670,025	3,359,233

[20] 1 lb. of carbon dioxide is produced per one mile traveled. On average cars drive roughly 12,000 miles per year.

[21] Trees absorb approximately 13 pounds of carbon dioxide per year according to the American Forest and Paper Association, US Forests; Facts and Figures 1995. This estimate changes depending upon the age and type of the tree, and its surrounding climate. According to a 1993 figure from the Trust for Public Land, a single mature tree can absorb carbon dioxide at a rate of 48 lbs./year and release enough oxygen back into the atmosphere to support 2 human being, http://www.coloradotrees.org/benefits.htm.

Appendix 6

Endangered Species

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL
DIVISION OF FISH & WILDLIFE
NATURAL HERITAGE & ENDANGERED SPECIES
4876 HAY POINT LANDING ROAD
SMYRNA, DELAWARE 19977
TELEPHONE: (302) 653-2880
FAX: (302) 653-3431

January 2, 2006

Denise E. Stewart
Compliance Plus Services
336 South Warminster Road
Hatboro, PA 19040

RE: 601 Christina Ave, Wilmington, Delaware
Recycling operation for Aragonite
Applicant: Port Contractors, Inc.

Dear Ms. Stewart:

Thank you for contacting the Natural Heritage and Endangered Species program about information on rare, threatened and endangered species, unique natural communities, and other significant natural resources as they relate to the above referenced project.

A review of our database indicates that there are currently no records of state-rare or federally listed plants, animals or natural communities at or adjacent to this project site that would be affected by project activities. According to our GIS database and aerial photographs there are freshwater wetlands and intertidal mudflat habitat on this property. Efforts to reduce impacts to these areas should be made, as they can serve as important habitat for some species of wildlife. To protect water quality, efforts should be made to minimize sedimentary or inputs of other materials into the Christina River during construction. On-going efforts to contain run-off on the site so that it does not enter the River or associated wetlands should also be made.

We are continually updating records on Delaware's rare, threatened and endangered species, unique natural communities and other significant natural resources. If the start of the project is delayed more than a year past the date of this letter, please contact us again for the latest information. If you have any questions, please contact me at (302) 653-2883 ext. 126.

Sincerely,
Edna J. Stetzar
Edna J. Stetzar
Biologist/Environmental Review Coordinator

Appendix 7

Yard Composting

GUIDELINES FOR

YARD WASTE

COMPOSTING

FACILITIES

Prepared August 29, 2006

Prepared by DNREC
89 Kings Highway
Dover, Delaware 19901

For further information contact Debra Nielsen at (302)739-9403
e-mail address Debra.Nielsen@state.de.us
Or visit our website at
www.dnrec.state.de.us/DNREC2000/Divisions/AWM/YardWaste/index.asp

GUIDELINES FOR YARD WASTE COMPOSTING FACILITY

Authority: 7 Delaware Code 6025 and 7 Delaware Code 6003

Purpose:
The purpose of this document is to provide instructions and operating procedures for the operation of a yard waste composting facility.

Applicability:
This guidance applies to all persons, municipalities, and counties who own or operate a yard waste composting facility.

GUIDELINES FOR YARD WASTE COMPOSTING FACILITIES

Table of Contents

I. INTRODUCTION

Composting has been demonstrated to be an effective waste management technique that can produce a useful end-product while diverting a portion of the waste stream from disposal.

These guidelines have been established with input from the public via the Yard Waste Management Committee and the Yard Waste Guidance Committee to promote yard waste composting and reuse in the State while providing protection to human health and the environment. Health or environmental problems resulting from the improper operation of a yard waste composting facility will be treated in the same manner as health or environmental problems at other solid waste management facilities.

This document is intended to apply strictly to yard waste composting facilities. This topic was discussed extensively by the committee, and a decision was made to address guidelines for mulch production in the future if it becomes necessary with representatives of those business sectors.

II. DEFINITIONS

"Organic Yard Waste" means plant material residues resulting from lawn maintenance and other horticultural, gardening and landscaping activities and includes grass, leaves, prunings, brush, shrubs, garden material, Christmas trees and tree limbs up to 4 inches in diameter. "Organic Yard Waste" does not include de minimus plant material residues inadvertently mixed with inorganic contaminants, e.g., soils, stones, or trash not suitable for composting which may continue to be land filled.

"Yard Waste Composting Facility" means a facility that is used to compost organic yard waste. The term includes land affected during the lifetime of the operation, including, but not limited to, areas where composting actually occurs, support facilities, borrow areas, offices, equipment sheds, air and water pollution control and treatment systems, access roads, associated on-site or contiguous collection and transportation activities, and other activities in which the natural surface has been disturbed as a result of or incidental to operation of the facility.

"Compost" is an organic soil conditioner that has been stabilized to a humus-like product, that is free of viable human and plant pathogens and plant seeds, that does not attract

insects or vectors, that can be handled or stored without nuisance, and that is beneficial to the growth of plants. [1]

"Composting" is the biological decomposition and stabilization of organic substrates, under conditions that allow development of thermophilic temperatures as a result of biologically produced heat, to produce a final product that is stable, free of pathogens, and plant seeds, and can be beneficially applied to land. [2]

"Mulch" is an aesthetic ground cover that is used as a horticultural, above-ground dressing; for decoration, moisture control, weed control, erosion control, temperature control, or other similar purposes.

III. EXEMPTIONS

The following activities are exempted from these guidelines:

1. Mulch production by mulching companies, landscapers, tree services, municipalities, and institutions; as long as these facilities are not also producing compost.

2. Composting, on a private property, yard waste originating on the property.

3. Compost that is made in a community composting operation, which is used only by members of the community, and made by composting yard waste generated in that community. This exception does not apply to municipal or county composting operations, even if the compost is given away.

4. Disposal or land application on a farm of the agricultural wastes that are generated on a farm, or result from the operation of a farm. The disposal or land application must be conducted in a manner that is in compliance with all federal, state, and local regulatory requirements and that does not threaten human health or the environment.

5. Creation of brush piles on the property on which the material was generated.

6. The use of vegetative matter and untreated ground wood products to construct berms on the property on which the materials were generated.

7. In-house composting of yard trimmings by landscapers, tree services or soil processors, with end product used by that company for its operations or incorporated into processed soil, i.e., with no compost being sold or distributed off site. This exemption is limited to operations that have up to a maximum of 500 cubic yards of compost and/or organic yard waste on the site at any given time. Sites meeting these characteristics are strongly encouraged to follow

[1] The Practical Handbook of Compost Engineering, Robert T. Haug, Lewis Publishers, 1993, p. 374.

[2] The Practical Handbook of Compost Engineering, Robert T. Haug, Lewis Publishers, 1993, p. 1

standard composting methodology, which is available upon request, in order to avoid impacting human health and the environment. Operations determined to be causing an impact to human health or the environment must take corrective measures, and may lose their exempt status if they are not properly maintained.

IV. GRANDFATHERING OF MUNICIPAL SITES

Municipal composting operations existing as of the effective date of these guidelines will be grandfathered from those criteria they cannot meet provided they are not impacting human health and the environment. Operations determined to be causing an impact to human health or the environment must take corrective measures and may lose their "grandfathered" status if they are not properly maintained.

V. TECHNICAL GUIDANCE FOR THE OPERATION OF A YARD WASTE COMPOSTING FACILITY

A person, municipality, or county that operates a yard waste composting facility shall comply with these guidelines.

General Requirements

The following operational information must be submitted to the Department on the attached Yard Waste Composting Facility Application Form:

a) The name, address, and telephone number of the operator of the facility.

b) The sponsoring municipality or county (where applicable).

c) The location of the facility, including identification of the site by outlying perimeter site boundaries on a United States Geological Survey 7.5 minute topographic map.

d) Proof of ownership or lease agreement.

e) A general site plan drawn to scale for the facility indicating the following:

   i. The location of access roads and gates in relation to public and private roads, wells, and property lines.

   ii. The location of the tipping area.

   iii. The location of the processing area, including compost piles and windrows.

   iv. The location of storage and cutting areas.

v. Surface water controls.

f) An operational narrative describing:

i. The yard waste collection methods that will be employed by the facility.

ii. The methods that will be utilized at the facility to construct compost piles.

iii. The proposed dimensions of compost piles and windrows at the facility.

iv. The source of supplemental water that will be used to maintain an optimal 50 percent moisture content of compost piles or windrows at the facility.

v. The proposed method of turning windrows, the turning frequency for composting at the facility and the method for determining that frequency.

vi. The proposed duration of the composting process, including curing time, storage time, and compost distribution.

vii. A plan for the marketing and distribution of the finished compost.

viii. A residue disposal plan, including the location of disposal sites.

ix. Provisions for emergency response.

g) The projected volume of yard waste that will be processed by the facility during the calendar year and the maximum amount of yard waste that the facility is capable of managing.

Siting Restrictions

Yard waste composting operations, including storage, composting, and curing, shall not occur in the following areas or the following distances, unless the operator takes special precautions and receives written authorization from the Department:

a) In a 100 year flood plain.

b) Within 300 feet measured horizontally from an occupied dwelling.

c) Within 25 feet of a property line.

d) Within 100 feet of a water source.

e) Within 3 feet of a regional groundwater table.

f) Within 100 feet of a perennial stream.

Access control

1. A gate or other barrier shall be maintained at all potential vehicular access points to block unauthorized access to the site.

2. Access to the site shall be limited to those times when an attendant is on duty.

Operational Requirements

1. No person, municipality, or county shall bring or receive any material at a yard waste composting facility other than those meeting the definition of "organic yard waste" or those that have otherwise been approved by the Department.

2. The Department may limit the use of grass clippings at a yard waste composting facility if a site adversely affects the citizens or environment of the State. Grass clipping shall not be brought to or received at a yard waste composting facility unless:

a) Bags or other collection containers are emptied of all grass clippings within 48 hours of delivery to the facility.

b) Grass clippings are incorporated into the windrows of partially composted leaves or other yard waste within 48 hours of delivery to the facility.

c) Grass clippings are incorporated into the partially composted windrows of partially composted leaves or other yard waste at a ratio not to exceed one part grass clippings to three parts yard waste, by volume.

3. No more than 3,000 cubic yards of yard waste shall be placed, stored, or processed on any acre of a facility where composting activity occurs or is planned to occur.

4. A person, municipality, or county operating a yard waste facility shall, for the duration of yard waste composting activities, identify the operation by posting and maintaining signs that are clearly visible at the junction of each access road and public road. The signs shall be easily seen and read. They should be constructed of a durable, weather-resistant material. The sign wording shall include the name, address, and telephone number of the person(s), municipality(ies), county(ies), operating the facility, the operating hours, and the materials that can be received

by the facility. Private businesses should be afforded the same access and financial assistance made available to government entities to meet this requirement.

5. Each Yard waste composting facility shall be operated in a manner which results in active biological decomposition of the vegetative material received.

6. Yard waste compost piles or windrows shall be constructed and maintained as follows.

a) The compost area shall be constructed in a well drained area with a workable surface and a slope of 2-4 percent to prevent ponding and control surface water.

b) The size of the compost piles or windrows will be a function of the equipment available to adequately manage the compost piles, and as approved by the Department.

c) Compost piles or windrows shall be constructed within one week following the receipt of compostable material at the facility.

d) During the active composting process, the optimal moisture content of the windrows or compost pile shall range from 40 to 60 percent to promote decomposition.

e) All surface water shall be diverted away from tipping, processing, composting, curing, and storage areas. Surface water controls shall be based on a 24-hour precipitation event to be expected once every 25 years. Proper drainage must be maintained to prevent ponding and excessive moisture.

7. The operator shall maintain sufficient distance between windrows or piles to allow the proper use of equipment during the deposit, removal, and turning of compost.

8. The operator shall establish an adequate frequency for inspecting the facility to detect hot spots in any composting, curing, or storage areas, dust or litter accumulation, surface water accumulation, erosion or sedimentation, vectors, odors, and other problems. The operator shall take necessary corrective action to address all problems in a prompt manner.

9. The operator shall not allow compostable materials or residues to be blown or otherwise deposited offsite.

Residue Disposal

1. The operator shall not allow non-compostable residues or solid waste other than yard waste to accumulate at the facility, and shall provide for disposal or processing.

2. Yard waste and other municipal waste received at the facility that are not suitable for composting shall be removed weekly and disposed of or processed at a permitted waste facility.

Nuisance Control

1. The operator shall not cause or allow the attraction, harborage, or breeding of vectors.

2. The operator shall not cause or allow conditions that are harmful to the environment or public health, or create safety hazards, odors, noise, or other public nuisances.

Emergency Response

1. Adequate space shall be maintained to allow unobstructed movement of emergency personnel and equipment.

2. The operator of each yard waste composting facility shall immediately contact local police or fire departments, the Department of Natural Resources and Environmental Control, and other appropriate state or local emergency response agencies in the event of fire, spill, or other hazards that threaten public health, safety, welfare, or the environment, and whenever necessary in the event of personal injury.

Air Resources Protection

1. The operator shall implement fugitive dust control measures.

2. No person, municipality, or county shall cause or allow open burning at the facility.

3. The management of yard waste shall be conducted in a manner such that excessive odors are not created.

Water Quality Protection

1. The operator shall manage water and control erosion and sedimentation as required by either the Division of Soil and Water Conservation or the Division of Water Resources.

2. The operator shall not cause or allow a point or non-point source pollution discharge from or on the facility to any surface waters of the State and shall operate the facility in a manner to prevent any impact to groundwater.

Alternative Technologies for Composting

1. The Department may approve, on a case by case basis a composting technology which may not meet these technical guidance requirements, provided a clear demonstration can be made that the alternative composting technology employed does not impact human health or the environment.

VI. REGISTRATION OF COMPOST PRODUCT

1. According to the Delaware Department of Agriculture, compost can be considered a fertilizer or a soil amendment. If it sold as a fertilizer, it must contain and claim nutrients. Compost that does not have a nutrient claim is considered to be a soil amendment.

2. Any compost product that is sold or given away in Delaware must be registered with the Department of Agriculture. Compost produced for self-use does not need to be registered with the Department of Agriculture. Compost which is made by a community, and used only by the community members, does not need to be registered.

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
SOLID AND HAZARDOUS WASTE BRANCH

YARD WASTE COMPOSTING FACILITY APPLICATION FORM

Please familiarize yourself with the Delaware Department of Natural Resources and Environmental Control GUIDELINES FOR YARD WASTE COMPOSTING FACILITIES prior to filling out this form.

1.
Operator Name _____
Operator Mailing Address _____
_____
_____
Operator Phone Number _____

2.
Name of Facility _____
Contact person _____
Contact Phone Number _____

Property Owners Name _____
Property Owners Phone _____
Street Address of Facility _____
Including Access Road _____
Name and Legislative # _____
State and Zip Code _____
City, Borough, Township _____
County _____
Sponsoring Municipality _____
(Where applicable)

Attach a 7.5 minute topographical map identifying the yard waste composting facility site boundaries outlined on it.

Provide proof the operator has the legal right to enter the land and perform the approved activities.

3.
Proposed composting method: _____
Total acres of composting facility: _____
The Maximum quantity of yard waste and composted materials to be on the site at any one time: _____
Yard waste in cubic yards: _____
Finished compost in cubic yards: _____

4.
Prepare and include in this application a general site plan[3] for the facility which illustrates the location of the following items:

- Access roads in relation to the nearest public and private road, wells, and property lines
- Tipping area
- Gate location
- Surface water controls, erosion and sedimentation controls
- Processing area including location, orientation, and size of compost piles or windrows curing or storage areas
- North arrow
- Scale of drawing

5.
Please address the following items: (attach additional sheets if necessary)

- Provide a complete list of the source(s) of yard waste to be received.

- Describe how the yard waste will be collected and received at the facility.

- Describe the method for inspecting incoming yard waste and for removing unacceptable material.

- Describe the windrow construction methods including equipment to be used.

- Describe the windrow size: Initial dimensions will be _____wide x _____ high x _____ long.

- Describe the source of supplemental water which will be used to maintain optimal 40-60% moisture content of compost piles or windrows.

[3] Please note that a hand drawn sketch that includes site dimensions is acceptable. An engineers drawing is not required.

- Indicate the frequency of windrow turning:_____
- Indicate the temperature range to be maintained: _____
- Indicate the method of windrow turning: _____
- Describe the method for determining turning frequency.

- Describe the approximate duration of the composting cycle: (in days)
- Describe the composting process:

- Describe the curing period for the compost:
- Indicate the time required for storage and distribution:
- Indicate the total time required for composting operation:
- Describe the marketing and distribution plan for the finished compost.

- Describe the residue disposal plan and identify the disposal or processing site(s) to be used.

- Describe the plan for emergency response (fire, police, etc.)

- Outline the public information and education program (attach samples of literature if available).

ENVIRONMENTAL OFFSET PLAN
FOR
PENINSULA COMPOST COMPANY, LLC
PROPOSED FOOD AND WOOD WASTE COMPOSTING FACILITY

1.0 INTRODUCTION

The following Environmental Offset Plan was prepared by Compliance Plus Services, Inc. ("CPS) in support of the Peninsula Compost Company, LLC ("PCC") Coastal Zone Application for a proposed composting facility where source separated food wastes are mixed with wood/yard waste to prepare a final organic humus mulch for use as landscaping products. Detailed description of the compost facility operations and design are provided in the Coastal Zone Application. This Plan describes the proposed environmental benefits that PCC has identified or demonstrated in support of the application to offset the potential environmental impacts of the compost facility.

The composting facility will provide a number of environmental benefits. These will include, but are not limited to:

- Removing a waste stream from Delaware's solid waste management system to both reduce the volume of solid waste disposed of in the state and produce a material that can be beneficially used and returned to the marketplace;
- Providing a reduction in annual volumes of solid waste disposal thereby extending the life of Delaware's landfills and deferring the environmental impacts of construction and operation of newly permitted landfill space;
- A reduction in the use of landfill operating equipment and systems necessary to properly manage and store wastes directed for landfill disposal, (including, but not limited to, loaders/compactors, other heavy equipment, stormwater management systems, leachate collection systems, and landfill gas management systems);
- Conservation of natural resources with the reduction in the use of mined new soils for daily, intermediate and final cover as well as landfill construction materials; and
- Improved aesthetics and quality of life issues for the landfill's surrounding community.

Currently, this solid waste material (source separated food materials) is disposed of at a number of landfills within the State of Delaware and its neighboring state, Pennsylvania. For the purposes of this offsetting analysis, it has been assumed that the food material collected is generated from sources within a 40 mile service radius of the site. Given this geographic area, these wastes may be diverted from a number of landfills. Accordingly, we have used for our modeling a generic modern landfill. To insure that the modeling estimates used to calculate the benefits derived are not over estimated, the distance used for transportation to and from the PCC

facility will be 45 miles (round trip). This assumption has been made due to the proximity of the proposed facility to a large number of institutions which would be able to routinely generate the source separated food materials. (A summary of the assumptions used for this Plan are included in Exhibit 1.)

The processing of source separated food wastes and other binder materials at the proposed facility will result in an increase in air emissions from the material handling operations used to produce the final product. The air emissions will be in the form of particulate matter (PM), volatile organic compounds (VOCs) and, potential odors. This information is detailed in Section 5 of the Coastal Zone application and is further discussed below. Coastal zone permit regulations require the applicant to provide offsets which clearly and demonstrably are more beneficial to the environment, particularly in the Coastal Zone, than the potential environmental impacts associated with the proposed activities that require permitting.

This proposed Environmental Offset Plan includes offsets in the reduction of direct and indirect media pollutants, positive enhancement of socio-economic impacts to the community and replenishment of natural resources that will provide an overall benefit to the Coastal Zone region.

2.0 FACILITY INFORMATION

2.1 Current Site Conditions

The site is currently occupied by a recycling operation that processes stone, gravel, broken glass, soil, recycled brick, cement and concrete aggregate, clay and ceramic materials under a Coastal Zone Act permit (No. 301) issued to Resource Recovery of New Castle, Inc., now known as Material Recovery, Inc. ("MRI"), subsequent to approval of a Coastal Zone Act Permit issued to Peninsula Composting (prior to initiating operations at the site), the aggregate recycling operation will be relocated to another site within the Coastal Zone. MRI's current permit allows the manufacture of 433,600 tons of materials per year.

The proposed site for the relocated recycling operation is on the east side of Christiana Avenue, across from its present location. The existing roadways of the site where the recycling operation would be relocated to are paved, whereas at the current location, the roadways are not paved. Relocating the recycling operation will result in reduced air emissions since the vehicle travel over paved surfaces produces less particulate emissions than similar traffic over unpaved surfaces. Air emissions estimates were prepared by CPS utilizing EPA AP-42 emission factors and shows a reduction of particulate matter emissions of 8.27 tons per year (TPY) between the operations at the two sites. Details of the emissions calculations are provided in Exhibit 2 of this Offset Plan. A sketch of the current and proposed sites is provided in Exhibit 3 of this Offset Plan.

2.2 Proposed Site Improvements

Peninsula Composting plans the following site improvements at 601 Christiana Avenue: construction of a pre-engineered building for receiving/tipping floor with integral biofilter (odor absorber) unit and site paving of access roads, windrow composting area and finished product screening and storage area (existing).

3.0 OFFSET PLAN

The proposed Offset Plan involves two main components:

a. Relocation of an existing permitted operation from one site to another site within the Coastal Zone resulting in a reduction in air emissions from current permitted levels.
b. Removal of a waste stream from Delaware's solid waste management system and production of a material which can be beneficially reused.

3.1 Relocation of Existing Operations

The relocation of the existing recycling operation from its current location to an adjacent location within the Coastal Zone results in a net reduction in particulate emissions of 8.27 TPY. The reduction in air emissions results since vehicle travel over paved surfaces produces less particulate emissions than similar traffic over unpaved surfaces. Air emissions estimates were calculated by CPS utilizing EPA AP-42 emission factors and shows a reduction of particulate matter emissions of 8.27 tons per year (TPY) between the operations at the two sites.

	Annual Emissions (Tons)		
Particle Size*	**Paved**	**Unpaved**	**Difference**
TSP(PM30)	7.01	15.29	8.27
Totals:	**7.01**	**15.29**	

Details of the emissions calculations are provided in Exhibit 2 of this Offset Plan. A summary of the assumptions used to develop the estimated emission calculations is provided in Exhibit 1.

3.2 Proposed Composting Facility

As described above, the proposed composting facility is designed to take source separated food materials that are generated by importers, fast food restaurants, diners, cafeterias, universities and schools, sports venues, prisons, hospitals and other similar facilities. The composting facility will also be accepting wood such as tree parts, brush, yard waste and untreated wood products (e.g., wood pallets, lumber, etc.) suitable to the composting process. The wood/wood products will be processed inside the receiving (tipping) building using electrically-powered equipment to produce wood chips that are used as a carbon source for the compost process and bulking agent. The process produces a compost material that will be sold as compost or blended with other soils to produce a topsoil product for sale to landscape contractors or homeowners.

The entire composting operation will be subject to Delaware Regulations Governing Solid Waste (DRGSW) (Section 2.E).

Based on operating conditions and the facility design, the potential site emissions is expected to principally include possible particulate matter (PM), volatile organic compounds (VOCs), and potentially, odors. The majority of material handling operations and material storage at the site are principally completed indoors or under cover where emissions (including odors) are not expected to be generated. Accordingly, the focus of emission evaluation is related to the screening/blending equipment that is conducted outdoors and the biological odor absorber unit where the tipping building air is directed, following collection, and allowed to discharge to the atmosphere.

The diversion of the source separated food materials to the proposed composting facility to be manufactured into a reusable product will result in a reduction in the amount of this material that would have otherwise ended up at a landfill. It has been long recognized and studied that organic or carbon-containing wastes that are placed into landfill units naturally breakdown over time within the landfill unit. This breakdown process results in emissions of various potential pollutants, principally methane gas and carbon dioxide. Consequently, since the material processed at the proposed facility will no longer have to be managed at a landfill, there will be a net decrease in emissions associated with handling the material and general landfill operations. For the purposes of this offset plan, the emission "credits" that are discussed here have been developed based on the difference between the emissions generated from management in landfills as opposed to the proposed material management techniques that will be conducted at the proposed facility.

To make the offsetting analysis inherently conservative, the following assumptions have been made (these are further detailed in Exhibit 1):

1. The proposed facility will process approximately 120,000 TPY (tons per year) of source separated food materials. Offsets have been developed based on diverting approximately 120,000 TPY of material from landfills. This is based on the assumption that all of the 120,000 tons per year of source separated food materials (that will be used in the process) were previously disposed of in a landfill. This is considered reasonable since our current society has placed increased emphasis on proper food handling procedures and shelf life expectancy. Currently, there is no readily available "after market" for these types of food wastes. We are estimating that initially 60% of the source separated food materials (72,000 TPY) and 100% of the tree parts, brush and yard waste will be from Delaware with the remaining 40% (48,000 TPY) will be from the southeastern Pennsylvania area or other nearby states. Marketing efforts by Peninsula will concentrate on Delaware sources. Reduced transportation costs due to the proximity to the facility will make use of this facility attractive for Delaware users. It is expected that marketing efforts will be successful in increasing the percentage of food materials from Delaware sources from 60% to 80%. This facility will provide a financially attractive disposal option for materials subject to the January 2008 ban on landfill disposal of yard waste. Generators will likely be within a 40 mile radius of the site. Exhibit 4 includes a general location map which shows the 40 mile radius Regional service area for PCC.

2. The incoming waste stream will contain some materials that will not be suitable for the composting process. Separation of these unsuitable materials will result in approximately seven tons per day of solid waste (primarily plastic packaging waste) (2184 TPY). This solid waste will be recycled/disposed of off-site at an approved location.

3. The estimated amount of solid wastes that will be diverted from Delaware landfills is approximately 70,000 tons per year. (72,000 TPY source separated food waste – 2,184 TPY solid waste (7 tons per day of plastic packaging waste x 312 days per year) = 69,816 TPY or approximately 70,000 TPY)

Using the above assumptions, point source emissions from operations at the proposed facility were calculated using emission factors from US EPA, AP-42. These emissions are discussed in Paragraph 5.1 of the Coastal Zone Application and are summarized in tabular form below.

	Emissions in Tons per Year
Contaminant	Composting Facility
PM	0.39
CO	0.00
NOx	0.00
SOx	0.00
VOC/HC	1.50
CO_2	-23,351
Total Emissions	*-23,349.11*

Detailed emissions calculations and information supporting these summary emissions are provided in Exhibits 5 and 7. The reduction in CO_2 emissions is estimated using the EPA's Waste Reduction (WARM) Model, which is more fully described below.

As described above, the materials that will be processed at the proposed facility will result in a corresponding decrease in the amount of these materials being directed to landfills for disposal.

Landfill operations do not differ substantially from location to location, therefore the amount of benefits from diverting food wastes from landfill(s) will be not dependent on the size and/or location of the landfill. Currently, not all food wastes being disposed of in landfills is source separated prior to disposal. To source the materials for the composting facility, it is anticipated that the generators will be from a regional area.

DSWA's 2006 Annual Report shows that over 1.1 million tons of wastes were landfilled in the State of Delaware during 2006 including more than 640,000 tons at the Cherry Island landfill. The proposed composting facility is estimated to annually divert 120,000 tons of source separated food materials (waste) materials per year from landfills, including approximately 70,000 tons which would be expected to be disposed of in Delaware landfills. This volume

reduction would result in a measureable decrease in the number of hours that compaction equipment would be in use at landfills. There would also be a reduction in the need for daily and/or intermediate cover materials used at the landfills to properly manage the wastes during placement.

The result of this reduction or diversion of the waste stream would have a positive impact on the environment in the Coastal Zone for the following reasons:

- There will be a reduction in the amount of time compaction equipment will be used at the landfill to compact less waste material (thereby reducing the amount of engine combustion hours).
- The amount of intermediate daily cover materials required at the landfill would be reduced. The production of these materials requires either mining of virgin soils or the processing of other materials to provide the daily cover soils. This process normally involves various types of construction equipment such as loaders, screening equipment and vehicles to transport the material to the landfill site. The decreased amount of cover material will result in a reduction in construction equipment operating hours (not producing potentially harmful air emissions).

To calculate the reduced emissions due to the reduction in the waste stream, it is necessary to estimate the amount of time the compaction equipment would be idled. It is also necessary to estimate the amount of cover materials that would not be required. Exhibit 1 provides a summary of the assumptions made during the development of the Coastal Zone Application and Environmental Offset Plan.

The approximately 70,000 tons per year of diverted wastes from Delaware landfills represents approximately eleven percent of the total waste stream placed in DSWA's Cherry Island landfill in 2006. The Cherry Island landfill is the Delaware landfill where a large majority (conservatively estimated at 80%) of these wastes would have been landfilled (since the generators are estimated to be within a forty mile radius of the proposed Peninsula Composting site). Therefore, it is reasonable to assume that landfill management operations would be reduced by a factor similar to the corresponding volume reduction. Using a direct relationship, landfill operations would likely be reduced by 8.7% (we estimate that the 80% reduction of the amount of food waste currently be landfilled at Cherry Island would result in 56,000 tons diverted from an annual waste stream of 643,100 tons or 8.7%). However to be inherently conservative in the analysis, we will use 4.35% as the factor for reduced landfill operations.

We have used the DSWA 2006 Annual Report to estimate the amount of material required for intermediate and daily cover. The report shows that Clean Earth of New Castle, Inc. ("CENC") provided approximately 522,000 tons of cover materials that year. There will be a reduction in the need for cover materials due to the reduction in the volume of wastes landfilled. Food wastes can be compacted during landfill operations to a greater extent than other wastes normally landfilled. Accordingly, we propose using a 2.5% factor to estimate the amount of cover material that would not be required due to the reduction in annual waste volume. Consequently, we developed estimates of the air emissions that would have resulted from the processing and transport of approximately 13,050 tons of cover materials. If a source other than the CENC

facility was utilized to provide the cover material, the amount of emissions are expected to be substantially similar. See Exhibit 6 for detailed calculations.

A summary of the reduced emissions due to the reduced landfill operations is provided in the following table:

Reduced Emissions from Reduction in Landfill Operations (ton/year)

Contaminant*	Compactors	Loader (engines)	Material Handling	Screener Operation	Truck Transport	***Contaminant Totals***
Hours	*317*	*216*	*N/A*	*52.2*	*247.2*	
PM	0.19	0.02	0.02	0.02	0.01	*0.27*
CO	0.59	0.07	N/A	1.76E-02	0.20	*0.87*
NOx	2.72	0.31	N/A	0.08	0.29	*3.41*
SOx	0.18	0.02	N/A	5.40E-03	0.00	*0.21*
HC	0.22	0.02	N/A	6.51E-03	0.01	*0.26*
Total Emissions	*3.89*	*0.45*	*0.02*	*0.13*	*0.51*	*83.55*

** CO_2 emissions are not included here and are already included in EPA's WARM Model as discussed in Section 3.3 below.*

The following table summarizes the reduced air emissions resulting from the relocated aggregate recycling center and the reduced operations at landfills due to the diversion of food wastes to the composting facility.

Reduced Emission (Tons/Year)

Contaminant*	Relocated Aggregate Recycling Facility	Reduced Landfill Operations	Total Reduction
PM	8.27	0.27	8.54
CO	0.00	0.87	0.87
NOx	0.00	3.41	3.41
SOx	0.00	0.21	0.21
HC	0.00	*0.26*	0.26
VOC	0.00	0.00	0.00
Total Emissions	*8.27*	5.02	*13.29*

** CO_2 emissions are not included here and are already included in EPA's WARM Model as discussed in Section 3.3 below.*

3.2.1 Discussion of Specific Contaminants:

3.2.1.1 Particulate Matter (PM):

The proposed composting facility is estimated to produce particulate matter emissions of 0.39 tons/year. This is more than offset by a reduction in particulate matter emissions due to the relocation of the aggregate recycling center at the site of 8.27 tons/year. Additionally, the diversion of food waste from landfills to the proposed composting facility will result in reduced equipment usage/reduced need for daily landfill cover materials with an estimated reduction in PM emissions of 0.27 tons/year. The total reduction of 8.54 tons/year is well in excess of the offset required.

3.2.1.2 Carbon Monoxide (CO):

The proposed composting facility operations will not produce CO emissions. However, the diversion of food waste from landfills to the proposed composting facility will result in reduced equipment usage/ reduced need for daily landfill cover materials with an estimated reduction in CO emissions of 0.87 tons/year.

3.2.1.3 Nitrogen Oxides (NOx):

The proposed composting facility operations will not produce NOx emissions. However, the diversion of food waste from landfills to the proposed composting facility will result in reduced equipment usage/ reduced need for daily landfill cover materials with an estimated reduction in NOx emissions of 3.41 tons/year.

3.2.1.4 SOx:

The proposed composting facility operations will not produce SOx emissions. However, the diversion of food waste from landfills to the proposed composting facility will result in reduced equipment usage/ reduced need for daily landfill cover materials with an estimated reduction in SOx emissions of 0.21 tons/year.

3.2.1.5 VOC:

Based on the types of materials that will be handled in the building and the relatively short duration of their storage in the unit, even in an upset condition (which PCC has stated to the Department will not exceed 5 days), any potential VOC emissions generated in the building and directed to the biofilter are not expected to be significant. Additionally, the nature of the incoming material stream will vary from day to day. The estimate of VOC emissions listed above is based on an "upset" condition where waste materials must be temporarily stored inside the tipping building while equipment is being repaired/replaced. The emission test data used in the estimate is from a facility similar to the proposed composting facility; however that facility constantly holds 4,000 cubic yards of

active compost piles inside the building. The proposed composting facility is designed to be emptied at the end of each working day. So, the estimate of an annual emission of VOCs of 1.5 tons does not represent normal operating conditions. This estimate is also overly conservative since these emissions will be directed to the biofilter unit. Although the biofilter contains activated carbonaceous material that acts to control potential odors, this material will have a similar effect on all organic emissions entering the unit. For the purposes of this application, we have assumed zero control; however, we would expect some reduction in VOCs to occur. It is provided as part of a complete assessment of the facility's operation. Additionally, diversion of food waste from landfills to the proposed composting facility will result in reduced equipment usage/ reduced need for daily landfill cover materials with an estimated reduction in HC emissions of 0.21 tons/year.

3.3 Greenhouse Gas Emission Reductions

The overall environmental impact to the Coastal Zone is not limited to the above listed constituents. Although not listed as a criteria pollutant, Greenhouse Gases (GHG) which include methane and carbon dioxide (CO_2) are of concern.

The amount of CO_2 emissions due to the various pieces of equipment (either in operation at the proposed facility or not in operation due to the deferral of food waste at the landfill) can be estimated using US EPA A-42. Exhibit 6 contains the detailed calculations.

There is a significant positive impact to the environment related to not landfilling food wastes material. Processing of the food wastes material for reuse mitigates the production of greenhouses gases (GHG) from the degradation of materials inside the landfill.

Much of the current global focus on climate change is on anthropogenic emissions—those resulting from human activities and subject to human control. Those emissions have the potential to alter the climate by disrupting the natural balances in carbon's biogeochemical cycle and altering the atmosphere's heat-trapping ability. For processes with CO2 emissions, if the emissions are from biogenic materials and the materials are grown on a sustainable basis, then those emissions are considered simply to close the loop in the natural carbon cycle. They return to the atmosphere CO2 that was originally removed by photosynthesis. In these cases, the CO2 emissions are the CO2 emissions are not anthropogenic and therefore *not* included in emission inventories (and are not addressed in the WARM model). Examples of biogenic materials are paper, yard trimmings, and food discards. On the other hand, CH4 emissions from landfills *are* counted. Even though the source of carbon is primarily biogenic, CH4 would not be emitted were it not for the human activity of landfilling the waste, which creates anaerobic conditions conducive to CH4 formation. Thus, reducing the amount of food wastes from landfills will have a beneficial effect on the environment.

The basis for quantification of the air emission offsets for the proposed project is the mitigation of greenhouse gases (GHG's) from processing the source separated food material as opposed to landfilling the material. That is, an estimate of metric tons of carbon dioxide equivalents

($MTCO_2Es$) has been developed. Our approach for this has been to utilize the US EPA's Waste Reduction Model (or WARM model, See Exhibit 7). This model, which estimated the environmental benefits of alternate waste management scenarios, was first introduced in 1998. Over the past ten or so years, it has undergone a number of revisions the most recent in August, 2006 resulting in WARM version 8. This model is probably the best tool available to meaningfully compare the GHG impacts of alternate waste management scenarios.

WARM estimates net environmental benefits between select scenarios. The model allows the user to input numerous variables to tailor the results to specific circumstances. For the purpose of estimating the net benefits anticipated from the proposed project, the following assumptions have been made and placed into the model:

1. The material would have normally gone to a currently permitted landfill. For the purposes of this approach, we are assuming that the landfill will have gas collection and associated energy recovery systems operating at the facility. Without these measures, the GHG emissions would be higher. The model assumes a collection percentage of 75% with the balance either remaining in the landfill or being released to the atmosphere as methane.

2. No impact is realized from transporting the material to the proposed facility versus the landfill. This approach was taken because, regardless of the material management method, transportation of the material will be required. However, 45 miles of transportation was included in the model to account for transportation of the finished material from the proposed facility to its end point of use.

Using the above assumptions for the estimated 120,000 tons of food waste materials that will be processed (instead of being placed in the landfill) results in a reduction in GHG emissions of 41,059 $MTCO_2E$ (metric tons carbon dioxide equivalent). Landfilling the food waste materials would produce 17,708 $MTCO_2E$ (metric tons carbon dioxide equivalent) of GHG emissions. Composting the food wastes results in a reduction of 23,351 $MTCO_2E$ (metric tons carbon dioxide equivalent) of GHG emissions. The net difference between the two processes is 41,059 $MTCO_2E$ (metric tons carbon dioxide equivalent) of GHG emissions. See Exhibit 7 for a summary of the WARM model analysis.

As the table below illustrates, the overall impact of the deferral of 120,000 tons of food wastes from landfills to the proposed composting facility will result in a decrease of over 41,000 metric tons carbon dioxide equivalent.

	Emissions in Tons per Year		
Contaminant	Composting Operations (METCO2E) per EPA WARM Model	Green House Gas Emissions Offsets ($METCO_2E$) per EPA WARM Model	Net Difference in Green House Gas Emissions due to composting
CO2	-23,351	17,708	-41,059

The impact on Delaware's Coastal Zone is shown in the table below:

	State of Delaware			Out-of-State Total
	Coastal Zone	Non Coastal Zone	Total	
Food Waste Materials (Tons per Year)	57,600	14,400	72,000	48,000
Green House Gas Emissions Reductions ($METCO_2E$) per EPA WARM Model	19,708	4,927	24,635	16,424

Although there is not, currently, a means to correlate the relative environmental benefits of mitigating criteria air pollutants versus greenhouse gases, the impacts of GHG is becoming increasingly well understood. Despite the assumption that the landfilling operation of the food waste material will include the collection of methane gas for energy recovery, there is still a significant amount of methane that would be released. Methane, a naturally occurring byproduct of anaerobic decomposition of organic matter, is a powerful greenhouse gas with a global warming potential 21 times greater than equivalents **(www.epa.gov/methane/scientific.html)**. The deferral of food waste material from landfills will have a positive impact on the Coastal Zone for this fact alone.

3.4 Emissions Reduction Summary

Delaware's Coastal Zone Permit regulations require that the offset proposal must clearly and demonstrably more than offset any new pollution from the proposed operations. Informal guidance indicates that the offset proposal must be at least 30% greater than the estimated level of new emissions. The following table compares the emission estimates from the proposed composting facility with the reductions estimated due to the relocated aggregate recycling facility and the reduced landfill operations.

	Emissions in Tons per Year			
Contaminant	Composting Facility	Proposed @ 1.3X	Reductions	Difference
PM	0.39	0.51	8.54	8.03
CO	0.00	0.00	0.87	0.87
NOx	0.00	0.00	3.41	3.41
SOx	0.00	0.00	0.21	0.21
HC	0.00	0.00	0.26	0.26
VOC	1.50	1.95	0.00	-1.95
CO_2	- 23,351	-	19,708 (Coastal Zone) 4,927 (Non-Coastal Zone) 16,424 (Out-of-State)	-

4.0 SOCIO-ECONOMIC IMPACTS

The proposed operation will also provide a positive impact on the Coastal Zone in other aspects. At current disposal rates, the Cherry Island Landfill is expected to reach its terminal height in 2025. The deferral of 45,000 tons of other materials (not associated with this application) from the landfill in 2008 has been forecast to add an additional seven years to its life (Source: DNREC Solid and Hazardous Waste Management Branch). If some or all of the 120,000 tons of food waste materials associated with this application are diverted from landfills, there will be a corresponding extension of their life expectancies. The cost of identifying a site for the next municipal solid waste landfill and the associated permitting costs (which will be borne by the citizens of the State) will be likewise deferred.

Equally important is the fact that the proposed facility will be a "resource conservation" center. The compost material/top soil produced will provide a positive environmental impact as it will be used to assist Delaware residents in landscaping and gardening efforts by improving air circulation and drainage, moderating soil temperatures, enhancing nutrient and water holding capacities, decreasing erosion, inhibiting weed growth and suppressing some plant pathogens.

5.0 NATURAL RESOURCES CONSERVATION

The proposed facility is, by the very nature of its operations, dedicated to improving the environment within the Coastal Zone. As demonstrated above, the proposed facility will provide Delaware institutions and companies a convenient way of recycling a former waste stream into a useable product that will provide continuing benefits to the environment throughout the State.

In addition, to assert Peninsula's commitment to the continued enhancement of Delaware's Coastal Zone, Peninsula proposes a one-time contribution to the South Wilmington Special Area Management Plan. The South Wilmington SAMP is a cooperative effort to create a comprehensive plan for the revitalization of South Wilmington. The SAMP will be a master plan that coordinates efforts of governmental entities and stakeholders in addressing social, economic and environmental issues consistent with the long term vision for South Wilmington. This contribution will be made in the amount of $2,500.00 within 60 days of receipt by Peninsula of the final, approval Coastal Zone Permit. This aspect of the proposed offset proposal will be implemented under the authority of DNREC in accordance with the aforementioned schedule. No negative impacts are anticipated in association with this one time donation.

Peninsula's proposal also includes new planting of native landscaping trees along the property boundary line. This will result in increased aesthetics and improve the integration of the environmental setting of the Coastal Zone area.

Peninsula Composting 10, 25 & 40 Mile Radius Range

Appendix 9

Air Emissions Letter

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF AIR & WASTE MANAGEMENT

AIR QUALITY MANAGEMENT SECTION

156 S. STATE STREET
DOVER, DELAWARE 19901

TELEPHONE: (302) 739 - 9402
FAX NO.: (302) 739 - 3106

January 25, 2007

Compliance Plus Services, Inc.
336 South Warminster Road
Hatboro, PA 19040

ATTENTION: Mike Logan
Vice President, Environmental Services

SUBJECT: Meeting about Dust Complaint Issue on February 6, 2007 at 1:30pm

Location: Division of Air and Waste Management
Conference Room A & B
391 Lukens Drive
New Castle, DE 19720

Dear Mr. Logan:

The Department has received complaints from the Communities near your location about fugitive dust and has formed a work group to discuss the public concerns regarding this matter. The first meeting was held January 11, 2007. Attached are the following: a summary of the first meeting, a list of attendees of the meeting, and the list of people invited to participate.

Actions to address the fugitive dust issue are detailed in the meeting summary. At the February 6 meeting the group will evaluate the actions. There will also be an opportunity to list additional actions before the evaluation begins. Actions that can be taken to ensure compliance will be addressed in this meeting. After evaluations, the group will decide whether another meeting is needed.

The Air Quality Management Section appreciates the time and effort provided by all who are participating.

Please feel free to contact me or Paul Foster in the New Castle office at (302) 323-4542.

Sincerely,

Nancy Terranova

Nancy Terranova,
Program Manager
Engineering and Compliance Branch

PEF:NET:ss
F:\EngAndCompliance\net\07001net.doc
pc: Dover File
Nancy E. Terranova
Everett L. DeWitt

Fugitive Dust Meeting: 1/11/07 at Lukens Conference Room:

Background Points:

- AQM is facilitating this set of meetings based on complaints received about fugitive dust
- AQM had success in the mid-1990s in addressing a similar problem with an industrial community in the Minquadale area
- As a result of those voluntary sessions, Air Permits for hot mix plants statewide have permit conditions addressing dust control measures, including paving of traveled roads within the site and wetting of non-paved areas.
- In late October, 2006 AQM was invited to attend a meeting of the Hamilton/Eden Park community Association. At that meeting, AQM suggested that a series of meetings that addressed the fugitive dust concerns should be conducted.

January 11 - Meeting Agenda:

1:30 Introductions
1:40 Background for Issue and Reason for Meetings
2:00 Discussion of Concerns
2:30 Discussion of Actions to address fugitive dust problem
3:00 Adjourn

During the meeting, we followed the agenda pretty well. The attendees to the meeting are found at the end of these minutes. The background was presented by Paul Foster, as detailed above. A summary of the concerns and actions that were recorded on the easel sheets follows this minutes report.

Concerns were discussed and recorded. The concerns are discussed here. The recorded concerns are listed as well. Marvin Thomas discussed his concerns with the Strobert Tree Services company on A Street adjacent to Barbara Hicks Community Park. The site has storage piles 10 to 12 feet high that are sources of fugitive dust in area where kids play basketball. He is concerned that lots of trucks without tarp coverage pass by New Castle Avenue, Heald Street, and Terminal Avenue. There are many neighborhoods on these roads.

General discussion in the group indicated more concerns about many issues. High levels of dust are frequently observed on New Castle Avenue. When members of the public call the 800 number and do not see any action, they get disappointed. People from the neighborhood should attend this meeting. Trucks are moving though the restricted roads. The increasing activities at the Port of Wilmington were noted which result in increased truck traffic. Roads adjacent to the Companies with dust concern can be cleaned regularly. Diamond Material's name came to discussion very often. Dust is a concern. Supervisor from Diamond Materials stated that the Company will do everything to control fugitive dust and make people happy. Some people expressed opinion that Diamond Materials is not the only Company of concern. Some voices expressed that DNREC can establish a website where everybody will have access to see what is happening with the dust problem in the neighborhood. Companies can call to each other to warn when fugitive dust is observed.

Discussion followed about sources of the dust:

- Mud that is dry on the streets
- Concrete companies
- Trucks without tarps
- Stock piles
- Traffic
- Heavy trucks on roads that are not paved

Paul Lester of Diamond Materials stated that they are planning to pave their entire yard. He indicated that Contractor Sand & Gravel are close by, and there is always dust all over. He was concerned that people may think dust comes from Diamond Materials, but it may come from Contractor Sand & Gravel or another source.

Following the discussion of concerns the group discussed actions. The actions were not evaluated, but were recorded. The group will evaluate actions at the second meeting.

Solutions were just listed, but there was discussion around a few. It was suggested that other access roads to the Port of Wilmington could be used to bypass some of the neighborhood. The use of tight and whole tarps on trucks was mentioned may times, with drivers and companies to practice good management and maintenance of their equipment. The use of green barriers in the area could be considered. Covering the piles would work, but it was stated that the piles were usually crusted over so, any fugitive dust was probably from the area on the ground surrounding the piles. It was further stated that this solution needs more investigation for feasibility. It was proposed that the companies could notify each other as well as DNREC regarding dust problems for timely responses and actions James Brunswick provided two files that suggest control measures for fugitive dust emissions. These files can be emailed upon request to Nancy Terranova or Paul Foster.

Concerns

- Carlyle Cocoa odor & dust complaints
- Increased truck traffic without tarps
- Increased truck traffic through neighborhoods
- Perhaps Independent Truckers
- Dirt Sources
    - Streets/truck tires
    - Uncovered storage piles/areas
- Determine WHAT is source of fugitive dust
- Height of Storage Piles
- Dust from non-paved roads
- Schaubert's Tree Service at 1506 A Street in Wilmington
    - Dust source
    - Storage Piles of Mulch/Dirt
    - Next to day care center/homes
- Diamond Materials – height of mounds
- Trucks drive through neighborhoods without tarps
- Dust on cars (overnight settling) in the 7th Street area
- Complaint Calls without immediate response are frustrating
- Construction on Public Works Yard
    - The City/County agreement appears to not be honored
    - Trucks to use Terminal Ave instead of New York Ave
    - Traffic is turning left out of Yard, instead of turning right
    - There is dust blowing from the construction site
    - Even though the agreement may have been for after completion of construction – residents are having problems and want agreement to be met during construction as well

Actions to be taken:

- Zoning , Truck Route travel
- Truck Routing to avoid neighborhoods
- Arrange Website to place issues/concerns
- Cover storage piles (tarps, coatings, hardeners)
- Follow EPA draft document for cement manufacturing
- Provide phone numbers for companies
- Communication between Industries/Community/DNREC
- AQM to look at facility when in area
- Consider Green Barriers
- Water Down storage piles
- Place tight tarps on trucks
- Use best management practices
- Companies notify each other as well as DNREC when fugitive dust is observed
- Timely communication
- Timely response and action
- Paving Dirt Areas
- Cleaning Roads
- Use of enclosures (similar to what is done for salt piles)
- Size/Location of storage piles
- Site Visits

Attendees:
January 11, 2007

Name	Affiliation	Email Address
William Baldwin	Action Environmental for Diamond Materials	whcb3@aol.com
James Brunswick	DNREC Community Ombudsman	james.brunswick@state.de.us
Chandu Dalsania	AQM DNREC	chandu.dalsania@state.de.us
Everett DeWhitt	AQM DNREC	everett.dewhitt@state.de.us
Paul Foster	AQM DNREC	paul.foster@state.de.us
Warren Hawleridge	Tilcon Delaware	whawleridge@oldcastlematerials.com
James Johnson	State of Delaware, House of Representatives	jj.johnson@state.de.us
Bill Harris	AQM DNREC	bill.harris@state.de.us
Paul Lane	Clean Earth	lanep@cleanearthinc.com
Paul H. Lester	Diamond Materials	phlester1029@aol.com
Mike Logan	CPS for Clean Earth & Material's Recovery ,Inc.	mlogan@cps-2comply.com
Chris Magdefrau	Greggo & Ferra	cmagdefrau@comcast.net
Stephen Manfredo	Mangiatore Monte, Inc.	smanfredo@maronecontractors.com
Steve Mann	AQM DNREC	stephen.mann@state.de.us
Fran Molloy	Mangiatore Monte, Inc.	fmolloy@maronecontractors.com
Robert A. Norman	Diamond Materials	rnorman@diamondmaterials.com
LaVaida Owens-White	1st & 3rd District NPC COW Leadership Council	lwhite@christianacare.org
Kathy Pirestani	AQM DNREC	katayoun.pirestani@state.de.us
Rosa Rivera	Henrietta Johnson Med. Ctr	rrivera@hjmc.org
Lupe Reynolds	AQM DNREC	guadalupe.reynolds@state.de.us
Sid Sharma	City of Wilmington	ssharma@ci.wilmington.de.us
Shaikh A. Tayeb	AQM DNREC	shaikh.tayeb@state.de.us
Nancy Terranova	AQM DNREC	nancy.terranova@state.de.us
Marvin Thomas	South bridge Civic Assoc.	marthomas@comcast.net
Jim Walmer	AQM DNREC	james.walmer@state.de.us
John Weaver	Magellan Terminals	john.weaver@magellanlp.com
Tom Whitacre	Port Contractors	twhitacre@portcontractors.com

AMI Asset Acquisition Company, Inc.
301 Pigeon Point Lane
New Castle, DE 19720
ATT: Paul Smart
Director of Env.Health and Safety

Contractor's Materials Hot Mix Plant
925 South Heald Street
Wilmington, DE 19801

ATTENTION: Joe Carbonneau
Plant Superintendent

Industraplate Corporation
5 James Court
P.O. Box 10812
Wilmington, De 19850-0812
ATTENTION: David Orr
Vice President

Mangiaotre Monte, Inc.
160 Crown Point
Thorofare, NJ 08086

ATTENTION: Fran Molloy
Manager

Pioneer Concrete
101 Rogers Road Suite 202
Wilmington, DE 19801

ATTENTION: Jerry Ellexson
Plant Manager

Strobert Tree Services
1506 "A" Street
Wilmington, DE 19801

Public Works Department
City of Wilm., Louis L. Redding City/Cnty Bldg
800 North French Street
Wilmington, De 19801-3537
ATT: Kash Srinivasan
Comm. of Public Works

Greggo and Ferrara
925 South Heald Street
Wilmington, DE 19801

ATTENTION: Vincent Greggo

Magellan
P. O. Box 22186 MD 27-3
Tulsa, OK 74121

ATTENTION: Stacy Colpitt
Air Quality Specialist

Compliance Plus Services, Inc.
336 South Warminster Road
Hatboro, PA 19040

ATTENTION: Mike Logan
VP, Env. Services

Pennsy Supply, Inc. – dba Tilcon DE, Inc.
1001 Paxton Street
P.O. Box 3331
Harrisburg, PA 17105
ATTENTION: John Rice
Asst. Secretary

Diamond Materials
924 South Heald Street
Wilmington, DE 19801

ATTENTION: Paul Lester
Plant Superintendent

Contractor Materials, LLC
925 South Heald Street
Wilmington, DE 19801

ATTENTION: Christian Magdefrau
Project Engineer

Magellan
1050 Christina Ave.
Wilmington, DE 19801

ATTENTION: Alan Cosby
Area Supervisor

Contractor Material, Inc.
925 South Heald Street
New Castle, DE 19720

ATTENTION: James Thomas
President

Tilcon Delaware, Inc. Terminal Avenue
3700 Bay Road
Dover, DE 19901

ATTENTION: Damian Murphy
VP and General Manager

Neighborhood House
1218 B Street
Wilmington, DE 19801

ATT: Art Boswell
Executive Director

Rev. Barron Sherer
Mt. Sinai Missionary Baptist Church
3079 New Castle Avenue
Wilmington, De 19801

3rd District Planning Council
2403 Lamotte Street
Wilmington, DE 19801

ATTENTION: Lance Bruce
President

Dunleith Civic Association
466 Bethune Drive
Wilmington, DE 19801

ATTENTION: Sandra Smithers
President

Oakmont Civic Association
25 Kingston Road
New Castle, DE 19720

ATTENTION: Jacqueline Lewis
President

4th District Planning Council
607 West 4th Street
Wilmington, DE 19801

ATTENTION: Khary DeWitt
President

Eden & Hamilton Park Civic Association
27 ½ South Street
Hamilton Park
New Castle, DE 19720
ATTENTION: Elder Louis McDuffy
President

Overview Gardens/Garfield Park Civic Association
68 Karlyn Drive
New Castle, DE 19720

ATTENTION: Lee Jarmon
President

Revival Fellowship Church
3071 New Castle Avenue
New Castle, DE 19720

ATTENTION: Rev. W. W. Koonce
Pastor

Tenant Association
503 Townsend Street
Wilmington, DE 19801

ATTENTION: Charles Boone
President

South Bridge Civic Association
216 South Heald Street
Wilmington DE 19801

ATTENTION: Marvin Thomas
President

Rose Rivera
Henrietta Johnson Medical Center
601 New Castle Avenue
Wilmington, DE 19801

Honorable S. C. Madison
United House of Prayer for all Peoples
3090 New Castle Avenue
New Castle, DE 19720

Rose Gate Civic Association
123 Rose Lane
New Castle, DE 19720

ATTENTION: Robert Thomas
President

Wendell E. Hall Sr.
Solid Rock Baptist Church
4082 New Castle Avenue
New Castle, DE 19720

Council Member Charles M. "Bud" Freel
Wilmington City Council
Louis L. Redding City/County Building
800 North French Street
Wilmington, De 19801-3537

Council Member Hanifa G.N. Shabazz
Wilmington City Council
Louis L. Redding City/County Building
800 North French Street
Wilmington, De 19801-3537

Representative Hazel D. Plant
Legislative Hall

P.O. Box 1401
Dover DE, 19903

Senator Margaret Rose Henry
Legislative Hall

P.O. Box 1401
Dover DE, 19903

Council Member Kevin F. Kelley
Wilmington City Council
Louis L. Redding City/County Building
800 North French Street
Wilmington, De 19801-3537

Representative James Johnson
Legislative Hall
P.O. Box 1401
Dover DE, 19903

Representative Hazel D. Plant
Carvel State Office Building
820 North French Street
Wilmington, De 19801

Louis L. Redding Cty/Cnty Bldg
800 North French St, 8th Floor
Wilmington, De 19801

ATTENTION: Jea Street
NC County Council

Council Member Stephanie T. Bolden
Wilmington City Council
Louis L. Redding City/County Building
800 North French Street
Wilmington, De 19801-3537

Representative James Johnson
Carvel State Office Building
820 North French Street
Wilmington, De 19801

Senator Margaret Rose Henry
Carvel State Office Building
820 North French Street
Wilmington, De 19801

Louis L. Redding Cty/Cnty Bldg
800 North French St, 8th Floor
Wilmington, De 19801

ATTENTION: Penrose Hollins
NC County Council

Appendix 10

Offset Matrix

COASTAL ZONE ENVIRONMENTAL IMPACT OFFSET MATRIX
Applicant: Peninsula Compost Company LLC
Project: Proposed Material Composting Operation
CZA Offset Review Reference: (DNREC Only)

Application Date: May, 2007
Amendments: January, 2008
Offset Review Date: (DNREC Use Only)
Matrix Amended:

ENVIRONMENTAL IMPACTS	(Applicant's Use) DESCRIBE ENVIRONMENTAL IMPACTS	PAGE NO.	(Applicant's Use) DESCRIBE ENVIRONMENTAL OFFSET PROPOSAL[1]	PAGE NO.	(DNREC Use Only) OFFSET SUFFICIENCY Yes, No or N/A
Air Quality (Applicant to List Below by Parameter)					
PM	Approximately 0.39 tons per year from material handling operations	Pages 12-13	The proposal includes relocation of an existing permitted aggregate recycling operation currently on site to another location within the Coastal Zone. This relocation will result in a reduction in PM emissions of 8.27 tons per year due to the vehicle traffic using paved roads rather than unpaved roads. The diversion of the food wastes to the proposed composting facility from landfills will result in a decrease in equipment usage at the landfill and also a reduction in the need for intermediate daily cover materials. The reduced equipment usage at the landfill and used to produce cover materials results in reduced emissions of PM (0.27 TPY), CO (0.87 TPY), NOx (3.41 TPY), SOx (0.21 TPY), HC (0. 26 TPY). Additionally, the diversion of food wastes from landfills reduces the amount of greenhouse gases (GHG) produced during degradation of the wastes inside the landfill. Produced as methane, (which is a powerful greenhouse gas with a global warming potential 21 times greater than CO_2), the avoided emissions in the coastal zone are equivalent to 19,708 metric tons of CO_2, in addition another 4,927 tons are reduced in non-coastal regions of Delaware and 16,424 tons are reduced in area states.	Please see Offsetting Plan	
CO	No impacts anticipated.				
NOx	No impacts anticipated.				
SOx	No impacts anticipated.				
HC	No impacts anticipated.				
VOC	Approximately 1.50 tons per year from material handling operations (during upset conditions)	Page 13			
CO_2					
Water Quality		Pages 14-19			
Surface	No impacts anticipated.				
Groundwater	No impacts anticipated.				
Water Quantity		Pages 19-20			
Surface	No impacts anticipated.				
Groundwater	No impacts anticipated.				
Water Use For:		Pages 19-20			
Processing	No impacts anticipated.				
Cooling	No impacts anticipated.				
Effluent Removal	No impacts anticipated.				
Solid Waste	The project will compost materials that would otherwise end up in a solid waste landfill thereby reducing the total amount of solid waste managed in this manner. Solid waste generated during the receipt of the source separated food materials will be collected, placed in collection containers and either recycled off-site or disposed of off-site in an approved facility.	Pages 20-21	Food materials no longer suitable for consumption will be used in an composting operation to produce a product used by landscaping contractors and homeowners to improve the quality of the soils on their property. The proposed facility will divert approximately 120,000 tons per year of this solid waste stream from landfills thereby extending the useful life of the landfills.	Please see Offsetting Plan	
Hazardous Waste	No impacts anticipated.	Page 21			
Habitat		Pages 22-23	The applicant is proposing a financial contribution of $2,500.00 to the South Wilmington Special Area Management Plan to assist in the redevelopment of the economic depressed neighborhood which is located nearby.	Please see Offsetting Plan	
Wetlands	No impacts anticipated.				
Flora Fauna	No impacts anticipated.				
Drainage/Flood Control	No impacts anticipated.	Pages 15-17	The proposed improvements include Stormwater Best Management Practices (BMP) to preclude sediment or floating wood chips from entering the existing detention basins. The aeration of the water in the detention basins will increase the dissolved oxygen content of the stormwater entering the Christina River from the site.		
Erosion[2]	The project will increase the impervious coverage of the site with the addition of paved areas. Stormwater may contain a slight increase in the amounts of sediment, wood chip debris or COD.	Pages 15-17	The proposed improvements include Stormwater Best Management Practices (BMP) to preclude sediment or floating wood chips from entering the existing detention basins.		
Land Use Effects					
Glare	No impacts anticipated.	Page 23			
Heat	No impacts anticipated.	Page 23			
Noise	No impacts anticipated.	Page 23			
Odors	No impacts anticipated.	Page 23			
Vibration	No impacts anticipated.	Page 23			
Radiation	No impacts anticipated.	Page 23			
Electro-Magnetic Interference	No impacts anticipated.	Page 23			
Other Effects			The proposed site improvements include planting of native landscape trees along the property line as a visual buffer to increase aesthetics and improve the integration of the site with the environmental setting of the coastal zone.	See Page 36	
Threatened & Endangered Species	No impacts anticipated.	Page 22			
Impacts From:					

COASTAL ZONE ENVIRONMENTAL IMPACT OFFSET MATRIX
Applicant: Peninsula Compost Company LLC
Project: Proposed Material Composting Operation
CZA Offset Review Reference: (DNREC Only)

Application Date: May, 2007
Amendments: January, 2008
Offset Review Date: (DNREC Use Only)
Matrix Amended:

ENVIRONMENTAL IMPACTS	(Applicant's Use) DESCRIBE ENVIRONMENTAL IMPACTS	PAGE NO.	(Applicant's Use) DESCRIBE ENVIRONMENTAL OFFSET PROPOSAL[1]	PAGE NO.	(DNREC Use Only) OFFSET SUFFICIENCY Yes, No or N/A
Raw Material	No impacts anticipated.				
Intermediate Products	No impacts anticipated.				
By-Products	No impacts anticipated.				
Final Products	No impacts anticipated.				

1 See paragraph I.1.b in "Secretary Assessment"

2 Construction and normal operation