

SWANA RECYCLING TECHNICAL ASSISTANCE

FINAL REPORT

HANOVER BOROUGH PERMIT-BY-RULE COMPOST FACILITY EVALUATION



HARRISBURG, PENNSYLVANIA

SEPTEMBER 2008

SWANA TECHNICAL ASSISTANCE STUDY
FINAL REPORT
HANOVER BOROUGH
PERMIT-BY-RULE COMPOST FACILITY EVALUATION

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SWANA TECHNICAL ASSISTANCE STUDY
EXECUTIVE SUMMARY
HANOVER BOROUGH
PERMIT-BY-RULE COMPOST FACILITY EVALUATION

The Borough of Hanover (Borough) is in the process of submitting a Permit-By-Rule (PBR) yard waste compost facility on the site of the Borough's former waste water treatment plant located off Sewer Plant Road in Hanover, Pennsylvania. Gannett Fleming, Inc. (GF) provided technical assistance to the Borough to assist in developing draft documents and to conduct a preliminary site evaluation. During our study, GF provided the following to the Borough to be used to finalize the Permit-By-Rule application submittal:

- Completed a 7.5 Quadrangle map showing the 100-yr. flood plain in relation to the site
- Completed a Draft General Site Plan
- Completed a Draft Prevention, Preparedness and Contingency Plan
- Completed a Draft Permit-By-Rule application
- Preliminary site visit of the proposed compost facility

Based on GF's evaluation of the proposed compost facility (see attached **Compost Site Evaluation**), the site is well suited for yard waste composting, particularly because of the following characteristics:

- The site is isolated from residential households and commercial establishments
- The site has existing gates and fencing to control site access (minimizes initial costs)
- The site is level, clear of trees and other structures
- Preliminary grading has already been completed for the active compost area.
- The proposed site meets most of the siting criteria and PBR application requirements.

It is noted that GF could not verify if the compost facility met all applicable siting criteria since it was out of our work scope to conduct any wetlands or water table investigations.

If the PBR application for the proposed facility is approved by the Pennsylvania Department of Environmental Protection (PADEP), Borough staff will operate the yard waste compost facility using low-tech windrow composting methods including the use of loaders to periodically turn windrowed leaves and yard waste. It is the Borough's intention to use the new compost facility to process yard waste (including leaves, tree trimmings and grass) that is generated by the Borough and Conewago Township. Due to the cost and limited availability of staffing, coupled with the potential for illegal dumping and compost material contamination, the compost facility will not be used for public drop-off at this time. However, there are alternate drop-off locations, including H&H Mulch, within five miles of the Borough that residents may use during normal business hours.

Pending verification that the site meets all yard waste compost facility siting criteria and PADEP approvals; GF believes the proposed compost facility is well-suited for receiving and processing yard waste material. GF recommends the following:

- Utilize the draft documents (e.g. General Site Plan, PPC Plan, PBR application, and maps) to move forward with finalizing the PBR application submittal.
- The Borough should work with PADEP in the Permit-By-Rule application process to confirm the site meets all siting criteria and to permit the compost facility.

- It is recommended that the flow of yard waste material on the PBR site is as follows: Incoming material passes through entrance → feedstock preparation area → active composting area (windrows) → curing/storage → facility exit.
- Train at least one compost site operator in composting (www.proprecycles.org).
- Identify uses for compost in a variety of Borough projects/applications and market a portion of the compost material for revenue to partially offset operational costs.
- The Borough should consider using the transfer station scale as a means to weigh and document yard waste quantities.
- To help offset rising waste management costs, implement a program to recover tip fees for yard waste deliveries from commercial vendors (e.g. local landscapers). The Borough could direct vendors/landscapers across the scale at the waste transfer facility prior to delivery to the compost facility for weighing and billing, if this strategy was determined favorable and feasible for the Borough.
- Although the active compost facility meets the buffer requirement (50 feet from a property line, it is still recommended the Borough inform the adjoining property owner of the Borough's intent to operate a compost facility (pending PADEP approval). Since the activity is agricultural farming that is separated by the Borough's fence, it is not expected the land-owner would be resistant or impacted in any negative way by the proposed facility and low-tech composting operation.
- It is recommended the Borough properly construct and turn yard waste windrows to improve the rate of composting and quality of compost:
 - Construct yard waste windrows within one week of delivery of yard waste **6 to 8 feet high by 12 to 14 feet wide** at a minimum of 100' long.
 - Construct piles in pairs with **7-10 feet between piles** for equipment and combine two piles after size-reduction so the proper pile size is maintained.
 - Maintain minimum **3:1 leaf to grass ratio** (if grass is accepted)
 - During the first month, turn piles at least once per week
 - After first month, turn at least monthly
 - Stack stable compost for final curing (usually by end of next summer)

SWANA TECHNICAL ASSISTANCE STUDY
FINAL REPORT
HANOVER BOROUGH
PERMIT-BY-RULE COMPOST FACILITY

1.0 INTRODUCTION

Hanover Borough (Borough) is located in York County, Pennsylvania. The Borough is in the process of relocating its yard waste compost facility to an area adjacent to the former waste water treatment plant (see **Location Map** at the end of this Report). Through the partnership with the Solid Waste Authority of North America (SWANA), the Pennsylvania Association of Township Supervisors (PSATS), and the Pennsylvania Department of Environmental Protection (PADEP), Hanover Borough was awarded \$7,500 in technical assistance to be provided by Gannett Fleming, Inc. (GF) to assist in completing the Permit-By-Rule (PBR) documents for the proposed yard waste compost facility.

1.1 Scope of Work

GF worked with Hanover Borough to develop the following tasks under this study.

- Task #1** GF will gather and review background information provided by the Borough and will incorporate relevant information into the project report. This background information will focus on information related to the current leaf waste collection and processing/compost operations.
- Task #2** GF will make one (1) site visit to the Borough’s compost site. GF will evaluate the site and make observations with consideration of the site layout, operations, and methods used for document incoming and outgoing material quantities. GF will use the observations from the site visit to develop recommendations for the collection system and compost operation.
- Task #3** GF will prepare and provide the Borough with a project report including findings and recommendations. This task includes a review of the report by the Pennsylvania Department of Environmental Protection (PADEP) and response to PADEP comments. An electronic file of the final report will be submitted to PADEP and to the Borough. Two bound and one unbound hardcopies of the Final Report will also be provided to the Borough.

2.0 BACKGROUND

The Borough has approximately 7,000 households and is mandated to recycle by the Municipal Waste Planning, Recycling, and Waste Reduction Act of 1988 (Act 101). Act 101 mandates curbside recycling in communities with a population over 10,000 and in communities over 5,000 with a density of 300 people per square mile. Mandated municipalities are required to provide for the collection of “leaf waste” for residents as described by Chapter 271 of the PA Code. “Leaf waste” is defined in Chapter 271 as **leaves, garden residues, shrubbery and tree trimmings, and similar material**. Leaf waste does not include grass clippings.

Currently, the Borough composts leaves at a composting facility located off Blettner Avenue. **Garden residues** are collected (2) two times a year by the Borough in May and October. The Borough also collects fallen brush from windstorms and Christmas trees are collected December through January. Residents may dispose of branches, tree and shrub trimmings, and pulpy vines cut into three (3) foot lengths and bundled to a weight less than fifty (50) pounds at the Borough’s drop-off center located at North Street. Over time, the Borough’s compost facility became overcrowded with old compost material and yard waste. Hanover Borough has taken initial steps to relocate and develop a new Permit-By-Rule (under 5 acres) yard waste compost facility at the site of the former waste water treatment plant. To clear the existing site of accumulated material, the Borough worked with H&H Excavating and removed accumulated yard waste in the spring of 2008.

The proposed compost site is nearly four acres and is isolated from residential and commercial properties. The proposed site is owned by the Borough and has existing infrastructure to support yard waste composting. The site has an existing access road, is fenced with a gated entrance and exit and has a water hydrant that could be used for wetting piles as needed (see **Draft General Site Plan**). GF provided technical assistance to support the Borough in completing a draft Permit-By-Rule Application (PBR), including required documents and maps and conducted a preliminary investigation of the proposed compost facility. The proposed compost site will serve the Borough and neighboring Conewago Township.

3.0 COMPOST FACILITY SITE VISIT/EVALUATION

On June 16th, 2008 GF conducted a site visit of the proposed 4-acre yard waste compost facility located off Sewer Plant Road. GF completed a Compost Facility Evaluation Form, including site photos (attached in **Appendices**). As summarized, GF made the following observations about the proposed compost facility:

- The site is isolated from residential and commercial receptors.
- Borough staff is located within a couple miles of the site to assist as needed at the site.

- Existing fencing and gates facilitate control of site access.
- Most of the area proposed for active composting (1-2 acres currently) has a 1-2 percent slope. The site may require additional area be graded to allow more room for composting, pre-processing, storage and curing.
- There are remnants of an old constructed pond that is filled with grass, dirt and water adjacent to the 2-acre area that was recently graded. This area was associated with the operation of the former waste water treatment facility.
- The current working surface was earthen (and is recommended to be improved as a working surface by adding millings, asphalt or other alternative to harden the surface to facilitate managing yard waste without contaminating the material with rocks and dirt).
- There is no building for equipment storage on site.
- The site promotes efficient and safe traffic flow because of an entrance and exit gate for trucks, equipment and visitors.
- The area that has been graded by the Borough for active composting is just under two acres. Additional area may need to be graded as material from both Townships is windrowed and composted on the site.

Based on our site visit and experience with other compost facility design projects, GF developed a draft General Site Plan (refer to Section 4.2 and **Figures** attached at the end of this Report).

3.1 Permit-By-Rule Yard Waste Compost Facility Siting Restrictions

The PADEP Permit-By-Rule Guidelines include siting restrictions that are listed below. GF provided a response following each restriction below based on our preliminary investigation and site visit observations. GF did not perform any wetlands investigation. The Guidelines state that 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. **No.** (refer to attached Flood-Plain map)
- b. In or within 300 feet of an exceptional value wetland. **GF did not complete a wetland analysis.**
- c. In or within 100 feet of a wetland other than an exceptional value wetland. **GF did not complete a wetland analysis.**
- d. Within 100 feet of a sinkhole or area draining into a sinkhole. **No. GF did not observe any sinkholes and there is no history of sinkholes on this property.**
- e. Within 300 feet measured horizontally from an occupied dwelling unless the owner has provided a written waiver consenting to the facility being closer than 300 feet. **No.**

There are no occupied dwellings within 300 feet.

- f. Within 50 feet of a property line, unless the operator demonstrates that only curing of compost is occurring within that distance. **No.** (refer to General Site Plan) **The active compost area is greater than 50 feet from the nearest property owner** (land use: agricultural farmland).
- g. Within 300 feet of a water source. **No.** None observed.
- h. Within 3.3 feet of a regional groundwater water table. **GF did not complete a groundwater table analysis.**
- i. Within 100 feet of a perennial stream. **No.**

4.0 PERMIT-BY-RULE APPLICATION – DRAFT

As part of the Permit-By Rule (PBR) application process, the Borough is required to submit a PBR to PADEP including the following:

- Completed Permit-By-Rule Application
- General Site Plan
- Flood Plain Map
- Prevention, Preparedness and Contingency plan (PPC Plan)

GF assisted the Borough to develop drafts of each of the above required documents. It is also noted that the Borough is required to educate residents about the compost facility and yard waste collection program at least once every 6 months in accordance with Act 101 requirements and PADEP policies, and should provide samples of their educational materials with its PBR submittal.

4.1 Draft Permit-By-Rule Yard Waste Compost Facility Application

Hanover Borough is required to submit a Permit-By-Rule Yard Waste Compost Facility Application to PADEP prior to operating the proposed compost facility. GF assisted the Borough with the completion of a **draft PBR Application** (see attached **Appendices**).

4.2 Draft General Site Plan

A General Site Plan (Refer to attached **Figures**) is required for Permit-By-Rule compost facilities. Using GIS, GF developed a General Site Plan (attached) for the proposed yard waste compost facility. This draft General Site Plan is a conceptual layout subject to review and

confirmation and clarification by PADEP that the proposed compost site meets all applicable site criteria as specified in the Permit-by-Rule Guidelines and other applicable regulations.

4.3 Flood Plain Delineation and 7.5 Quadrangle Map

Using GIS, GF developed a 7.5 quadrangle map and delineated the flood plan using US Geologic Survey data (See the **Figures** attached at the end of the Report). The proposed compost facility is not located within the 100-year flood plain.

4.4 Prevention, Preparedness and Contingency plan (PPC Plan)

The Borough is required to complete a Prevention, Preparedness and Contingency Plan (PPC Plan) as part of the PBR process. GF completed a **draft PPC Plan** for the Borough (see **Appendices**).

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The Borough of Hanover (Borough) is in the process of implementing a Permit-By-Rule (PBR) Yard waste compost facility on the site of the Borough's former waste water treatment plant located off Sewer Plant Road in Hanover, Pennsylvania. If the PBR application for the proposed facility is approved by the Pennsylvania Department of Environmental Protection (PADEP), Borough staff will operate the yard waste compost facility using low-tech windrow composting methods, including the use of loaders to periodically turn windrowed leaves and yard waste.

It is the Borough's intention to use the new compost facility to process yard waste (including grass) that is generated and collected in the Borough and in Conewago Township. Due to the cost of staffing and the potential for illegal dumping and compost material contamination, the compost facility will not be used for public drop-off at this time. However, there are alternate drop-off locations, including H&H Mulch, within five miles of the Borough that residents may use during normal business hours.

During this Recycling Technical Assistance study GF provided the following to the Borough:

- Completed a 7.5 Quadrangle map showing the 100-yr flood plain in relation to the proposed site.
- Completed a preliminary General Site Plan
- Completed a Draft Prevention, Preparedness and Contingency Plan
- Conducted a site visit of the proposed compost facility.
- Completed a Draft Permit-By-Rule application

GF has provided these files and documents to the Borough, which can be used to finalize the Permit-By-Rule application submittal.

Based on GF's evaluation of the proposed compost facility, the site well suited for composting, particularly because of the following characteristics:

- The site is isolated from residential households and commercial establishments
- The site has existing gates and fencing to control site access (eliminating capital cost expenditure for site development)
- The site is level, clear of trees and other structures
- Preliminary grading has been completed for the active compost area.
- Our preliminary site investigation determined the proposed site meets most of the siting criteria within in the PBR application requirements. GF did not verify if the compost facility met all applicable siting criteria. GF did not evaluate or perform any wetlands or water table assessments pertaining to these siting criteria.

Pending verification the site meets all siting criteria and PADEP approvals; GF believes the proposed compost facility is well-suited for receiving and processing yard waste material.

5.2 Recommendations

GF recommends the following:

- Utilize the draft documents GF has prepared (e.g. General Site Plan, PPC Plan, PBR application, and maps) to move forward with finalizing the PBR application submittal.
- GF recommends the Borough work with PADEP in the Permit-By-Rule application process to confirm the site meets all siting criteria and to permit the compost facility.
- Use the proposed General Site Plan as guideline to laying out and operating the facility. It is recommended generally that the flow of the material is as follows: Incoming material passes through entrance → feedstock preparation area → active composting area (windrows) → curing/storage → facility exit.
- Train at least one compost site operator in composting. Compost classes are available through the Professional Recyclers of PA (www.proprecycles.org).
- In the future, as finished compost is produced, it is recommended the Borough identify uses for compost in a variety of Borough projects/applications and also market a portion of the compost material for revenue to partially offset operational costs.
- The Borough should consider a program to recover tip fees for yard waste deliveries from commercial vendors (e.g. local landscapers). Tipping arrangements could be kept to

minimum by limiting the vendors and/or days when they may access the site (in conjunction with a loader operator present). This strategy could be beneficial to both the commercial vendors and the Borough. Vendors may need a cost-effective location for processing yard waste, and the Borough may periodically need additional or different feedstocks (e.g. grass), and at the same time can generate a small amount of revenue.

- Although the active compost facility meets the buffer requirement (50 feet from a property line, it is still recommended the Borough inform the adjoining property owner of the Borough's intent to operate a compost facility (pending PADEP approval). Since the activity is agricultural farming that is separated by the Borough's fence, it is not expected the land-owner would be resistant or impacted in any negative way by the proposed facility and low-tech compost operations.
- It is recommended the Borough use the following yard waste windrow construction and turning methods to manage/compost yard waste materials:

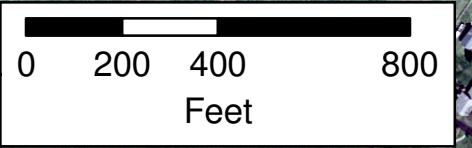
Construction:

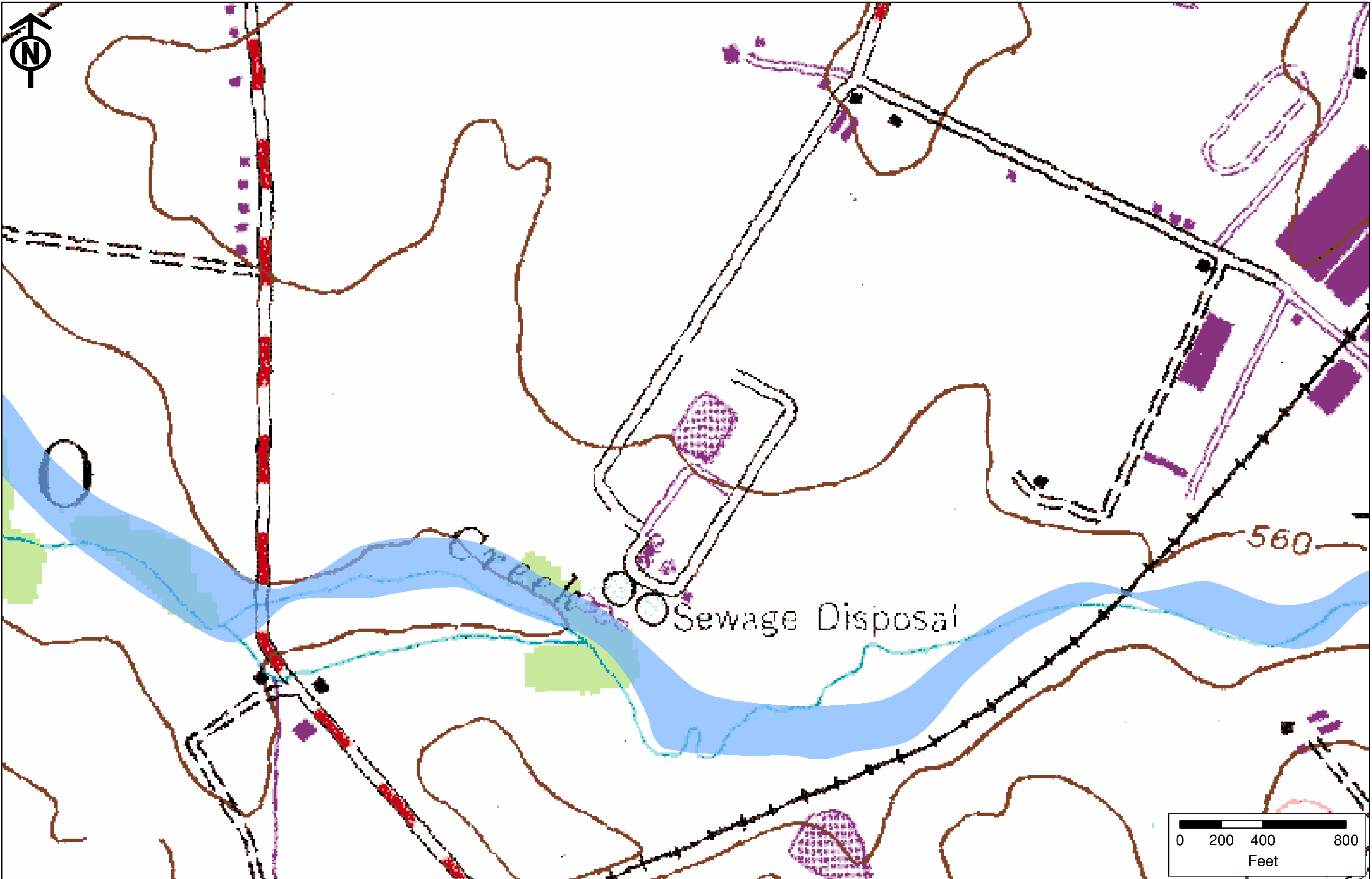
- ♦ Construct piles within one week of delivery of yard waste
- ♦ Thoroughly mix/break up incoming leaves & yard wastes
- ♦ Do not compact the material
- ♦ Construct piles **6 to 8 feet high by 12 to 14 feet wide**
- ♦ Construct piles in pairs with **7-10 feet between piles** for equipment
- ♦ Add approx. 20 gal. of water per cubic yard (40 gal. per foot of windrow)
- ♦ Incorporate grass clippings within 24 hours
- ♦ Maintain minimum 3:1 leaf to grass ratio (if grass is accepted)
- ♦ Add bulking material (e.g. woodchips) as needed to improve air flow
- ♦ Note: Moderately Compacted Leaves = approx. 400 lbs. per cubic yard

Turning:

- ♦ During the first month, turn piles at least once per week
- ♦ After first month, turn at least monthly
- ♦ Turn piles when pile temperature drops below 90°F or exceeds 140°F
- ♦ Water piles during turning, if dry (squeeze test: material should be damp)
- ♦ Keep material loose and maintain air circulation
- ♦ After size reduction, combine windrows to maintain optimal pile size
- ♦ Stack stable compost for final curing (usually by end of next summer)

FIGURES







Sewer Plant Road

Exit Gate

Access Road

Existing Storage and Curing Area

Entrance Gate (Sign)

Water Hydrant

Exit Gate

Proposed Graded Area (Future Expansion)

Proposed Feedstock Preparation

Proposed Milling Area

OLD SEWER PLANT

Proposed Storage and Curing Area

Proposed Windrow Configuration

350'

50' Setback

Property Line

Borough of Hanover

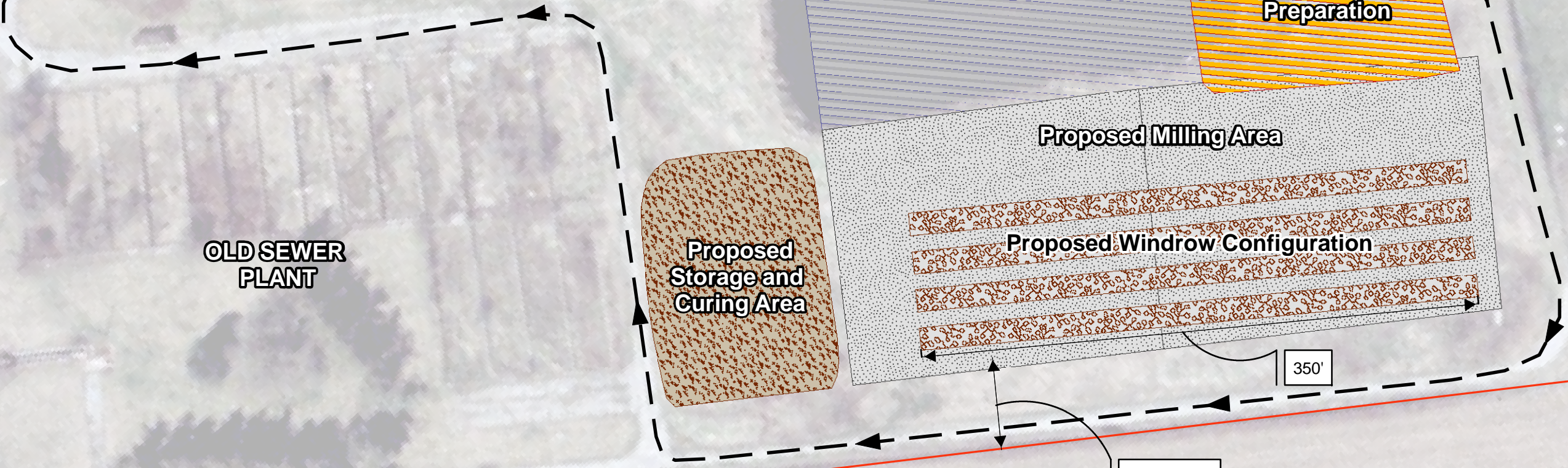
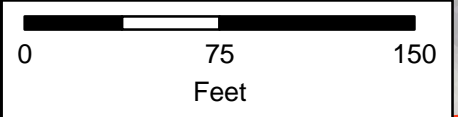
Compost Facility

DRAFT GENERAL SITE PLAN

NOTE: Pending PA DEP Approval

Gannett Fleming

June 2008



APPENDICES

Site Evaluation

Draft Permit-By-Rule Application

Draft PPC Plan

TABLE 1: HANOVER BOROUGH COMPOST SITE EVALUATION

COMPOST SITE CRITERIA	SITE RATING (+, 0, -)	ADDITIONAL COMMENTS
Remote from residential areas (recommended at least 300-foot buffer)	+	Yes. Very remote.
Close proximity to material generation	+	Yes. Within 2 miles of the center of the Borough
Sufficient Size	0	Yes, for current material. Additional grading may be needed as windrows are constructed for additional space for active composting, feedstock preparation and curing.
Ownership/ Control of site	+	Yes. Owned by the Borough.
LAND		
Vacant	+	Land is vacant in the proposed compost area
Level to moderate slopes	+	Yes. Land has level to 2-3% slope.
Good drainage, no high water table	NA	Did not evaluate the water table level.
Not within 100 feet of a perennial stream or within 300 feet of a water source	+	No perennial stream within 100 feet.
Outside of floodplain	+	Outside of the Flood Plain according to USACE data.
SENSITIVE AREAS		
No wetlands	NA	Grassy area observed. GF did not complete wetlands analysis.
No historic sites	+	None observed
No rare/endangered species	NA	GF did not complete endangered species analysis.
No restricted lands	+	None
No sensitive "receptors" nearby	+	No occupied residential or commercial establishments nearby.
No sinkhole areas (within 100 feet)	+	None observed
ACCESS		
Easy access for vehicles, equipment, & public	+	Existing road
Control of access to unauthorized persons		Multiple gates and fencing.
UTILITIES		
Water supply	+	Yes. Hydrant
Power supply	-	No.
Stormwater management	+	Stormwater appears to be buffered by grassy areas and currently there is no impervious surface.
PROCESSING CAPACITY		
Processing equipment	0	Loaders used for turning, but no grinder or compost screener.
Equipment utilization	+	Entrance and Exit gates facilitate efficient flow of equipment
Residential traffic flow	NA	Residents will not be able to drop off at site
Commercial traffic flow	NA	NA
Onsite compost methods	NA	Windrow (no material on site at time of visit)
Material distribution offsite	-	Additional uses/markets should be identified
Processing equipment storage on-site	-	No covered storage.
<p>ADDITIONAL NOTES:</p> <p>Site is favorable for a yard waste composting facility and meets most permit criteria under the Permit-By-Rule Guidelines. GF did not complete wetlands, endangered species or water table assessments.</p>		

+ Positive 0 Neutral - Negative

Hanover Borough – Compost Site Photos – 2008



Hanover Borough – Compost Site Photos – 2008



Hanover Borough – Compost Site Photos – 2008



Hanover Borough – Compost Site Photos – 2008

