SWANA RECYCLING TECHNICAL ASSISTANCE STUDY

Regional Compost Facility Evaluation
Exeter Borough, Luzerne County

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SWANA TECHNICAL ASSISTANCE STUDY
FINAL REPORT
EXETER BOROUGH, LUZERNE COUNTY
MULTI-MUNICIPAL COMPOST FACILITY EVALUATION

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Affected by rising costs and heightened economic stresses that impact Luzerne County and all of Pennsylvania, it is imperative that **Exeter Borough**, **Wyoming Borough**, **West Wyoming Borough, West Pittston** and **Kingston Borough** carefully plan for, redesign and properly manage their compost operations. Yard waste collection and composting programs require time and money. However, the resulting benefits to the surrounding communities from a properly managed compost facility can outweigh the cost invested by the municipalities. With proper processing, finished compost and mulch can be valuable to plant growth, landscaping and construction projects without the harmful impacts caused by artificial fertilizers and other artificial products. When market-grade compost is produced, a fair fee per cubic yard can be established to help offset a portion of the costs incurred by each municipality, thus helping the municipalities to continue these beneficial collection and compost operations into the future.

GF visited and provided recommendations on four municipal compost facilities. Specific recommendations for each facility are presented in **Section 3.0**. Based on GF's observations, it is clear that operational adjustments are needed, and that these facilities are at risk to waste money and resources and may continue to stockpile a low-grade compost material that is not cost-effectively returned to the local communities. All four compost facilities use low-tech windrow composting methods, but do not have processing equipment to grind incoming brush and/or to screen finished compost. The inability of these facilities to produce market-grade finished compost is primarily caused by two interrelated factors:

1) Curbside Collection Format: Each compost facility accepts packer truckloads of combined or commingled yard waste from the residential collection programs where leaves, grass (exception: Kingston Borough prohibits grass), garden residues and other similar materials are mixed with woody wastes including brush and tree trimmings;

2) Lack of Processing of Incoming Mixed Yard Waste Material: Due to the presence of woody wastes, the incoming yard waste requires processing using a grinder before it can be placed into properly constructed windrows to optimize the windrow composting process. Currently, the unprocessed mixed yard waste material cannot be effectively managed and composted, and this will continue to prevent effective compost facility operation until processing equipment is utilized.

Notably, the residential curbside collection of mixed yard waste does not have to change if the mixed yard waste is pre-processed with a grinder. Therefore, it will be crucial for the municipalities to be successful in their Act 101, Section 902 Grant Application request for a horizontal grinder that will be shared among all four compost sites. GF has provided a number of conclusions and recommendations throughout this Report. A few key recommendations include:

- As described in this Report, it is recommended the municipalities immediately begin making adjustments to the site configuration and yard waste material management to ensure stockpiled yard wastes and compost are organized and free of non-compostable debris that could potentially damage the proposed yard waste processing equipment requested by the municipalities as part of their Act 101, Section 902 Recycling Grant application. The sites should be ready to grind and then windrow accumulated yard wastes with arrival of the proposed horizontal grinder.

- Although GF does not recommend the municipalities change the curbside yard waste collection format from commingled yard waste collection to segregated collection by material (e.g. providing separate collections for leaves/grass and for woody wastes), it is still recommended the municipalities standardize their curbside collection specifications and educational materials (to the extent feasible) and become strict about allowing ONLY the specified organic materials to be placed at the curbside by residents. A loosely monitored curbside yard waste program will lead to costly compost equipment repairs.

- Assuming the horizontal grinder is procured, it should be used to pre-process the mixed yard waste using a smaller diameter screen so the woody fragments are reduced in size. After pre-processing, the ground mixed yard waste should be placed into windrows 6-8' high by 12'14' wide and allowed to compost 2-3 months until active composting is finished. The material should then be placed in curing piles not to exceed 15' high for a period of 2 months.

- Facility operators should receive training in the science and practice of composting and the equipment operators should complete safety training. The municipalities should support compost training as needed. Training is provided periodically by the professional recyclers of PA (PROP) www.proprecycles.org

- It is recommended the municipalities purchase a relatively small new or used mobile compost screener (one-bucket top load units can cost as little as $5,000 - $15,000).

- Large woody waste including stumps and larger diameter branches should be kept segregated from mixed waste, placed into a large pile and periodically shredded into mulch. Mulch can be stockpiled in piles not to exceed 15' high and is immediately ready for use/market.

- A donation box for money should be placed near the residential pickup areas where compost or mulch is manually loaded by residents. Each compost facility should expand up market and revenue opportunities as they improve product quality.

- It is recommended a fee be charged for each cubic yard of finished mulch or compost that is mechanically loaded into a vehicle.

- As a general rule, it is recommended that self-loading residential pickup areas for compost be located near the entrance to the compost facility (even outside the gate); so that visitors only wishing to manually load compost do not impact facility operations.

- The municipalities should execute an intermunicipal equipment sharing arrangement:

  - A single municipality should be assigned to oversee the equipment sharing program, including fixed costs and usage fees, equipment management and coordination of the equipment operator(s).

  - Identify one primary operator for the proposed horizontal grinder and a secondary operator to be used as backup when the primary operator is unavailable. These persons will accompany the equipment to each site and operate the equipment.

  - The cost of using the yard waste processing equipment should be fairly distributed and, in part, be allocated by usage. Certain fixed costs for things like routine maintenance and wear parts could be allocated evenly among participating municipalities and assessed as fixed cost to each municipality on an annual basis. One way to distribute the operating cost according to usage is by charging a fee per operating hour, which can be tracked using the hour meter on the processing equipment. The assigned equipment operator should be tasked to record the hours and submit the information to the municipality assigned to administer the shared equipment program so fees can be appropriately distributed.

- The municipalities should work together to develop a standard and simple tracking system to estimate incoming yard waste and outgoing product quantities. Operational costs and revenues should be tracked and an annual budget should be established for each facility and yard waste collection program.

- Finished compost should be tested annually at Penn State Agricultural Analytical Services Lab (www.aasl.psu.edu) and the lab results should be reviewed and posted on a website and/or otherwise made available to vendors.

- The compost facilities should investigate and secure residential and commercial markets for finished compost and mulch products and set a goal to move all the finished material offsite that was processed during the previous year.

- GF does not recommend Wyoming Borough perform any site PADEP permitting of their compost facility location that is located in the Floodway until an evaluation of other possible sites, including shared use of another site, land leasing, or coordination with another business or private owner has been investigated.

SWANA TECHNICAL ASSISTANCE STUDY
FINAL REPORT
EXETER BOROUGH, LUZERNE COUNTY
MULTI-MUNICIPAL YARD WASTE COMPOST FACILITY EVALUATION

1.0 INTRODUCTION

Exeter Borough (Borough) is located in Luzerne County, Pennsylvania. The Borough is in the process of evaluating multi-municipal yard waste composting efforts among Exeter Borough, Kingston Borough, Wyoming Borough, West Pittston, and West Wyoming Borough. Through the partnership with the Solid Waste Authority of North America (SWANA), the Pennsylvania Association of Township Supervisors (PSAT's), and the Pennsylvania Department of Environmental Protection (PADEP), Exeter Borough was awarded $7,500 in technical assistance to be provided by Gannett Fleming, Inc. (GF) to assist in evaluating four municipal compost facilities and shared arrangements to improve operations while effectively managing costs.

1.1 Scope of Work

GF worked with Exeter 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 visit and evaluate four (4) compost sites in Luzerne County. GF will make observations with consideration of the site layout, operations, and methods used for documenting incoming and outgoing material quantities. GF will use the observations from the site visits to develop recommendations for the collection systems and compost operations.

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. Five bound hardcopies and one electronic version of the Final Report will also be provided to the Borough.

2.0 BACKGROUND

There are four separate composting facilities located in the Northeast Region (PADEP) that were evaluated during this study (refer to the **Regional Compost Facility Map** attached at the end of this Report):

- **Exeter Borough**
- **Wyoming Borough**
- **West Wyoming Borough**
- **Kingston Borough**

The four compost facilities accept yard waste material from five participating municipalities. West Pittston does not host a compost facility, but transports curbside collected yard waste to the West Wyoming compost facility. Each municipality has curbside collection programs using waste packer trucks to collect mixed or "commingled" yard wastes (e.g. leaves, grass, tree trimmings, garden residues, Christmas trees, and similar material) for delivery to their respective compost facility. Kingston Borough is the only municipality that prohibits grass collection due to the potential that odors may impact nearby residential establishments.

2.1 Compost Definitions

This study frequently refers to the terms leaf waste, yard waste, mulch, compost and windrow. Definitions for these terms are provided below.

Leaf Waste is defined by Act 101 and its regulations as "Leaves, garden residues, shrubbery and tree trimmings, and similar material, but not including grass clippings."

Yard Waste as defined by Pennsylvania Code, Title 25, Chapter 271.1 and includes leaves, grass clippings, garden residue, tree trimmings, chipped shrubbery and other vegetative material.

Mulch - commonly defined as a soil covering used to control weeds or erosion; retain moisture in soil; and insulate soil from cold weather. Mulch is also used for aesthetic purposes. Organic materials commonly used for mulch include wood chips, ground up landscape trimmings, shredded bark, coarse compost material, straw, and shredded paper. Non-organic materials include crushed concrete and brick, stones and gravel, lava rock, and even plastic film. Yard waste mulch is ready immediately following processing using a grinder or shredder and is piled (rather than windrowed) in piles up to 15' high. Mulch piles exceeding 15' high increase the risk of pile fires.

Compost - Pennsylvania Code, Title 25, Chapter 271.1 defines composting as the process by which organic solid waste is biologically decomposed under anaerobic or aerobic conditions to

yield a humus-like product (i.e. compost). Compost feedstock materials include yard and landscape trimmings, agricultural crop residues, paper pulp, food scraps, wood chips, manure, and biosolids. Compost is often used for enhancing soil structure and building organic matter content, adding nutrients to soil, controlling weeds and dust, and retaining moisture in soil.

Windrow (yard waste) – Outside composting of organic waste in rows that are mechanically constructed and mixed regularly to improve the compost process. Yard waste windrows are constructed **6'-8' high** by **14'- 16' wide** to maintain adequate temperatures to optimize the compost process. Windrows are constructed in parallel rows, and longer rows (space permitting) facilitate processing efficiency.

3.0 YARD WASTE COMPOST FACILITY EVALUATIONS

GF conducted site visits of four compost facilities on July 2, 2008 in Luzerne County.

- **Exeter Borough**
- **Wyoming Borough**
- **West Wyoming Borough (also used by West Pittston Borough)**
- **Kingston Borough**

During the site visits and evaluations, GF completed evaluation forms, took photographs, and noted background information about each facility. The **Compost Facility Evaluation Forms** and photographs are in **Appendix A.** Following the four compost facility visits, GF met with representatives from each municipality at the Exeter Borough building to discuss the observations and concerns. Based on GF's preliminary investigations and our experience with similar compost operations, the following sections include observations and recommendations for each compost facility. It is noted that some of GF's compost program recommendations are contingent upon, or will vary pending the final procurement and shared use of a horizontal grinder to process yard wastes, which will be determined through the Act 101, Section 902 Recycling Grant process. Additional recommendations that apply more generally to the yard waste collection and compost programs for all affected municipalities are presented in **Section 6.2**.

3.1 Exeter Borough

The Exeter Borough Compost Site Evaluation Form, along with the other evaluations, is presented in **Appendix A**. Maps showing the Exeter Borough Compost facility and Recycling Center are included in the **Figures** at the end of this Report. Based on GF's site visit, the following is a summary of findings for the Exeter Borough compost facility:

- Incoming yard waste from the curbside collection program is collected mixed or commingled (brush combined with leaves, grass and trimmings) using a packer truck. Since there is no pre-processing of the mixed yard waste material, handling is made more difficult and windrowing of material is only marginally effective in composting the material.
- The site has not been properly configured for composting. There is no dedicated area for feedstock preparation, which can include separating larger woody wastes from other organics (e.g. leaves, grass, trimmings, garden residues and other similar organics).
- The material appeared clean or free of unwanted/non-compostable materials.
- Processing equipment is not used. Since incoming materials (like leaves) are not segregated for composting, and because there is no grinder to break down woody wastes into compostable fragments, this facility cannot currently produce valuable finished/marketable compost and mulch products.
- Mixed yard waste has accumulated on site.
- The site is smaller than is recommended to promote effective material management, equipment utilization and proper construction of long, parallel compost windrows.
- The windrows on site at the time of the site visit were aligned incorrectly (perpendicular to the slope) and therefore trapped water and increased the wetness of the material.
- Material is generally too wet.
- There is no established schedule for an operator to periodically/routinely manage material at the site.
- The current material is poor quality and probably can not be marketed (particularly for any revenue) without processing.
- There is no record keeping of volume or operating costs for the compost facility.

3.1.1 Exeter Borough Compost Site Recommendations

GF recommends the following for the Exeter Borough Compost Facility:

- Fill in holes and depressions, leveling areas on site that are uneven.
- Grade the compost site so at least some of the stormwater flows into the existing rip rap and grade the site (2-4% slope) so that the windrows can be constructed in long, parallel rows that maximize space utilization of the site.

- Based on GF's observations, it is recommended that windrows are constructed diagonally across the site in a southwest to northeast orientation (as determined by the grading and stormwater management of the site).
- Expand the perimeter of the site to the extent feasible without removing the natural tree buffer and property line that separates the site from the mobile homes.
- Create the following designated areas at the site:
    - Feedstock preparation area:
      - Segregate brush and woody items (mulch).
      - Segregate mixed yard waste (leaves, grass, small trimmings, garden residues, etc.)
    - Grinding area
    - Active composting (windrow area)
    - Stockpiling/Curing area
    - Finished compost pickup area: It is noted that it may be feasible and preferable to locate the finished compost pickup area somewhere adjacent to the Recycling Center (away from the actual compost site) so that residents coming to pick up material do not have to go up to the actual compost site. This will keep visitors in view and allow personnel to assist compost customers as/if needed.
- During leveling and preliminary grading, some type of surface (even a compacted earthen surface) should be prepared as a stable base for handling brush and other materials with a loader.
- Although there is not much available space for expansion, it is recommended the site perimeter be expanded where possible to allow for designated areas for segregated material, staging and operating the grinder, and active windrow composting.
- A schedule should be developed to ensure a compost operator periodically visits the site to segregate materials, organize the site, repair ruts, turn materials and perform other compost operations as needed. Although this schedule can be flexible and be responsive to the volume of material requiring processing, some form of schedule would benefit both the compost site operation and improve the ability of Exeter Borough to adjust staffing allocation as needed.

3.2 Wyoming Borough

The Wyoming Borough Compost Site Evaluation Form and photos are presented in **Appendix A**. A map showing the Wyoming Borough compost facility is included in the **Figures** at the end of this Report. Based on GF's site visit, the following is a summary of findings for the **Wyoming Borough** compost facility:

- This compost site is not yet permitted under the PADEP Permit-By-Rule Guidelines, but is in the process of completing and submitting an application.
- This compost site is located in the Floodway according to United States Army Corp of Engineers (USACE) data. Regulations prohibit the development of compost facilities in the 100-year floodplain or floodway without approved "special precautions". PADEP has indicated this site may be approved but noted that certain operating controls must be established by the Borough for the compost site to permitted within the floodway:
  - No plastic bags or other garbage on the site
  - No unprocessed branches or Christmas trees remain at the end of the day unless a separate staging area is provided for these items outside the floodplain.

  These restrictions greatly limit the operational feasibility of this facility.
- Incoming yard waste from both Wyoming Borough and West Pittston Borough's curbside collection programs is collected mixed or commingled (brush combined with leaves, grass and trimmings) using a waste packer truck.
- There is no pre-processing (i.e. grinding or removal of brush and limbs) of the yard waste material.
- The yard waste is pushed into piles, not into windrows.
- The ground is level and there is unused space that could be used for windrow composting.
- The yard waste does not appear to be turned periodically (to accelerate composting).
- Some of the yard waste is too wet and there is some ponding of water at the base of accumulated piles.
- There is visible contamination of the yard waste consisting of plastic bags from the curbside program and from illegal dumping of various materials by residents and commercial vendors (e.g. small scale construction companies). The debris can cause damage to processing equipment if it is not removed prior to processing.
- The area is open to access by the public and illegal dumping is a problem.
- The yard waste material is pushed back in piles that have accumulated among existing trees making access to the material by a loader or other equipment difficult and potentially unsafe.
- There is no apparent compost plan/approach in place to manage the material.

- Without a grinder to break down the woody waste so it is incorporated into the compost, and without some material segregation, this facility cannot produce valuable finished/marketable compost and mulch products.
- The site is not too small for composting Borough-generated yard waste, but trees and lack of processing and lack of site organization do not allow for effective material management, equipment utilization and proper construction of long, parallel windrows.
- There is no established schedule for an operator to periodically/routinely manage material at the site.
- There is no record keeping of material volume or operating costs for the compost facility.

3.2.1 Wyoming Borough Compost Site Recommendations

GF recommends the following for the **Wyoming Borough** Compost Facility:

- Prior to moving forward with further compost facility development and the PADEP permitting process for Water Obstruction and Encroachment, FEMA requirements or for a Permit-by-Rule compost site, GF strongly recommends that Wyoming Borough verify the special operating conditions that will be placed on this facility by PADEP because the site is located in the USACE Floodway. PADEP has stated via email correspondence that branches (woody wastes) must be processed daily or located outside the floodplain in a separate staging area. These special conditions/operating requirements place an operational burden on the compost facility. It will not be practical or economically feasible to process yard waste daily. Handling/processing brush in a separate area is inefficient and impossible under the current curbside collection format where brush is mixed with leaves and grass. Other compost facility locations/shared arrangements should be reviewed carefully, before investing time and money in permitting activities that may reveal the site is not suitable.
- If it is feasible to move forward with the existing site, the following is recommended:
  - Fill and grade the area that will be used for active windrow composting. Maximize the length of the site so that long, parallel windrows can be constructed parallel to the slope of the grades site (to prevent ponding). It appears that a north-south orientation of windrows can optimize the current open space of the site and optimize the length of the site (See the Wyoming Compost Facility map).
  - Clear trees as needed to create a spacious, safe operating area.
  - Prohibit open public access to the site using gates.

- If financial/staff resources allow, widen the access road(s) to a width that is suitable for the proposed grinder and wide enough for two vehicles to pass side by side (20 feet is a standard/safe width). If the access road can be widened, it is recommended that gates are placed at the two access points so that traffic enters one gate and exits another.

- It is recommended the Borough implement a clean-up and operational strategy for the compost site so that the current material on site and any additional material is managed in a way so that it can be pre-processed using a grinder. This strategy includes:
  - Prohibit access to the site, except when staffed with a loader operator (or other staff).
  - Staff the compost site with a loader operator when it is open for drop-off. During this time the operator can turn windrows, segregate larger brush from mixed yard waste, inspect material for unwanted debris, etc. while deterring illegal dumping.

3.3 West Wyoming Borough Compost Site

The West Wyoming Borough Compost Site Evaluation Form and site photos are presented in **Appendix A**. A map showing the West Wyoming Borough compost facility is included in the **Figures** at the end of this Report. Based on GF's site visit, the following is a summary of findings for the West Wyoming Borough compost facility:

- The site includes:
  - A paved access road that continues back to the processing area of the compost site.
  - A sign at the entrance shows operating hours and accepted materials.
  - Gated entrance.
  - Wood chipper.
  - Drop-off area for brush.
  - Pile of finished compost available for residential pick-up.
  - Water source (hose) in the back of the site.

- Incoming yard waste from the curbside collection program is collected mixed or commingled (brush combined with leaves, grass and trimmings) using a packer truck. Unlike the other compost facilities evaluated, West Wyoming Borough separates larger brush from the incoming mixed loads of yard waste and chips the brush. West Pittston curbside collects and delivers their commingled yardwaste to West Wyoming's composting site. Even with larger brush removed, the amount of woody material remaining still negatively impacts material handling, slows the rate of composting, and degrades the quality of the finished compost. Some of the wood chips are added to the large pile of mixed yard waste.

- Yard waste that includes leaves, grass, similar material, twigs and small woody trimmings that are not removed for chipping are placed into large piles approximately 8-10' high and 40-60' wide and are turned occasionally. The yard waste is not placed into windrows. These large piles cannot be mixed uniformly and will not compost as quickly as material properly placed into windrows that are periodically turned.
- The material appears clean or free of unwanted/non-compostable materials.
- There is roughly 500 – 1,000 cubic yards of finished compost that sits in piles on site. This material appears to be quality compost with the exception that it contains twigs and smaller woody fragments.
- The long, narrow site configuration limits the ability to effectively manage material and make full use of equipment.
- There is no established schedule for an operator to periodically/routinely manage material at the site.
- The current material is fair quality and could be made into finished quality compost through a screening process to remove twigs and woody fragments.
- There is no record keeping of volume or operating costs for the compost facility.

3.3.1 West Wyoming Borough Compost Site Recommendations

GF recommends the following for the West Wyoming Compost Facility:

- Both West Wyoming and West Pittston will address the proper curbside preparation of yard waste by residents, implement an aggressive educational campaign and enforcement program to ensure residents follow all requirements and material specifications of the curbside yard waste collection program. The Borough staff responsible for curbside collection (or a yard waste contractor) should leave yard waste at the curb if it contains unwanted debris or if it is improperly prepared. Notices should be left on the yard waste indicating the problem.
- In the initial phase of making improvements to the West Wyoming compost facility, steps must be taken to create additional working space on the compost site. As soon as feasible, all the existing finished compost on site should be pushed into several large piles in the southeast (back) of the compost facility in preparation for future screening and to immediately create operating space.
- Finished compost should be moved off site so that existing material management can be improved. It is recommended the Borough enter an arrangement with an entity to screen the accumulated piles of finished compost, which will improve material

quality so it can be marketed effectively. The contractor could be allowed to take most of the material, but at least some of the finished compost should be kept for the Borough to use in various construction/maintenance applications and also to allow for residential pickup.

- As space is made available, the Borough and compost operator should begin constructing windrows, not large piles of incoming mixed yard waste. The windrows should utilize the full length of the compost site and be constructed 6'-8' high and 14-16' wide (refer to the laminated Compost Facility Guide provided during this study). It is recommended the windrows be constructed parallel to the northeast perimeter/fence, allowing just enough room for equipment to pass between the fence and the first windrow.
- A residential compost pick up area with a Jersey barrier or other concrete pushwall should be implemented just outside the entrance gates so that residents can pick up material without entering the facility. Initially, it is suggested a donation box be placed adjacent to the pick up area to recover revenue for the material.
- As the Borough improves upon the quality of its finished compost, it is recommended the Borough charge a fee per cubic yard for compost that is loaded into vehicles using the Borough's loader.
- A schedule should be developed to ensure a compost operator periodically turns windrowed materials.

3.4 Kingston Borough Compost Site

The Kingston Borough Compost Site Evaluation Form and site photos are presented in **Appendix A**. A map showing the Kingston Borough compost facility is included in the **Figures** at the end of this Report. Based on GF's site visit, the following is a summary of findings:

- The Kingston Borough site has adequate space plus a level and solid (but unpaved) work surface for composting. However, without any on-site processing (e.g. brush grinding), piles of accumulated brush are problematic and increase operating costs. As unprocessed yard waste accumulates, it is transported offsite every 2-4 months to create space. Recently, four truckloads of brush were taken to Earth Conservancy using Borough vehicles and staff over an 8-hour period. The cost of managing the yard waste is absorbed by the Borough without any revenue being received for the material.
- The site is very favorable for construction of long, parallel compost windrows; however windrow composting is not effectively utilized on the site.

- At the time of the site visit, approximately 50 percent of the brush on site was a direct result of recent storms.
- The site has some contamination by unwanted non-compostable materials. Non-organics are dropped-off by residents during visits to drop-off yard waste. Rocks, metal and other debris are sometimes received in paper bags (purchased from Lowes, Home Depot and similar providers) of yard waste collected curbside. Hidden rocks, metal and other debris can damage processing equipment.
- Additional contamination by unwanted materials is generated from the Borough's bulky item collection program. Items are crushed in a level area on the compost site so they can be consolidated prior to transport to disposal or recycling. This activity is not a serious concern currently, but will be a problem in the future when the site pre-processes brush and mixed yard waste so that windrows can be built and turned periodically.
- Yard waste arriving from the curbside program operated by Borough municipal crews is mixed and contains leaves and brush. The Kingston Borough operation varies from the other compost operations evaluated because Kingston Borough does not accept grass due to nearby houses that could be impacted by odors. The Borough accepts brush meeting the following dimensions: 6 inches in diameter and up to 4 feet long.
- Although GF does not recommend Kingston Borough start accepting grass from the residential program, it is noted that it typically takes longer to compost yard waste that is deficient of grass and other nitrogen-bearing feedstocks.
- There is no accurate documentation of material quantities or costs associated with operating the compost facility.

3.4.1 Kingston Borough Compost Site Recommendations

GF recommends the following for the Kingston Borough Compost Facility:

- Two designated areas should be established adjacent to each other; one for brush drop-off and one for mixed yard waste drop-off. Material segregation will facilitate processing into two separate finished products: mulch and compost. The larger diameter woody waste and brush should be kept separated from mixed yard waste comprised of small diameter trimmings, shrubbery and leaves.
- Accumulating yard waste materials and then reloading them unprocessed to take to a distant processing facility should be avoided. Consolidating material on site using the existing grinder (in need of repair), a rented grinder/shredder, or with the proposed horizontal grinder, should all be considered prior to distribution of unprocessed material offsite. Since accumulation of brush is an ongoing problem that requires

substantial time and cost to transport brush off site, the Borough should determine if it is feasible to fix and use the existing grinder periodically and as a back up for the larger shared grinder.

- If space does not become a serious problem, at a minimum, the mixed yard waste that is in bags and the small diameter (less than 2 inches) trimmings should be consolidated to one area to be processed by a grinder.
- Using the grinder, the larger diameter woody material should be processed into mulch. Processed mulch should immediately be placed into large piles that can not exceed 15 feet high. Wood mulch does not require curing and is ready to market.
- The mixed yard waste containing leaves and smaller trimmings that is collected curbside should be combined with any non-woody organics that are dropped off and then should be processed with the grinder, placed in windrows and composted for 2-5 months (until "active composting" ceases), and then placed in curing piles not larger than 15' high for 2 or more months.
- Add clearly visible signage in the composting area:
  - Brush Only
  - Leaves, shrubbery and trimmings less than 2 inches in diameter
  - Illegal dumping is prohibited. Violators will be prosecuted. $300 fine.
- Staff the compost site with a loader operator when it is open for drop-off. During this time the operator can turn windrows, segregate larger brush from mixed yard waste, inspect material for unwanted debris, etc. while deterring illegal dumping.
- Grinding operations should not be allowed during hours when the facility is open to visitors/residents.
- Move the crushing operation for bulky items a short distance from its current location to another designated location in the yard so that this activity does not result in unwanted debris and unnecessary clean up that could negatively impact the compost site.

Since Kingston Borough does not accept grass, the compost process at this facility may be slower than the other facilities that accept grass. Grass contains nitrogen that helps accelerate the natural compost process when mixed thoroughly into material at the proper carbon to nitrogen ratios.

4.0 COMPOST FACILITY FIELD GUIDE

During initial discussions with Exeter Borough, it was determined that each facility could benefit from guidance related to how to operate a windrow technology compost facility and how to measure certain parameters to help facility operators optimize the compost process. GF developed a compost facility field guide that is provided in **Appendix B** for use at the compost facilities. GF laminated lime-green copies of the guide and provided these to each compost facility operator. A grease pen can be used on the guide to log daily information.

5.0 MARKETS FOR PROCESSED YARD WASTE

It was beyond the scope of this study to do an in-depth analysis of compost markets in the region. There are two primary products that can be produced from processing yard waste, mulch and compost. Mulch is essentially woody waste that has been ground or shredded over a short duration of time. Compost contains more organic content (leaves, grass, etc.) than mulch and it goes through an active phase of composting where the material breaks down over time using bacteria, heat, moisture and time.

Marketing compost is relatively simple, but does require time. First, one or more desirable finished products must be produced, and second, contacts and arrangements must be made with potential markets. For these small municipal operations, much of the municipally-generated compost and mulch can be marketed to residents and used in municipal applications (parks, road repair, etc.). Additional material can be marketed to other users including landscapers, developers and other commercial entities that need organic materials for their projects. A list of landscapers for the area is provided in **Appendix C**.

The current material at all four compost sites is poor quality and should be improved to be marketed effectively. Keeping incoming and outgoing material free of contaminants is critical to successful marketing. The demand for quality organic material is fairly high and markets/end uses for compost are diverse. For example, the Earth Conservancy recently sold a large quantity of compost to a company involved in a dike construction project where compost was mixed with soil to form a soil blend suitable for the project. Local landscapers, construction companies, and residents are some of the common market segments for compost.

To facilitate marketing the compost it should be tested annually at Penn State University and the lab results should be reviewed and posted on a website or otherwise made available to vendors. This data is more important to commercial end users than residents.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

In the face of rising costs and economic stresses that impact Luzerne County and all of Pennsylvania, it is imperative that the five municipal governments that were targeted in this multi-municipal composting evaluation carefully plan for, and redesign the compost operations that were investigated. These yard waste compost facilities are small facilities (less than five acres) and are located in the following municipalities in Luzerne County, Pennsylvania (see Figure):

- **Exeter Borough**
- **Wyoming Borough**
- **West Wyoming Borough**
- **Kingston Borough**

Without making operational adjustments, these facilities are at risk to waste money and resources and will continue to stockpile material that is not returned to the local community where it is valued as a mulch, compost, soil amendment or other valuable product. Based on Gannett Fleming's findings, it is clear that all four compost facilities have an opportunity to make significant operational improvements. All four compost facilities use low-tech windrow composting methods, but do not have processing equipment to grind incoming brush and/or to screen finished compost. The inability of these facilities to produce market-grade finished compost has resulted in accumulated yard waste material. The fundamental operating problem is primarily caused by two interrelated factors:

1) Curbside Collection Format: Each compost facility accepts packer truckloads of combined or commingled yard waste from the residential collection program where leaves, grass (exception: Kingston Borough prohibits grass), garden residues and other similar material are mixed with woody wastes including brush and tree trimmings;

2) Lack of Processing of Incoming Mixed Yard Waste Material: Due to the presence of woody wastes, the incoming yard waste requires processing using a grinder before it can be used in properly constructed windrows to optimize the windrow composting process. Currently, the unprocessed mixed yard waste material cannot be effectively managed and composted and this will continue to prevent effective compost facility operation until processing equipment is utilized.

Note: The residential curbside collection of mixed yard waste does not have to change if the mixed yard waste is pre-processed with a grinder. However, if a cost effective program can not be implemented to grind mixed yard waste prior to windrowing, it may be necessary to alter the curbside collection program to segregate collections of leaves and/or grass with woody wastes.
Other notable conclusions include the following:

- None of the four compost sites effectively utilizes windrow composting methods (construction of long, parallel rows that are turned/mixed periodically). Windrowing is hindered by space limitations, poor site configuration, lack of composting education and because it is difficult to properly construct windrows containing woody material.
- The unprocessed material accumulating on site negatively impacts material management and site utilization. Much of the material has not composted completely and/or contains twigs and branches.
- West Wyoming Borough's site is the only compost facility that has any finished compost available to residents, and even this compost contains smaller twigs and woody material.
- It does not appear that the four compost sites have been viewed as a priority or integral part of the existing waste management and recycling programs. However, this multi-municipal evaluation is a step in the right direction. It will be important that the elected officials support an ongoing compost facility planning process that will share processing equipment, staff and other resources and as feasible.
- None of the compost facilities has lab tests performed on their finished compost.

The Borough of Exeter recently submitted an Act 101, Section 902 Recycling Grant in conjunction with Wyoming Borough, West Wyoming Borough, Kingston Borough and West Pittston Borough to offset up to 90 percent of capital costs for a horizontal grinder to process yard waste. Provided these municipalities are successful in securing Act 101, Section 902 Grant Funding and a grinder, there is an excellent opportunity to dramatically improve the compost site operations. The shared use of this processing equipment will be crucial to the successful operation of these compost facilities, particularly because incoming commingled yard waste from the residential curbside programs required pre-processing prior to windrowing the material. Initially, the grinder will play a key role in processing accumulated piles mixed yard waste so these compost sites can:

- immediately reduce the volume of material currently on site;
- pre-process commingled yard waste so material can be formed into properly sized windrows that promote active composting;
- reconfigure the sites;
- Expedite the compost process (reduce time the material requires to "finish") so that finished compost can be marketed and moved offsite to residents and commercial vendors (e.g. local landscapers).

- Improve financial sustainability through offsetting at least a portion of operating costs through marketing finished compost and mulch products, and possibly through charging a tip fee to commercial vendors for dropping of loads of yard waste.

6.2 Recommendations

Gannett Fleming evaluated and provided specific recommendations for each compost facility in **Section 3.0** of this Report. The following section provides additional recommendations that are relevant to all four of the municipal composting programs:

Municipal Support for Compost Programs

- It is recommended each municipality get support from Borough Council and other participants (collectors and compost operators) that changes are needed in both the curbside programs and the compost facility operations in order to collect and process yard waste so that useable finish compost and mulch is produced.
- It is recommended representatives and compost operators from all five affected municipalities meet twice per year to review yard waste collection and compost program activities, including shared arrangements and shared use of other resources.
- The municipalities should support ongoing compost and equipment training.

Curbside Yard Waste Collection Format and Compost Site Preparation

- Initially, GF does not recommend the municipalities change the curbside yard waste collection format from commingled yard waste collection to segregated collection by material (e.g. providing separate collections for leaves/grass and for woody wastes). Rather, in the time frame from now until the arrival of a grinder (worst case: one that is rented), each compost facility should prepare their sites and material so that the sites are in a position to efficiently process material with a grinder and begin effective windrow composting. This will include site modifications as recommended for each site and includes: clearing and grubbing; site reconfiguration and grading; organizing material; material inspection and removal of non-compostable debris; developing a pad/designated area for grinding; and sufficient area for windrowing ground mixed yard waste with windrows aligned parallel to the slope (to prevent water ponding).
- If a grinder is not procured and operated, it is recommended that the municipalities change the curbside collection format so that leaves and/or grass are collected separately from woody wastes. Segregated leaves and/or grass should be composted in windrows and turned weekly in the first month and once per month after the first month (refer to the Compost Facility Guide provided during this project).

- Grinding mixed yard waste and windrowing it to create a finished marketable product can be conducted as trial period for two years. This material can be marketed in the region as proven by the Earth Conservancy. If it is determined a higher quality finished product must be achieved, both curbside segregation of woody waste and screening equipment options should be evaluated.

Curbside Yard Waste Program Education

- It only requires one piece of metal to pass through a grinder to cause thousands of dollars in repair and equipment damage as well as risk of injury to the equipment operator and others. To minimize yard waste contamination by residents, all five affected municipalities should implement a standardized and aggressive educational campaign and enforcement program to ensure residents follow all requirements and material specifications of the curbside yard waste collection program. Details of this educational campaign will be contingent upon successful notification by PADEP of a Recycling Grant award to procure a horizontal grinder. The educational campaign should logically follow the timing of the equipment arrival and the content/message should emphasize a new program to produce quality finished compost and mulch that will be available to the local communities.
- The Borough staff responsible for curbside collection (or a yard waste Contractor) should leave yard waste at the curb if it contains unwanted debris or if it is improperly prepared. A notice should be left on the yard waste indicating the problem.
- Each compost facility should post signage describing material requirements and fines for littering.

Fees for Yard Waste

- Due to the rising cost of waste management and yard waste management programs, a standardized fee structure should be implemented for all four compost facilities to recover a portion of these costs.
    - At a minimum, it is recommended a fee be charged for each cubic yard of finished mulch or compost that is mechanically loaded into a vehicle. The price per cubic yard should not be set so low that it drastically undercuts regional compost facility pricing.
    - A donation box should be placed near the residential pickup areas for compost that is manually loaded by residents.

Yard Waste Material Management

- It is recommended the compost operators reference the Gannett Fleming Compost Facility Guide as a tool to properly manage yard waste compost.
- Each municipality and compost operator must visibly inspect incoming mixed yard waste for debris.
- Windrows of ground mixed yard waste should be allowed to actively compost at least 2 months or longer depending on age, ratios, moisture, oxygen and other factors.
- Compost should be cured for two months in piles prior to distribution/marketing.
- Standardize (to the extent feasible) the curbside yard waste specifications among all five participating municipalities for leaves, grass (if accepted) and yard waste. For example, each municipality could accept brush up to 6 inches in diameter and less than 48 inches long.

Signage

Each compost facility should post clearly visible signage to designate compost facility guidelines and to identify processing areas for both visitors and operators.

- Entrance signs or gated areas should include operating hours and other guidelines

Other signage is recommended for processing areas and pick up areas and can include:

- Mulch or Mulch Pickup
- Compost or Compost Pickup
- Brush Drop-off
- Leaves only
- Illegal dumping prohibited. Violators will be prosecuted. $300 fine.
- Area under surveillance

Compost/Operator Training

- Compost training is recommended for a compost site operator from each compost facility. Compost training courses are available periodically through the Professional Recyclers of PA (www.proprecycles.org).
- It is recommended Borough representatives and compost facility operators tour the Earth Conservancy compost operation.
- It is recommended the compost operators reference the Gannett Fleming Compost Facility Guide as a tool to properly manage yard waste compost.

- It is recommended each compost site process the larger diameter woody wastes and brush to create mulch, which is immediately ready for distribution (i.e. does not require composting).

Processing Equipment

- It is recommended the multi-municipal compost program procure a horizontal grinder for processing mixed yard wastes (contingent upon successful Section 902, Recycling Grant).
- It is recommended the municipalities purchase a small new or used mobile compost screener. Some of these units cost as little as $5,000 - $15,000, but will be an important tool to help the municipalities produce a saleable finished compost product to help offset program costs.

Equipment Sharing

- A single municipality should be assigned to oversee the equipment sharing program, including fixed costs and usage fees, equipment management and coordination of the equipment operator(s).
- It is recommended the municipalities work together to identify one primary operator for the proposed horizontal grinder and a secondary operator to be used as backup when the primary operator is unavailable. It is recommended these two people be assigned as the operators for the equipment and accompany the equipment to each compost facility to perform the processing.
- An intermunicipal equipment sharing agreement should be developed to clarify the shared equipment arrangements for the proposed grinder.
- The cost of using the yard waste processing equipment should be fairly distributed and, in part, be allocated by usage. Certain fixed costs for things like routine maintenance and wear parts could be allocated evenly among participating municipalities and assessed as fixed cost to each municipality on an annual basis. One way to distribute the operating cost according to usage is by charging a fee per operating hour, which can be tracked using the hourly meter on the processing equipment. The assigned equipment operator should be tasked to record the hours and submit the information to the municipality assigned to administer the shared equipment program so fees can be appropriately distributed.

Record Keeping and Compost Testing

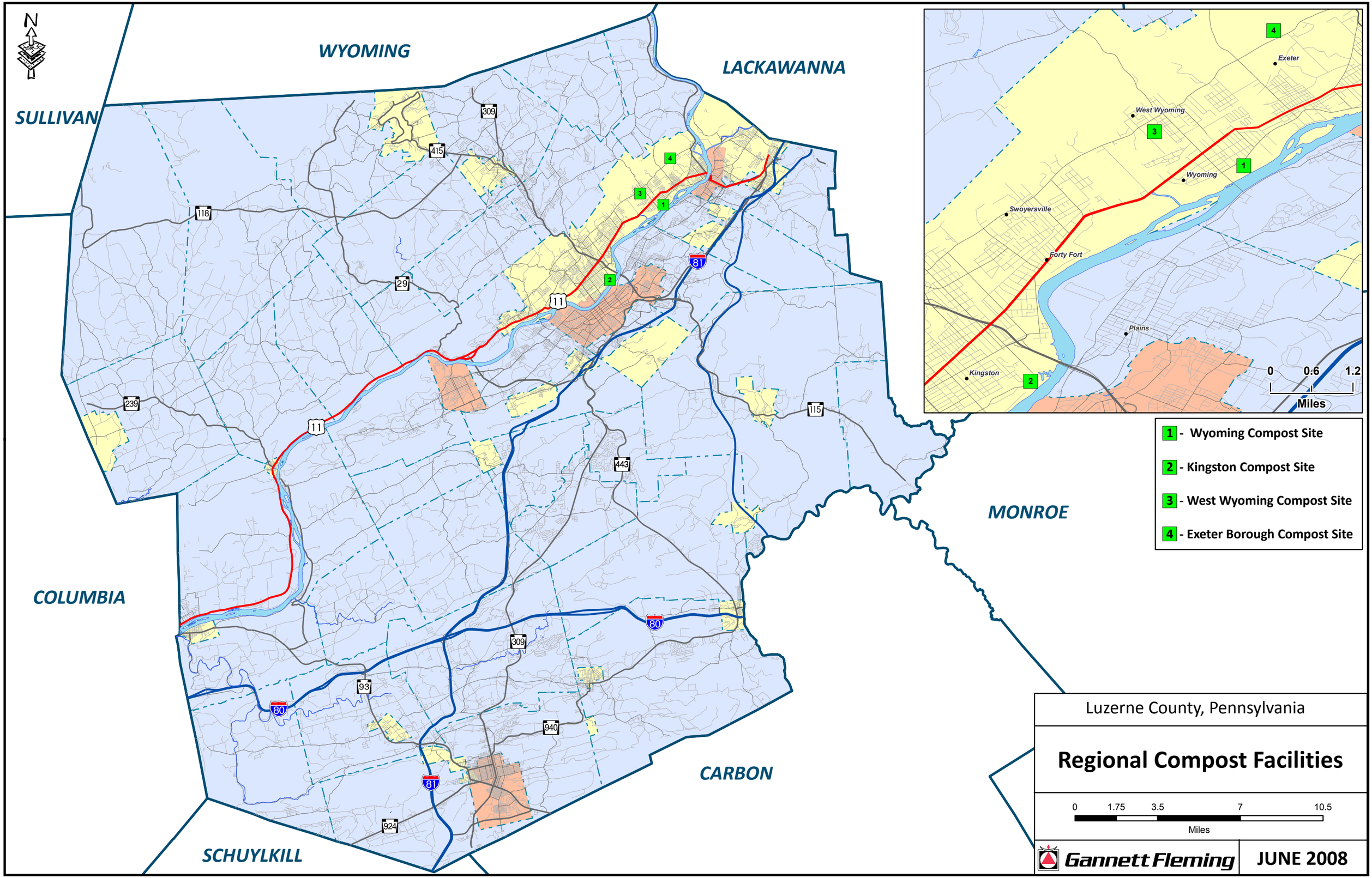
- The municipalities should work together to develop a standard and simple tracking system to estimate incoming yard waste and outgoing product quantities. Yard waste quantities can be estimated based on volume (cubic yards) for truckloads and/or by calculating the volume of piles on site. Operational hours and costs should be tracked and used for planning purposes, budgeting, and for allocating staff to balance compost facility activities with other municipal tasks/responsibilities.
- Operational costs and revenues should be tracked and an annual budget should be established for each facility and yard waste collection program.
- Finished compost should be tested annually at Penn State Agricultural Analytical Services Lab (www.aasl.psu.edu) and the lab results should be reviewed and posted on a website and/or otherwise made available to vendors.

Marketing Finished Mulch and Compost

- Successful marketing of processed material is likely the most critical piece of operating a sustainable composting program. The flow of material offsite is critical to efficient site utilization and incoming revenue. Recognizing that markets will be influenced by the type, quality and available quantities of finished compost and mulch products, the participating municipalities should work together on a focused marketing strategy that includes marketing mulch and finished compost products to residents, landscapers and other commercial vendors as well as marketing the availability of bulk quantities for use on construction projects and other similar applications in the region. The compost facilities should set a goal to move all the finished material offsite that was processed into mulch and compost during the previous year.

FIGURES

Only the Regional Map is provided in the on-line Report


WYOMING
LACKAWANNA
SULLIVAN
MONROE
COLUMBIA
CARBON
SCHUYLKILL
N
309
415
118
29
11
239
81
115
443
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93
940
924
Exeter
West Wyoming
Wyoming
Swoyersville
Forty Fort
Plains
Kingston
0
0.6
1.2
Miles
1 - Wyoming Compost Site
2 - Kingston Compost Site
3 - West Wyoming Compost Site
4 - Exeter Borough Compost Site
Luzerne County, Pennsylvania
Regional Compost Facilities
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1.75
3.5
7
10.5
Miles
Gannett Fleming
JUNE 2008

APPENDICES

Appendix A

Compost Site Evaluations

TABLE 1: EXETER BOROUGH COMPOST SITE EVALUATION

COMPOST SITE CRITERIA	SITE RATING (+, 0, -)	ADDITIONAL COMMENTS
Remote from residential areas (recommended at least 300-foot buffer)	+	No. There is a mobile home park visible through a screening of trees.
Close proximity to material generation	+	Yes.
Sufficient Size	-	No. Cleared area is 1 – 2 acres.
Ownership/ Control of site	+	Yes. Site is owned by Borough.
LAND		
Vacant	+	Yes. But some accumulated mixed yard waste.
Level to moderate slopes	-	No. Uneven slope greater than 3% in some areas with some depressions that require fill and grading.
Good drainage, no high water table	0	Observed some puddles on site but appeared to be due to windrow construction trapping the water.
Not within 100 feet of a perennial stream or within 300 feet of a water source	+	No stream or water source observed.
Outside of floodplain	+	Yes.
SENSITIVE AREAS		
No wetlands	+	None observed. GF did not conduct a wetlands analysis.
No historic sites	+	None observed.
No rare/endangered species	+	None observed. GF did not conduct a species analysis.
No restricted lands	+	None observed.
No sensitive "receptors" nearby	-	There are mobile homes visible through a screening of trees.
No sinkhole areas (within 100 feet)	+	None observed
ACCESS		
Easy access for vehicles, equipment, & public	-	Access for equipment, particularly a large horizontal is limited because paved road ends at site and ground is unlevel and soft.
Control of access to unauthorized persons	+	Yes. A gate is located at the entrance of the facility near the recycling center.
UTILITIES		
Water supply	-	No.
Power supply	-	No.
Stormwater management	+	Yes. Rip rap and retention basin
PROCESSING CAPACITY		
Processing equipment	+	Chipper, Case loader, nearby garage, leaf vacuum
Equipment utilization	-	Loader not used effectively in windrow construction: windrows are not parallel to slope so water ponding is occurring and the loader should be used to segregate incoming material to dedicated areas on the site. Large brush and wood remained in the windrows.
Residential traffic flow	NA	Not used for residential drop-off. Turn around area is very limited.
Commercial traffic flow	NA	None.
Onsite compost methods	-	Poor. All material is mixed and being allowed to decompose, no market
Material distribution offsite	-	Material cannot be marketed in current mixed (wood, leaves and grass) and poorly composted condition.
Processing equipment storage on-site	+	PBW/Recycling building at bottom of hill

ADDITIONAL NOTES:
Goal is marketable compost
Collection is done with a waste packer and yard waste is mixed.
It will be important to educate/require residents to meet specifications of 3' length and 2" diameter for brush. Much larger diameter brush was observed.
Collection is every Thursday
Vince – Streets Department – manpower shortage

+ Positive 0 Neutral - Negative

Exeter Borough Compost Site Photos

TABLE 1: WYOMING BOROUGH COMPOST SITE EVALUATION

COMPOST SITE CRITERIA	SITE RATING (+, 0, -)	ADDITIONAL COMMENTS
Remote from residential areas (recommended at least 300-foot buffer)	+	Yes. No homes within 300'.
Close proximity to material generation	-	Yes.
Sufficient Size	0	Although it appears there is sufficient land area available there are trees that interfere with the utilization of the site. Clearing and grading will improve space.
Ownership/ Control of site	-	Yes; owned by Borough. However, site currently has a none-gated access point.
LAND		
Vacant	+	Yes.
Level to moderate slopes	+	Mostly level.
Good drainage, no high water table	-	No. Some water ponding and wet soil upon observation (recent rainfall).
Not within 100 feet of a perennial stream or within 300 feet of a water source	-	No perennial stream or water source observed.
Outside of floodplain		This site is actually located in the floodway. Refer to map provided in the Recycling Technical Assistance Report. No A PADEP Exemption may allow the site to be permitted, but PADEP has already noted certain operational conditions may be required.
SENSITIVE AREAS		
No wetlands	NA	NA – Did not conduct wetland observation
No historic sites	+	None observed.
No rare/endangered species	+	None observed.
No restricted lands	+	None observed.
No sensitive "receptors" nearby	+	None observed.
No sinkhole areas (within 100 feet)	+	None observed.
ACCESS		
Easy access for vehicles, equipment, & public	0	Access road is narrow for heavy equipment and may be softer than desireable. Space is available to stage and turn around grinder.
Control of access to unauthorized persons	-	Not currently. Open access. Dumping is a problem and children and four wheeler observed during visit.
UTILITIES		
Water supply	-	None.
Power supply	-	None.
Stormwater management	0	Site is unpaved and does not appear to increase runoff.
PROCESSING CAPACITY		
Processing equipment	-	Periodically use loader. Material is not placed in windrows and processing of material is required.
Equipment utilization	-	Little material segregation. Material is pushed into areas with trees preventing access so the material can be managed, organized and turned.
Residential traffic flow	-	Facility is open for drop-off and not staffed.
Commercial traffic flow	-	Appears small commercial vendors are dumping on the site (e.g. construction debris)
Onsite compost methods	-	Poor. Material is not being managed in a way to produce finished compost or mulch. Materials is contaminated with plastic bags from curbside collections and with other debris that is dumped at the site.
Material distribution offsite	-	Material is not moved/marketed off-site.
Processing equipment storage on-site	-	There are buildings nearby to store a loader as needed.

ADDITIONAL NOTES: Goals: Borough will add a gate and plans to close the second access so traffic can be restricted. Wish to operate drop-off on a set schedule with one staff person. Signage should be added.
Fill: Clean fill is available to grade the site.
Plastic bags are contaminating the site from the curbside collection: United Sanitation
Curbside Collection – Mixed: leaves, brush, and grass.
End of June – volume drops off at the compost facility.

+ Positive 0 Neutral - Negative

Wyoming Borough Site Photos

TABLE 1: WEST WYOMING BOROUGH COMPOST SITE EVALUATION

COMPOST SITE CRITERIA	SITE RATING (+, 0, -)	ADDITIONAL COMMENTS
Remote from residential areas (recommended at least 300-foot buffer)	+	Yes. No residential receptors.
Close proximity to material generation	+	Yes. Borough-generated material plus material from West Pittston Borough.
Sufficient Size	0	Additional area would benefit the site, which is somewhat restricted by the long narrow alignment. Accumulation of older compost material also negatively impacts site utilization.
Ownership/ Control of site	+	Yes. Owned by Borough. Gated.
LAND		
Vacant	-	Yes. No structures on site.
Level to moderate slopes	+	Yes. Site is level to slopes less than 3 percent.
Good drainage, no high water table	+	Yes. Slight slope favors good drainage toward buffer swale/natural ravine at south/southeast edge of compost facility. No ponding observed
Not within 100 feet of a perennial stream or within 300 feet of a water source	+	No.
Outside of floodplain	+	Yes.
SENSITIVE AREAS		
No wetlands	NA	NA – Did not conduct wetland observation
No historic sites	+	None observed.
No rare/endangered species	+	None observed.
No restricted lands	+	None observed.
No sensitive "receptors" nearby	+	None observed.
No sinkhole areas (within 100 feet)	+	None observed.
ACCESS		
Easy access for vehicles, equipment, & public	+	Yes. Paved access.
Control of access to unauthorized persons	+	Yes. Gate.
UTILITIES		
Water supply	-	Yes. Hose in the back of the site.
Power supply	-	No.
Stormwater management	-	Slight slope favors good drainage toward buffer swale/natural ravine at south/southeast edge of compost facility. Access is only impervious surface.
PROCESSING CAPACITY		
Processing equipment	0	Have a wood chipper and loader. Grinding is needed
Equipment utilization	-	Loaders could be used more effectively to move finished compost to the perimeter of the site in a dedicated area.
Residential traffic flow	+	Limited "by appointment" only.
Commercial traffic flow	-	Commercial vendors are not permitted to use the site.
Onsite compost methods	-	It is good that some of the larger brush is removed from incoming mixed loads and run through the chipper. The mixed yard waste is not windrowed but piled in large piles that exceed 10' high and roughly 40' to 50' wide. This method creates pockets of hot and cool spots where the compost process is slowed and unevenly distributed throughout the piles.
Material distribution offsite	-	The Borough has a small pile of compost located inside the gate of the facility for residential pickup at no cost. In part due to the presents of twigs in the compost residents only take a small amount of this material.
Processing equipment storage on-site	-	There are nearby buildings that can house the loader. The chipper is staged outside when the compost facility is actively used.

ADDITIONAL NOTES:
Drop-off – normal business
Residential – leaves, grass, brush mixed
Tickets for compost – residential Commercial tip fee tickets
Problem with sticks in the compost. Screening would result in quality compost.
Approximately 2,000 cubic yards finished compost sitting on site (containing small twigs)

+ Positive 0 Neutral - Negative

West Wyoming Compost Site Photos

TABLE 1: KINGSTON BOROUGH COMPOST SITE EVALUATION

COMPOST SITE CRITERIA	SITE RATING (+, 0, -)	ADDITIONAL COMMENTS
Remote from residential areas (recommended at least 300-foot buffer)	0	Site is separated by a small swale buffer and two-land roadway but there are affluent homes across street that could be affected if odors were prevalent.
Close proximity to material generation	+	Yes.
Sufficient Size	+	Size is Not with volume and zero processing
Ownership/ Control of site	-	Site owned by Borough. Site is not monitored during drop-off periods.
LAND		
Vacant	+	Site is, but affluent neighbors across street
Level to moderate slopes	+	Yes.
Good drainage, no high water table	+	Yes, only wet because of recent heavy rain and working surface is solid.
Not within 100 feet of a perennial stream or within 300 feet of a water source	+	No stream observed.
Outside of 100-year floodplain	+	Yes.
SENSITIVE AREAS		
No wetlands	+	None observed
No historic sites	+	None observed
No rare/endangered species	+	None observed
No restricted lands	+	None observed
No sensitive "receptors" nearby	+	Yes, neighbors
No sinkhole areas (within 100 feet)	+	None observed
ACCESS		
Easy access for vehicles, equipment, & public	+	Yes. Area is spacious with wide access road.
Control of access to unauthorized persons	-	No. Although a gate is located at the beginning of the access road the drop-off a illegal dumping during operating hours
UTILITIES		
Water supply	-	No.
Power supply	-	No.
Stormwater management	+	Buffer/swale parallel to site along street.
PROCESSING CAPACITY		
Processing equipment	-	Old grinder, does not work. Loader is used but little windrowing is occurring.
Equipment utilization	-	Poor. Material is not being processed on site. When large piles are accumulated the material is handled a second time, loaded into a track and hauled to the Earth Conservancy yard waste processing facility approximately 20 miles away in Nanticoke PA. The Borough is not charged to deliver material to the Conservancy, but they also do not receive any revenue for this material.
Residential traffic flow	+	Space is available for vehicle access. There are some signs indicating the drop-off location. There are no signs about dumping at the actual material unload area, only at the gate at the entrance by the public works buildings.
Commercial traffic flow	NA	Prohibited (stated on sign at entrance).
Onsite compost methods	-	Poor. No active composting. Double-handling and mixing of material.
Material distribution offsite	-	Earth Conservancy and private parties are currently accepting some of the material (at no cost and no revenue). Cost is incurred for labor and transportation
Processing equipment storage on-site	+	Limited storage may be available in either one of the public works facilities or in a designated area in the yard.

ADDITIONAL NOTES:
Hours: Friday 7-2:30 and the first Saturday of the month for 5 months of the year – Site is not staffed during operating hours.
Facility does not take grass (odor prevention).
Paper bags used for curbside yard waste – sometimes contain small rocks
Street sweeper pile is hauled away, Earth Conservancy takes for free (4 trips of 20 miles)

+ Positive 0 Neutral - Negative

Kingston Borough Site Photos

Appendix B

Compost Field Guide

Not provided in on-line Report

Appendix C

Landscaper Listing

Landscape Contractors & Designers

A L R Landscaping Dunmore 961-0363
Aiken Bernadette C Rt 196 Lake Ariel 698-6442
American Landscaping Co
81 Austin Av Wilkes-Barre 822-6201
Aquamatic Lawn Irrigation Inc Clrks Smmt 587-4674
B&Q Inc 121 Gravel Rd Huntdn Crk 256-3036
Back To Nature Landscaping
238 S St Wyoming 693-0808
Balchunas Landscaping Mountain Top 379-2289
Bald Mountain Nursery Wilkes Barre 826-0276
Baran Landscaping 283-3229
Barletta Enterprises 216 S Pine St Hazleton 459-5011
Beebe Albert Excavating Fctryvl 945-5614
Benninger's Valley Lawn Care
594 W Foothills Dr Sugarloaf 708-0999
Bill & Wayne Enterprises Excavating Inc
State Route 6 Lckwxn 226-9558

BITTO'S LANDSCAPING & LAWN SERVICE
Over 20 Years Experience
Licensed & Insured
Landscape Designs • Retaining Walls
Pavers • Patios • Decks • Walkways • Ponds
Lighting • Seeding • Mulch
Free Estimates
Commercial & Residential
Swoyersville 570-288-5177

Bohn Landscaping 498 S Main St Jnkns Twp 602-1688
Brindle P J General Contracting
16 Pfeifer Rd Lk Ariel 226-0499
Brothers' Lawn Care Inc
108 Wallace Rd Lake Ariel 698-8555
Brothers' Lawn Care Inc 698-9677
Butler Excavating 1506 Farr St Scranton 961-1179
Complete Landscaping Serv
721 Throop St Dunmore 969-9063
Country Tree & Landscaping Nanticoke 740-2788
Countryside Landscaping And Lawn Care Inc
Call 679-2554
Creative Landscape Design Wilkes-Barre 824-6868
DJ's Landscaping
660 E Lackawanna Av Olyphant 383-6288
Dave's Lawn & Landscaping 455-7345
DeAngelo Brothers Inc
100 N Conahan Dr Hazleton 459-1114
Doolin Trees & Landscapes Rd 1 Nchlsn 222-9669
Dunbar's Evergreen Landscaping Old Forge . . . 562-1685
Durso Cory J Trkhnnck 586-8564
Eddie's Nursery & Florist
1619 Scranton Carbondale Highway
Dickson City 489-3514
Edmund James Nursery Garden Center
401 Turkey Path Rd Sybrtsvll 788-3451
Elite Fence LLC Dnmr 344-4600
Elston Landscaping Kunkle 675-3904
Eternal Gardening
Serving Northeastern PA 457-4622
Evergreen
Call 693-0268
Excavating By John Novosel Mt-Top Mtn Tp . . . 814-1340
Farina Landscaping Inc 499-5919
Foltz Landscaping 760-4814
Footpaths And Landscapes Dallas 333-9900
Foster Robert J 2042 Cedar Av Rr Scrntn 347-8998
Four Seasons Ground Care Inc
Call 341-8733
Four Seasons Grounds Care Inc
2065 Hamlin Hwy Moscow 689-5296
Call 842-3230
Frank's Nursery & Landscape Service
685 Shoemaker Av West Wyoming 693-3623

Landscape Contractors & Designers (Cont)

Gentile's Landscaping
1709 Electric St Dunmore 342-5482
Ges Landscaping Contractors Dallas 675-7819
Grace Landscaping Scranton 347-3273
Green Meadow Nursery
Scranton 348-1080

Landscape Contractors & Designers (Cont)

Green Mountain Landscaping
Rd 1 Newfoundland 676-5676
Green Tree Landscapes Inc
Call 674-9650
Green Valley Seeding Inc 50 Reese St Plains 824-8280
Green Valley Yard Care Lake Ariel 698-7617
Gregg Betti's Landscaping Jermyn 876-5711
Hardway Farms LLC Dallas 675-5090
Hauze Barbara Ornamental Landscaping
Sybrtsvll 788-2042
J D Landscaping 788-0659
J D Landscaping & Lawn Care Hazleton 455-3841
Jaden's Landscaping 117 Burke St Plains 824-2404

Classification Continued Next Page

Landscape Contractors & Designers (Cont)

James Edmund Nursery Garden Sybrtsvl 788-3451
Jazikoff Landscaping 1 Skyline Dr Dreher 676-3550
Jeff's Lawn Care And Landscaping
610 Monges St Hzltn 459-0421
John Novosel Landscaping-Mt Top
Mountaintop 814-1340
Kalinowski Landscaping Dunmore 961-2787
Kaminski Michael Landscaping
100 Florence St Dupont 654-6942
Kellogg's Paul Nursery Stock Hamlin 689-7912
Key Landscaping Enterp Inc Jermyn 254-6796
Keyes Allen Falls 388-2564
Kisian's Trucking 534 Forest Hills Dr Hazleton 455-8426
Kmetz Nursery 120 Madison Ave Hawley 226-2256
Kolebuk Landscaping 270 Canaan St Crbndl 282-6737
Kurt Rytka Custom Landscaping
Serving Monroe County 499-4447
Landmark Landscaping
125 W Field St Nanticoke 740-7487
Landscape Designs Thomas E Mitchell
1770 Pittston Blvd Wilkes-Barre 826-9860
Lawn Doctor Of Luzerne County
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Leonard's Lawn Care & Snowplow Inc
Waymart. 488-7241
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489 St Tikhon's Road Waymart 937-4774
Lithia Gateway Garden Landscapers-Growers
Fctryvl 945-5671
M & S Landscaping State Route 590 Hamlin 689-0465
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Mark's Landscaping 234 Simpson St Dupont 655-0249
McDonald's Green Thumb Landscaping Inc
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McKean Landscaping Towpath Rd Lckwon 226-2530
McLaughlin's Landscaping Unlimited
467-R Grove St Pringle. 288-4322
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Mrak-U-Less Landscaping & Lawn Care
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Mulberry Bush 336 N Irving Av Scranton 969-2427
Nate's 207-9235
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Lake Ariel Lake Ariel 689-3308
Nice's Landscape Services Centermoreland 333-4515
Northern Tree Construction Company
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Ornamental Landscaping Sybrtsvll. 788-2042
Paradise Landscaping Inc
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Paul Stewart Landscaping Co
Call 436-6380
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30 E Kirmer Ave Nanticoke 735-3647
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Prime Time Lawn Care & Landscaping
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RAVE LANDSCAPING INC
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Rossi Land Management Sugrlf 788-3483
Scarano Landscaping & Maintenance
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Seeds Inc Chippewa Dr Paupck 226-2579
Shaver & Sons Dallas 333-4627
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Shaver & Sons Lawn Care Dallas 674-5296
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Stashik Steve Landscaping
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Shvertwn 696-6067
Stobodzian Joseph Landscaping
63 Steele St Wilkes-Barre 829-1412
Sweet Valley Landscaping Hawley 226-2658
Sweet Valley Landscaping
66 E Liberty St Wilkes Barre 825-7101
Sweet Valley Landscaping Inc Old Forge 457-1636
T J's Landscaping & Excavating
413 Keystone Av Peckville 489-8823
TIMBERLINE TREE & LANDSCAPING LLC
Wilkes-Barre/Scranton. 820-0240
Old Forge 451-1516
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Turf Builders Olyphant. 383-8873
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Village Green Landscaping
940 St Marys Rd Mtn Tp 868-8406
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