

*cursey*

|   |   |             |
|---|---|-------------|
| <b>Chapter 1 - Summary</b>  |   |             |
| Less than 10 page summary - <ul style="list-style-type: none"> <li>• evaluate each chapter briefly</li> <li>• compare existing systems to needs assessed</li> <li>• outline plans for future</li> </ul>   | ✓ |             |
| Implementation schedule illustrating current and planned facilities and programs  | ✓ | good        |
| Map with facilities & programs where appropriate on a base systems map for each county in the Region  | ✓ | good        |
| Flow diagram illustrating the waste stream in the Region  | ✓ |             |
| <b>Chapter 2 - General Information</b>  |   |             |
| Identify the Region by name, and list counties and municipalities that comprise the Region.   | ✓ |             |
| Total population of Region by county; provide source of information and year  | ✓ |             |
| Regional Solid Waste Board Members - name, address, term, etc.<br><i>Some members terms expired 1/2001</i>  | ✓ |             |
| Has the Region formed a Part 9 Solid Waste Authority?   | ✓ |             |
| Three contacts for solid waste information  | ✓ |             |
| Activities and workings of the Region's Solid Waste Board and/or Part 9 Authority Board <ul style="list-style-type: none"> <li>• Board meeting schedule</li> <li>• involvement with concerned entities in planning decisions</li> <li>• process for addressing public</li> <li>• permit review</li> </ul> | ✓ |             |
| Region's rationale for formation  | ✓ | good detail |
| <i>Responsibilities of various participating jurisdictions -TCA 68-211-815(b) 14)</i>   | ✓ |             |
| Municipalities with door to door collection service - table   | ✓ |             |
| Describe the Region, generally, geographically, and demographically.  | ✓ |             |
| Fee for solid waste services- <ul style="list-style-type: none"> <li>• legal authority to institute</li> <li>• jurisdiction collects it</li> <li>• how collected</li> <li>• how much</li> </ul>   | ✓ |             |
| Funding for solid waste programs and expenses in the Region <ul style="list-style-type: none"> <li>• capital cost considerations</li> <li>• staffing requirements</li> <li>• operating expenses</li> </ul>  | ✓ |             |
| New expenses and/or new fees or revenues needed or anticipated  | ✓ |             |
| Designated special revenue or enterprise fund   | ✓ |             |

|   |   |  |
|---|---|--|
| Proposed 10-year solid waste budget   | ✓ |  |
| Contacts in the Region for information regarding solid waste budgets  | ✓ |  |
| <b>Chapter 3 - Waste Stream</b>   |   |  |
| Tons of solid waste were generated within the Region <u>and</u> disposed of in Class I landfills or incinerators located in or out of the Region. (include breakdown of tonnages and sources of information)  | ✓ |  |
| Percentages in the following categories <ul style="list-style-type: none"> <li>• Residential</li> <li>• Commercial</li> <li>• Industrial</li> <li>• Institutional (school, hospital, prison)</li> <li>• Other (including special)                      The total should equal 100%.</li> </ul> <i>(Compare this to estimates from original 10-year plan and comment)</i>  | ✓ |  |
| Estimate the percentage of the tons reported in #1 above using these categories: <ul style="list-style-type: none"> <li>• Yard waste</li> <li>• Construction/Demolition waste (Class IV)</li> <li>• Tires</li> <li>• Recyclables</li> <li>• White goods</li> <li>• Regular Municipal Solid Waste                      The total should equal 100%.</li> </ul> <i>(Compare this to estimates from original 10-year plan and comment)</i> | ✓ |  |
| Total Generated waste: <ul style="list-style-type: none"> <li>• source reduction (especially industrial practices);</li> <li>• recycling (include composting);</li> <li>• diversion (to Class III/IV landfills); and</li> <li>• unmanaged waste (burned in backyards, illegal dumps, ditches)</li> <li>• disposed</li> </ul> <i>(Compare this to estimates from original 10-year plan and comment)</i>                                  | ✓ |  |
| Proportional Flow Diagram - Discuss your reasons for making the estimates in all four cases above.  | ✓ |  |
| Demographic trends that may affect waste disposal and generation figures in the region  | ✓ |  |
| Economic condition of the Region employers unemployment rate - <i>How does/might this affect the waste stream?</i>  | ✓ |  |
| Top five contributors to the overall waste stream generated - name, phone, waste types, tons disposed - <i>Likelihood that this trend will continue?</i>  | ✓ |  |
| Clean up and litter prevention programs - describe the program, contacts <i>Do programs target prevalent waste streams?</i>   | ✓ |  |
| Each county, city, or Part 9 Authority in the Region. <ul style="list-style-type: none"> <li>• current reduction or diversion programs sponsored by each and the success level</li> <li>• proposed programs and discuss</li> <li>• ten year trends and needs</li> <li>• how the jurisdictions work together</li> <li>• education programs (commercial and industrial sectors)</li> </ul>  | ✓ |  |
| <b>Chapter 4 - Collection &amp; Transportation</b>  |   |  |

|   |   |  |
|---|---|--|
| Collection services available - table<br><i>Contract information where applicable? (contractor, term of contract)</i>   | ✓ |  |
| Collection Assurance<br><i>Is efficient collection assured at a reasonable price for the ten year planning horizon?</i>   | ✓ |  |
| Collection needs in the Region, and trends anticipated over the next ten years<br><i>Plans to meet indicated needs</i>  | ✓ |  |
| <b>Chapter 5 - Recycling</b>  |   |  |
| Recycling or waste reduction coordinator - name, title, phone, address  | ✓ |  |
| Waste reduction programs <ul style="list-style-type: none"> <li>• Program Name, Contact, Phone Number, Address</li> <li>• Program Description (Items accepted, curbside, drop-off, not-for-profit, etc., public or private operated, open to all or to a limited group)</li> </ul>  | ✓ |  |
| Materials processing facilities<br><i>Success of facility, plans to continue operation</i>  |   |  |
| Composting facilities<br><i>Success of facility, plans to continue operation</i>  | ✓ |  |
| Recycling & Reduction Efforts <ul style="list-style-type: none"> <li>• Progress and setbacks</li> <li>• Successes and failures in marketing</li> <li>• Cooperation of jurisdictions in the Region on marketing efforts</li> <li>• Future plans for additional recycling, reduction, or end-use programs<br/><i>(How plan to address setbacks in reduction efforts and marketing failures)</i></li> </ul>  | ✓ |  |
| List and describe recycling collection site(s) - Name, Contact, Phone Number, Address, etc  | ✓ |  |
| <b>Chapter 6 - Disposal</b>   |   |  |
| Please list all the landfills, transfer stations, Municipal Solid Waste incinerators, Landfill Gas to Energy facilities, and Waste to Energy facilities in the Region. <ul style="list-style-type: none"> <li>• Name of Facility</li> <li>• Owner</li> <li>• Operator/Contact</li> <li>• Phone Number</li> <li>• Address/Location/County</li> <li>• Classification of Landfill (I – IV)<br/>For Class I landfill: does facility meet Federal Subtitle D regulations?</li> <li>• Jurisdictions Served (Please identify by name)</li> <li>• Permit Number</li> <li>• Tipping fee per ton (List fee amounts)</li> <li>• Special Tipping Fees (List fee amounts)</li> <li>• Materials the facility receives/limits</li> <li>• Does the facility produce energy?</li> <li>• Transfer from where to where?</li> </ul> | ✓ |  |
| Class I waste exported  | ✓ |  |
| Class I waste imported  | ✓ |  |

|   |    |    |
|---|----|----|
| Evaluate disposal needs <ul style="list-style-type: none"> <li>• Is efficient disposal assured at a reasonable price for the ten year planning horizon?</li> <li>• What changes in the disposal system are being contemplated?</li> <li>• What changes should be contemplated with consideration to anticipated growth and disposal demands?</li> </ul> | ✓  |    |
| Planned capacity assurance - <i>life expectancy addressed?</i>  | ✓  |    |
| Enterprise fund for Class I landfills or incinerators   | ✓  | NA |
| <b>Chapter 7- Problem Wastes</b>  |    |    |
| Level of success with household hazardous waste collection and level of satisfaction with the State program.  | ✓  |    |
| Permanent household hazardous waste collection center?<br><i>Plans for disposal of HHW especially if not using state program</i>  | ✓  |    |
| Waste tire - site(s) available<br>What happens to waste tires in the Region once they are collected   | ✓  |    |
| Problem with waste tire dumping?<br><i>How are problems being addressed and what are future plans to eliminate problem?</i>   | ✓  |    |
| Lead acid battery, oil and auto fluid collection<br><i>Plans to expand?</i>   | ✓  |    |
| <b>Chapter 8 - Solid Waste Education</b>  |    |    |
| Persons or organizations with active efforts to educate the public  | ✓  |    |
| Outstanding needs in the area of public solid waste education   | ✓  |    |
| What progress has been made and what is planned?  | ✓  |    |
| Has the county or its Region filed an education action plan and made use of the Division of Community Assistance's Pathways to Education book?  | ✓  |    |
| <b>Chapter 9 - Flow Control &amp; Permit Review</b>   |    |    |
| Attempt to control the flow of waste<br><i>If yes, provide details of what is involved by law to make sure they understand</i>  | ✓  |    |
| Issues with regard to permit review or flow Control?  | ✓  |    |
| <b>Chapter 10 - Five -Year Plan Update Review</b>   |    |    |
| Public hearing details & comments   | ✓  |    |
| Local planning Commissions notification?  | ✓  |    |
| Resolution from every county in the Region approving the Five-Year Plan update.   | ✓  |    |
| Resolution of approval from the Part 9 Authority Board of Directors (if applicable)   | NA |    |

Region Central Tx


Date Completed 5/15/01



STATE OF TENNESSEE  
**DEPARTMENT OF ENVIRONMENT AND CONSERVATION**

Division of Community Assistance  
401 Church Street, 8<sup>th</sup> Floor  
Nashville, TN 37243-1533

January 8, 2001

Ms. Thea Prince  
Chairperson, ~~Central TN Regional Municipal SW Planning Region~~   
1023 Curlee Church Road  
P. O. Box 05  
Readyville, TN 37149

~~RE: Five-year Update to~~ Ten-year Solid Waste Plan  
Central TN County SW Region  
Region Member(s): Cannon, Coffee, Rutherford, Warren  
**Update Due — October 6, 2000**

Dear Ms. Prince:

As you are aware, the Solid Waste Management Act of 1991 requires the Solid Waste Regions to plan, monitor, and report on solid waste activities. One of the requirements of this legislation was for each region to prepare a Ten-year Solid Waste Management Plan. The legislation also requires that Five-year updates to those plans be prepared and submitted to the state for review. The Central TN County Region's Ten-year plan was approved on October 6, 1995; therefore, your Five-year Update was due to this office by October 6, 2000. Please note that the Update is expected to consider the next Ten-year planning horizon, and will become your current Ten-Year Plan upon approval by this office.

Also required by the Solid Waste Act is submittal of a Needs Assessment report for all of the counties within each Development District. The initial Assessment was due by September 30, 1992; with revisions due by April 1, 1999 and every five years after that. The SW Needs Assessment(s) for the counties and municipalities within your region were received on August 20, 1999. Please contact Mr. Jason Thompson with the Upper Cumberland Development District to determine the status of your Region's Needs Assessment report. The Needs Assessments will provide much of the information necessary for the preparation of the Five-year Update to your Ten-year Plan.

I am confident you will give due attention to your Five-year update to the Ten-year Solid Waste Management Plan. If you have any concerns, I encourage you to contact Ms. Rebecca Gorham with DCA at 615-532-0744.

Sincerely,

*Ron Graham*

Ron Graham  
Director

RG:RPG:lr

Cc : The Honorable Carol Hamblen, Warren County Executive  
The Honorable Dale Bush, Cannon County Executive  
The Honorable James R. Wilhelm, Coffee County Executive  
The Honorable Nancy R. Allen, Rutherford County Executive  
Mr. Jason Thompson, Upper Cumberland Development District  
Ms. Sara Brown, South Central TN Development District  
Mr. Phil Armor, Greater Nashville Regional Council  
Warren County Solid Waste Director  
Cannon County Solid Waste Director  
Mr. Rennie Bell, Coffee County Solid Waste Director  
Ms. Becky Smith, Rutherford County Solid Waste Coordinator  
Ms. Chris Garkovich, CTAS SW Management Consultant  
Mr. Mike Stooksberry, CTAS SW Management Consultant  
Mr. Ernie Taubert, Manager, Cookeville Environmental Assistance Center  
Mr. Chuck Head, Manager, Nashville Environmental Assistance Center

Routing Page  
Solid Waste Planning Region  
5 - YR Update

Planning Region: Central TN 08

**Clerk**

*Note: Send one original copy of the report to the permanent file. If the planning region did not provide two copies of the report, then make a working copy and send the original to the permanent file.*

1. Write in the name of the person completing this report Lilia Jefferson, Southern Consulting LLC  
a "cc" for all letters sent to the chairperson.
  
2. (may be attached as a separate list):  
Was a list of board members provided?  Yes  No  
*If yes, continue to question four and verify the term of each member is current.  
If no, skip question and go directly to question.*
  
3. Was the term of each member current?  Yes  No  
*Continue to question.*
  
4. See page 14:  
Did the chairperson of the board sign and date the report?  Yes  No  
*Continue to question.* -Not Dated<sup>ec</sup>
  
5. See page 14:  
Did the county executive, (each local Government body) sign and date the report?  Yes  No  
*Continue to question.* -Not Dated<sup>per</sup>
  
6. Which reviewer was assigned to this report?  Karen  Bob  Becky  
*Continue to question.*
  
7. On what date was the report sent to the reviewer? \_\_\_\_\_  
*Continue to question.*
  
8. What is the deadline for the review (i.e., 90 working days from received stamp)? 5/05/01  
*Attach routing page to the report and give it to the reviewer.*

*Note: The letter will be addressed to the chairperson. The cc list will include the County Executive, Development District Director, person who prepared the report, and the CTAS contact. Modify (with date, names, cc, etc.) and print the letter entitled "5YrUpdtlnmrg." and give letter to Linda Rigsby for Ron Graham's signature. After letter is signed, Linda copies the letter for the cc list and one for the file. Linda then mails the letters and sends a copy of the letter to Patty to be placed in the permanent file.*

**Reviewer**

Date review is complete                      Reviewer's initials                       
*Log-in completion date and give working copy of report to Bob. Leave original copy in the permanent file.*



STATE OF TENNESSEE  
**DEPARTMENT OF ENVIRONMENT AND CONSERVATION**

Division of Community Assistance  
401 Church Street, 8<sup>th</sup> Floor  
Nashville, TN 37243-1533

February 6, 2001

Ms. Thea Prince, Chairperson  
Central TN Regional Municipal SW Planning Region  
1023 Curlee Church Road  
P. O. Box 05  
Readyville, TN 37149

RE: ~~Five-year~~ Update to Ten-year Solid Waste Plan  
Central TN Regional Municipal SW Planning Region *CR*

Dear Ms. Prince:

Thank you for your submission of the Central TN Regional Municipal SW Planning Region Update Plan. We received your plan on February 5, 2001. Division staff will complete the review within the next 90 days as required by The Solid Waste Act of 1991.

If you need additional information or have further questions, please contact Becky Gorham at 615-532-0744.

Sincerely,

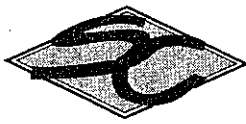
*Ron Graham*

Ron Graham  
Director

RG:rpg

C: The Honorable Dale Bush, Cannon County Executive  
The Honorable James R. Wilhelm, Coffee County Executive  
The Honorable Nancy R. Allen, Rutherford County Executive  
The Honorable Carol Hamblen, Warren County Executive  
Cannon County Solid Waste Director  
Mr. Rennie Bell, Coffee County Solid Waste Director  
Ms. Becky Smith, Rutherford County Solid Waste Coordinator  
Warren County Solid Waste Director  
Ms. Chris Garkovich, SW Management Consultant, CTAS  
Mr. Mike Stooksberry, SW Management Consultant, CTAS  
Mr. Phil Armor, (SWM), Greater Nashville Regional Council  
Ms. Sara Brown, (SWM), South Central TN Development District  
Mr. Jason Thompson, (SWM), Upper Cumberland Development District  
Mr. Chuck Head, Manager, Nashville Environmental Assistance Center  
Mr. Ernie Taubert, Manager, Cookeville Environmental Assistance Center





# Southern Consulting, LLC

Engineering ■ Materials Testing

February 7, 2001

Mr. Ron Graham  
Director  
Tennessee Department of Environment and Conservation  
Division of Community Assistance  
8<sup>th</sup> Floor L & C Tower  
401 Church Street  
Nashville, TN



RE: Five-Year Update for Regional Solid Waste Plan  
Central Tennessee Solid Waste Planning Region *JR*

Dear Mr. Graham:

The five-year update was forwarded to your office on January 31, 2001. Since that time, I have received additional information. Please find enclosed two copies of the Cannon County resolution approving the five-year update and the planning commission review letter. The resolution should be placed in Appendix W of the update. The planning commission review should be placed in Appendix X.

Should you have any questions regarding this information, please call me at (615) 740-8777.

Sincerely,  
SOUTHERN CONSULTING, LLC

Ilia C. Jefferson  
Planner

Cc: Members, Central Tennessee Solid Waste Planning Region

Enclosure

**CENTRAL TENNESSEE SOLID WASTE PLANNING REGION**  
C/o Rural Coffee County Solid Waste  
1110 Madison Street  
Manchester, TN 37355

January 30, 2001

Mr. Ron Graham  
Director  
Tennessee Department of Environment and Conservation  
Division of Community Assistance  
8<sup>th</sup> Floor L & C Tower  
401 Church Street  
Nashville, TN



RE: Five-Year Update for Regional Solid Waste Plan  
Central Tennessee Solid Waste Planning Region

Dear Mr. Graham:

Please find enclosed two copies of the Five-Year Update. As you will note in Appendices W and X, some of the county commission resolutions and planning commission reviews are missing. Finally, the signature pages are included at the end of Chapter 10 of the report.

Should you have any questions regarding this report, please call me at (615) 563-4443 or Ms. Ilija Jefferson of Southern Consulting at (615) 740-8777.

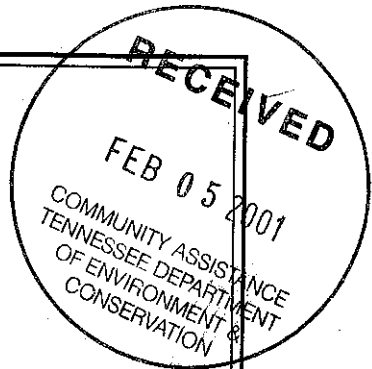
Sincerely,

A handwritten signature in black ink, appearing to read "Thea Prince".

Thea Prince  
Chairwoman  
Central Tennessee Solid Waste Planning Region

Cc: Members, Central Tennessee Solid Waste Planning Region

Enclosure



**FIVE YEAR UPDATE**  
**FOR THE**  
**CENTRAL TENNESSEE SOLID WASTE**  
**PLANNING REGION**  
**MUNICIPAL SOLID WASTE REGIONAL PLAN**

*Prepared for:*

Central Tennessee Solid Waste Planning Region

*Prepared by:*



**Southern Consulting, LLC**

Engineering • Materials Testing

101-B W Railroad Street  
Dickson, TN 37055

January 1, 2001

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# Chapter 1 Summary

In 1993 the Central Tennessee Solid Waste Planning Region consisting of the Cannon, Coffee, Rutherford, and Warren Counties was formed. The region is located in the central area of Middle Tennessee. Municipalities within the region with populations over 1,000 are Woodbury in Cannon County, Manchester in Coffee County; Murfreesboro, Smyrna, LaVergne in Rutherford County; and McMinnville in Warren County. Tullahoma, located in Coffee County, has joined another planning region and is not incorporated in this plan update. According to the U.S. Census Bureau estimate for 1999, the region had a population of 249,002 and a total area of 1,713 square miles. Generally, the region measures 40 miles north to south and 50 miles east to west.

Counties in the region attempted to follow the tasks specified in the original solid waste regional plan. The counties have chosen to work separately in the areas of waste collection, disposal, recycling, and problem wastes. Education services are provided primarily at the regional level. Programs for collection, waste disposal, and regional education appear to be working well. These programs do not require major adjustments now or during the next five years.

To date, the region has not met the mandated waste reduction goal. The causes for not meeting the goal appear to be 1) inaccurate reporting of tonnages by disposal companies, 2) growth in the region, and 3) limited recycling and diversion opportunities in the region. The priorities for the region in the next five years are to obtain accurate disposal data, increase recycling opportunities, and increase waste diversion to Class IV landfills.

In the development of the five-year update, the region has reviewed demographic, economic, and disposal data to determine options for achieving the waste reduction goal.

All counties in the region have experienced population growth rates at or above the state growth rate of 11% during 1990 through 1999. Rutherford County grew 40% during the same time period. Cannon County experienced the second highest growth in the region at 17%.

The counties in the region have also experienced economic growth in the past five years. During the period from 1995 through 1998, the taxable retail sales in each county have increased by at least 35%. Coffee, Rutherford, and Warren Counties have each exceeded a 50% increase in taxable retail sales.

Changes in disposal rates during the period from 1995 through 1999 are mixed. The per capita rates in Cannon and Warren Counties are lower; however, the per capita rates for Coffee and Rutherford Counties have increased. Reasons for these results may stem from the following: inaccurate reporting of Class I tonnages for Coffee and Rutherford Counties, significant population and economic growth in Rutherford County,

and the need to establish additional reduction programs. The per capita rates for each county are provided below.

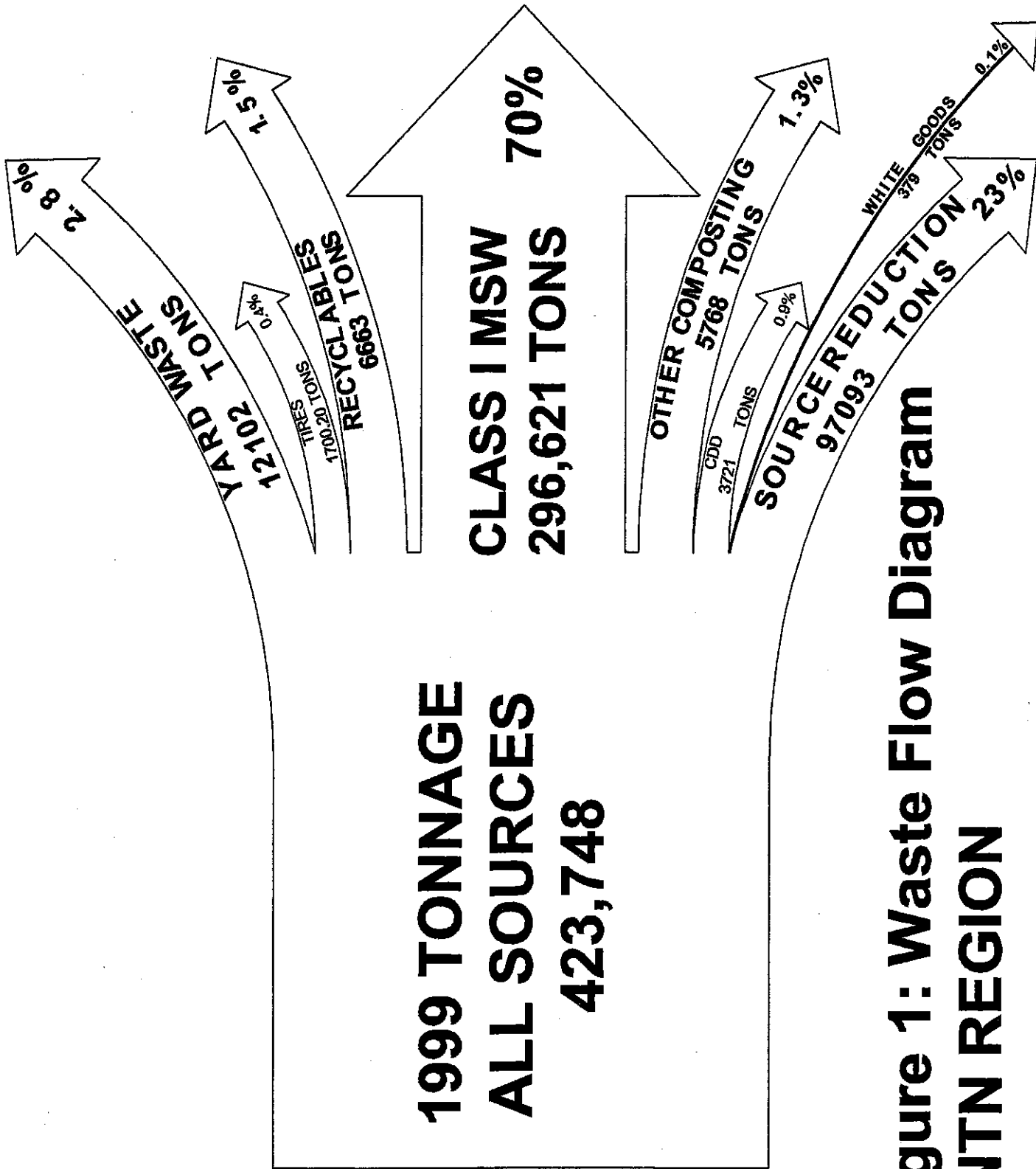
| <u>County</u> | <u>1995 PC</u> | <u>1999 PC</u> | <u>% Reduction</u> |
|---------------|----------------|----------------|--------------------|
| Cannon        | 1.06           | 0.334          | 68.0%              |
| Coffee        | 1.04           | 1.14           | 9.6% Increase      |
| Rutherford    | 1.16           | 1.325          | 14.2% Increase     |
| Warren        | 1.03           | 0.883          | 14.3%              |
| Region        | 1.12           | 1.191          | 6.3% Increase      |

The per capita rates were calculated as follows:

1. 1995 – the state provided a total base year tonnage for the region for 1995. The tonnage was then apportioned to each county using the 1995 population. Using the U.S. Census Bureau estimates for 1995, a per capita rate was developed.
2. 1999 – A per capita rate was developed using the reported tonnage for each county and the U.S. Census bureau population estimate for each county.

A flow diagram indicating the destination of waste generated in the region is provided on page 3. Waste flow diagrams for each county are included in Chapter 2. The data presented in red represents data reported for 1995 and information in green represents data for 1999. As the arrow indicates, the region is currently diverting 30 of the waste it generates from entering a Class I landfill. The arrow would also indicate that the recycle rate would need to increase for the region to achieve waste reduction. However, the arrow does not identify all the recycling and source reduction occurring in the region. Waste diverted in private sector programs may not be reported to the region or the state and therefore would be missing from the flow diagram. While the data provided in the region may not be complete, the arrow does indicate that the majority of waste generated in the region is still landfilled.





**Figure 1: Waste Flow Diagram**  
**CNTN REGION**

A second component of the review process was a review of existing disposal and waste reduction systems. A map indicating the general location of landfills, convenience centers, drop off centers, etc. in the region is provided on page 12. Each county in the region provided an adequate number of convenience centers for residents. Additionally, many localities provide door-to-door collection. All localities with the exception of McMinnville dispose of Class I waste at the BFI Middlepoint Landfill in Murfreesboro. McMinnville waste is hauled to the Cedar Ridge Landfill in Bedford County. Finally, recyclables (materials vary by center) are collected at each convenience center.

Based upon a review of existing data, several new options were evaluated for the region. Some of these options include: banning certain wastes from Class I landfills, increasing recycling opportunities, developing additional educational programs, developing new recycling and composting programs, and increasing the use of Class IV landfills.

From the options reviewed, the following options were chosen as most likely to aid the region in attaining waste reduction goals.

Proposed Waste Reduction Programs

**Cannon County**

Since the region has not met the reduction goal, several options for waste reduction were considered. Options that we are discussing include:

1. Obtain Accurate Disposal Data
  - Coordinate with disposal companies to obtain accurate data.
  - Establish reporting requirements in new disposal/collection contracts.
  
2. Establish education campaign
  - Utilize existing staff to implement education initiatives.
  - Work with other counties in the region to share ideas and costs to launch mass media initiatives.

|             |      |
|-------------|------|
| Annual Cost | \$ 0 |
|-------------|------|

3. Expand Waste Reduction Activities
  - Add bins as needed to accept all common recyclables at the convenience center. (\$6,000/bin) Use grant monies to purchase bins.
  - Add a bin to accept Class IV waste at the transfer station. This waste will be hauled to the Rutherford County Class III/IV landfill. Use recycle grant monies to purchase bins.

- Coordinate special collection drives for electronics, pesticides to coincide with HHW collection events
- Since the county appears to have achieved a 25% waste reduction, additional waste reduction activities will show a "Good Faith" effort to continue to reduce the waste stream and assist the region in achieving the reduction goal.

Capital Cost \$ 0

### Coffee County

1. Obtain Accurate Disposal Data

- Coordinate with disposal companies to obtain accurate data by weight and volume, limited to Manchester and Coffee County. Data must be maintained and furnished upon request to Coffee County Rural Solid Waste. Failure by disposal company to maintain and furnish accurate data may result in termination of contract.
- Establish reporting requirements in new disposal/collection contracts.
- Accurate data may result in as much as a ten percent reduction in the per capita rate.
- This task to be completed by the county and Manchester.

|                     |         |
|---------------------|---------|
| Estimated Reduction | 10%-15% |
| Annual Cost         | \$ 0    |

2. Establish education campaign

- Utilize existing staff to implement education initiatives.
- Education campaign should be continued with existing staff with emphasis on increased public awareness to recycling.
- The employee will coordinate with local businesses to increase recycling, launch advertising campaigns, organize special collection drives, act as a resource for industries that do not have in-house personnel, and disseminate information from the five-year update.
- Work with other counties in the region to share ideas and costs to launch mass media initiatives.

|                     |      |
|---------------------|------|
| Estimated Reduction | 5%   |
| Annual Cost         | \$ 0 |

(To be shared between county and city)

3. Expand Waste Reduction Activities

- Add bins as needed to accept all common recyclables at all convenience centers and recycling center.

- Negotiate with disposal company to accept Class IV and haul this waste to a Class IV landfill.
- If negotiations with BFI are not successful, then consider constructing a transfer station for collection of Class IV waste.
- Coordinate special collection drives for electronics, pesticides to coincide with HHW collection events.

|   |                     |        |
|---|---------------------|--------|
|   | Estimated Reduction | 13%    |
| Capital Cost (App. as exact no. bins needed not known | \$                  | 60,000 |

### Rutherford County

#### 1. Obtain Accurate Disposal Data

- Coordinate with disposal companies to obtain accurate data.
- This task to be completed by the county and Murfreesboro.
- A sample contract with reporting requirements is included in the plan

|                            |     |
|----------------------------|-----|
| Estimated Reduction (Max.) | 10% |
| Estimated Cost             | \$0 |

#### 2. Establish education campaign

- Utilize existing staff to implement education initiatives.
- If needed after one year, hire a full time employee to coordinate education and waste reduction initiatives.
- The employee will coordinate with local businesses to increase recycling, launch advertising campaigns, organize special collection drives, act as a resource for industries that do not have in-house personnel, and disseminate information from the five-year update.
- The county and Murfreesboro should share the expense of this task.
- Work with other counties in the region to share ideas and costs to launch mass media initiatives.

|  |           |
|--|-----------|
| Estimated Reduction                    | 5%        |
| Annual Cost                            | \$ 33,500 |
| (To be shared between county and city) |           |

#### 3. Expand Waste Reduction Activities

- Add bins for the collection of brush at convenience centers.
- Smyrna and LaVergne operate recycle drop off facilities.
  - a. Each facility funded by each town.
  - b. Collect corrugated cardboard, newspaper, mixed paper, aluminum cans, steel cans, glass and plastic.
  - c. Operations are part time (25 hours per week) initially to determine need and most beneficial operating hours.

|                                   |           |
|-----------------------------------|-----------|
| Estimated Reduction               | 2%        |
| Capital Cost (County - bins)      | \$ 84,000 |
| Capital Cost (1 recycle center)   | \$ 60,000 |
| Operating Cost (1 recycle center) | \$ 12,200 |

#### 4. MRF

- Alliance plans to open a MRF in 2001
- Process approximately 600 to 800 tons/ month
- County collects about 125 tons of mixed paper, corrugated cardboard, aluminum cans, steel cans, and plastic per month. (Average based upon the quantities collected for July, August, and September 2000)
- Murfreesboro collects approximately 110 tons per month of these same materials (base on 1999 data)
- BFI/Waste Management collect corrugated commercial cardboard
- Alliance expects to take some of the market of those recyclables being hauled to Nashville
- Therefore, county will not realize a 600 to 800 ton per month reduction
- Reduction can be expected to be approximately 200 tons/month from recycling drop-offs
- Reduction depends on the addition of collection locations and/or increased opportunities at all drop-off sites and increased education.
- Alliance can provide bins for the drop off location

|                            |           |
|----------------------------|-----------|
| Estimated Reduction (Max.) | 10%       |
| Annual Cost                | \$ 33,500 |

#### 5. Class IV landfill

- Install scales at the landfill
- Implement a tipping fee that is competitive with other disposal facilities
- Change hours of operation to be convenient for waste haulers, etc.
- Advertise location, operating schedule, and materials accepted at the facility

|   |            |
|---|------------|
| Estimated Reduction                                     | 5%-10%     |
| Annual Cost   | \$ 660,000 |
| (No Increase Anticipated Over Existing Operating Costs) |            |

### Warren County

#### 1. Obtain Accurate Disposal Data

- At renewal of disposal contract, coordinate with disposal companies to obtain accurate data.
- Establish reporting requirements in new disposal/collection contracts.

## Future Disposal Options

If goal is not met within three years the region should evaluate composting and/or ordinances.

### 1. Composting

- Composting is one potential alternative method MSW disposal.
- Approved "waste diversion" technology.
- In vessel composting - process of composting the organic waste in a vessel, commonly known in vessel system - Bedminster Process
- Cost function of anticipated/actual quantity of waste & size of the facility constructed
- Costs include capital, operating and maintenance costs
- Bedminster has licensed the process to various vendors in the United States and abroad with the following costs provided by "Waste Options, Inc."
  - Regional Class I disposal (1999) 300,000 TPY
  - Minimum size of facility 100 TPD (36,000 TPY)
  - Sewage Sludge may be accepted at a Ratio of one ton sludge (dewatered) to two tons MSW at no increase in facility size or cost.
  - Property requirement @100TPD 5± ac. (1 ac. for structures, 4 ac. for storage)
  - Property requirement @300TPD 40± ac. (3± ac. for structures, 37 ac. for storage)
  - Capital Cost borne by operator
  - Tipping fees would be based on a min. (.e. a "Put or Pay")
  - Composting will provide a useable product and a residual waste requiring disposal
  - Residual waste is comprised of inorganic materials (metals) and organic synthetic materials (plastic bags, bottles etc.)
  - Residual waste will be approximately 40% (by weight) of the total influent waste weight
  - With an aggressive recycling program both ahead of the composting facility and as part of the facility, the residual waste may be reduced to as little as 15 percent
  - Disposal costs must address the final disposition of the residual waste
  - Example of the theoretical costs:

|                           | <i>Minimal Recycling</i>          | <i>Maximized Recycling</i>        |
|---------------------------|-----------------------------------|-----------------------------------|
| MSW quantity              | 100 ton                           | 100 ton                           |
| Residual Waste            | 40 ton (100 x 40%)                | 15 ton (100 x 15%)                |
| Compost Tipping Fee       | \$5,500                           | \$5,500                           |
| Residual Disposal Fee     | \$1,000 (40 x \$25/ton)           | \$375 (15 x \$25/ton)             |
| Total Fee                 | \$6,500                           | \$5,875                           |
| <b>Total Cost per ton</b> | <b>\$65 per ton (100/\$6,500)</b> | <b>\$59 per ton (100/\$5,875)</b> |

|                          |             |
|--------------------------|-------------|
| Estimated Reduction      | 12%         |
| Annual Cost – Cannon     | N/A         |
| Annual Cost – Coffee     | \$245,000   |
| Annual Cost - Rutherford | \$1,964,000 |
| Annual Cost – Warren     | \$329,000   |

## 2. Regulation/Ordinance

The regulations presented below are examples of the region may consider in the future.

- Chicago high-density residential and commercial source reduction and recycling ordinance
  - Chicago enacted an ordinance to improve recycling at commercial and office establishments to 30% by weight, high density residential buildings to 12% by weight, and to promote a 25% recycling goal for haulers and recycling service providers.
  - As a condition of receiving/renewing licensure requirements, the hauler must provide certification associated with recycling activities. The haulers must certify that all material separated for recycling are in fact delivered to an appropriate recycling processor.
  - Provides requirements for accurately reporting quantities of materials and other notification requirements including contamination reported to customers.
- Pay as you throw
  - A type of system in which the waste generator (e.g. the homeowner) pays for waste disposal as a function of the quantity of waste actually disposed.
  - Intent is to immediately demonstrate to the waste generators the positive economics of reducing the quantity of waste generated and disposed.
  - In a rural environment, the risk of illegal disposal should be considered.
  - Athens Clarke County, GA: example ordinance

- Cardboard Restriction, Putnam County, TN: Restrict the disposal of industrial and commercial waste disposal of cardboard. Sample included in plan
  
- Agreement for Refuse and Recycling Collection
  - This agreement contains specific provisions for reporting MSW and recycling tonnages, remedies for customer complaints, collection schedules, and many other issues.
  - Monthly and yearly reports are to be filed and must include information on tonnages, recycling participation rates, education initiatives, and recommendation for program changes.

The composting program is recommended for consideration should the education and waste reduction programs fail to provide a 25 percent reduction as required by law. A composting program would not be initiated for three years. The region should construct and operate a relatively small composting facility. The facility would be sized to accommodate approximately 100 tons per day of municipal solid waste. Anticipated diversion is approximately 15+%.

The implementation schedule on page 13 indicates the timeframe for establishing each program. As the schedule suggests, the region projects compliance with the 25% waste reduction goal by January 1, 2005.



# IMPLEMENTATION PLAN

Central Tennessee Solid Waste Planning Region

| TASK   | YEAR       |            |            |            |            |
|--|------------|------------|------------|------------|------------|
|  | FY 2001/02 | FY 2002/03 | FY 2003/04 | FY 2004/05 | FY 2005/06 |
| <b>Gannon County</b>   |            |            |            |            |            |
| 1. Obtain Accurate Disposal Data<br>Coordinate with disposal companies<br>Establish contractual reporting requirements   | X          |            |            |            |            |
| 2. Establish Education Campaign<br>Utilize existing staff<br>Mass media initiatives  | X          | X          | X          | X          | X          |
| 3. Expand Waste Reduction Activities<br>Add bins at convenience center<br>Bin for Class IV waste<br>Special collection drives  | X          |            |            |            |            |
| <b>Coffee County</b>   |            |            |            |            |            |
| 1. Obtain Accurate Disposal Data<br>Coordinate with disposal companies<br>Establish contractual reporting requirements   | X          |            |            |            |            |
| 2. Establish Education Campaign<br>Utilize existing staff<br>Hire part time employee (if needed)<br>Mass media initiatives   | X          | X          | X          | X          | X          |
| 3. Expand Waste Reduction Activities<br>Add bins at convenience centers<br>Negotiate with BFI to accept Class IV waste<br>Class IV waste transfer station<br>Special collection drives | X          |            |            |            |            |
| 4. MSW Composting (if needed)<br>Evaluate need for system (w/ region)<br>Review option with Rutherford County<br>Contract for composting   |            |            |            | X          | X          |
| 5. Ordinance (if needed)   |            |            |            | X          | X          |
| <b>Manchester</b>  |            |            |            |            |            |
| 1. Obtain Accurate Disposal Data<br>Coordinate with disposal companies<br>Establish contractual reporting requirements   | X          |            |            |            |            |
| 2. Establish Education Campaign<br>Hire part time employee<br>Mass media initiatives   | X          | X          | X          | X          | X          |
| 3. Expand Waste Reduction Activities<br>Add bins at convenience centers  | X          |            |            |            |            |
| <b>Rutherford County</b>   |            |            |            |            |            |
| 1. Obtain Accurate Disposal Data<br>Coordinate with disposal companies   | X          |            |            |            |            |
| 2. Establish Education Campaign<br>Utilize existing staff<br>Hire full time employee<br>Mass media initiatives   | X          | X          | X          | X          | X          |
| 3. Expand Waste Reduction Activities<br>Add bins at convenience centers  | X          |            |            |            |            |

| TASK   | YEAR       |            |            |            |            |
|--|------------|------------|------------|------------|------------|
|  | FY 2001/02 | FY 2002/03 | FY 2003/04 | FY 2004/05 | FY 2005/06 |
| <b>Murfreesboro</b>  |            |            |            |            |            |
| 4. Class IV Landfill<br>Install scales<br>Implement competitive tipping fee<br>Implement competitive schedule  | X          |            |            |            |            |
| 5. MSW Composting (if needed)<br>Evaluate need for system (w/ region)<br>Contract for composting   |            |            |            | X          | X          |
| 6. Ordinance   |            |            |            | X          | X          |
| <b>LaVergne</b>  |            |            |            |            |            |
| 1. Obtain Accurate Disposal Data<br>Coordinate with disposal companies   | X          |            |            |            |            |
| 2. Establish Education Campaign<br>Utilize existing staff<br>Hire full time employee<br>Mass media initiatives   | X          | X          | X          | X          | X          |
| <b>Shelby County</b>   |            |            |            |            |            |
| 1. Expand Waste Reduction Activities<br>Develop Recycle Drop Off Center<br>Operate Recycle Drop Off Center   | X          |            |            |            |            |
| <b>Shelby County</b>   |            |            |            |            |            |
| 1. Expand Waste Reduction Activities<br>Develop Recycle Drop Off Center<br>Operate Recycle Drop Off Center   | X          |            |            |            |            |
| <b>Warren</b>  |            |            |            |            |            |
| 1. Obtain Accurate Disposal Data<br>Coordinate with disposal companies<br>Establish contractual reporting requirements   | X          |            |            |            |            |
| 2. Establish Education Campaign<br>Utilize existing staff<br>Hire part time employee<br>Mass media initiatives   | X          | X          | X          | X          | X          |
| 3. Expand Waste Reduction Activities<br>Add bins at convenience centers<br>Add bins for Class IV waste collection<br>Collect Class IV at waste transfer station<br>Special collection drives | X          | X          | X          | X          | X          |
| 4. Class IV Landfill<br>Operate Class IV Landfill (if coll. at L.S. successful)  |            |            |            | X          | X          |
| 5. MSW Composting<br>Evaluate need for system (w/ region)<br>Review option with Rutherford County<br>Contract for composting   |            |            |            | X          | X          |
| <b>McMinnville</b>   |            |            |            |            |            |
| 1. Establish Education Campaign<br>Utilize existing staff<br>Hire part time employee<br>Mass media initiatives   | X          |            |            |            |            |
| 2. Expand Waste Reduction Activities<br>Collect Class IV waste at transfer station   |            |            |            | X          | X          |
| 3. Ordinance   |            |            |            | X          | X          |

## Chapter 2 General Information About the Region

### 2.1 REGION MEMBERS

The Central Tennessee Solid Waste Planning Region is comprised of the counties of Cannon, Coffee, Rutherford, and Warren. In 1993, the City of Tullahoma chose to participate in the Interlocal Solid Waste Region and therefore is not included in any information in this plan.

### 2.2 POPULATION

The populations for the region and counties are included in Table 2-1.

Table 2-1 Region Population

| Locality      | 1995           | 1999           | 2000           |
|---------------|----------------|----------------|----------------|
| Cannon        | 11,452         | 12,268         | 12,398         |
| Coffee        | 26,527         | 27,874         | 28,131         |
| Rutherford    | 147,681        | 172,312        | 178,826        |
| Warren        | 35,194         | 36,547         | 36,938         |
| <b>Region</b> | <b>220,854</b> | <b>249,002</b> | <b>256,293</b> |

Notes:

1. 1995 data is taken from data estimated for July 1, 1995 by the U.S. Census Bureau and released on
2. 1999 data is taken from data estimated for July 1, 1999 by the U.S. Census Bureau and released on
3. 2000 data is estimated by Southern Consulting using the rate of change from 1998 to 1999. 1998 data was taken from U.S. Census Bureau estimates.
4. Estimates for Coffee County do not include Tullahoma.

## 2.3 REGIONAL BOARD MEMBERS

The regional board is comprised of thirteen members. Table 2-2 identifies the board members as of January 1, 2000.

Table 2-2 Board Members

Chairman: Thea Prince Telephone: (615) 563-4443  
 Represents: Cannon County Term Expires: 1/2005  
 Appointed By: County Executive Confirmed By: County Commission

| Member           | Locality Represented | Term (Yrs.) | Term Expires | Appointed By | Confirmed By |
|------------------|----------------------|-------------|--------------|--------------|--------------|
| Billy Youngblood | Cannon               | 3           | 1/2001       | CE           | CCm          |
| Randy Gannon     | Woodbury             | 4           | 1/2003       | M            | CCn          |
| Sam Morton       | Coffee               | 5           | 1/2001       | CE           | CCm          |
| Paul Hogan       | Coffee               | 3           | 1/2005       | CE           | CCm          |
| Tim Mahar        | Manchester           | 5           | 1/2003       | M            | CCn          |
| Carter Woodruff  | Rutherford           | 5           | 1/2001       | CE           | CCm          |
| Linda Stevens    | Rutherford           | 3           | 1/2001       | CE           | CCm          |
| Grant Kelley     | Rutherford           | 5           | 1/2003       | CE           | CCm          |
| Bud Klika        | Murfreesboro         | 4           | 1/2003       | M            | CCn          |
| Jack Jones       | Warren               | 3           | 1/2001       | CE           | CCm          |
| Bob Lee          | Warren               | 5           | 1/2005       | CE           | CCm          |
| Bill Brock       | McMinnville          | 5           | 1/2003       | M            | CCn          |

Notes:

1. CE = County Executive
2. M = Mayor
3. CCm – County Commission
4. CCn = City Council

## **2.4 PART 9 AUTHORITY**

The region has not formed a Part 9 Solid Waste Authority.

## **2.5 REGION CONTACTS**

Three contacts for the region include:

- a. Thea Prince, Chairman, 1023 Curlee Church Road, Readyville, TN 37149  
(615) 563-4443
- b. Wannella Ingleburger, Recording Secretary, 1110 Madison Street,  
Manchester, TN 37355 (615) 723-5139
- c. Trent Smith, P.E., Consultant, 101-B W Railroad Street, Dickson, TN 37055  
(615) 740-8777

## **2.6 REGIONAL BOARD ACTIVITIES**

The regional board is active typically meeting once a month on the third Thursday of each month. The primary functions of the board include tracking the waste stream quantity and waste reduction efforts of localities in the region, overseeing the youth and adult education programs, and preparing the Annual Progress Report. The region contracts the preparation of the quarterly reports used to track waste stream quantities, recycle data (where available), waste reduction efforts, and education efforts. The education program is provided through a grant with MTSU and TN SWEPT. Education seminars are provided at teacher in-service training, civic groups meetings, and on an as-requested basis. The region contracts out the preparation of the Annual Progress Report. The region has submitted each of its Annual Progress Reports by the March 31 deadline. The board reviews each annual report prior to its submittal. Meetings are held during the year to track the progress of each contract and discuss individual locality needs.

The Board is prepared to meet its responsibilities regarding permit review. As of yet, no permits have been presented to the board.

## **2.7 RATIONALE FOR FORMATION**

The localities within the region chose to form a multi-county region with the hopes of partnering on disposal and waste reduction efforts. During the preparation of the original ten-year plan, it became apparent that utilizing a regional approach to disposal, collection or waste reduction was not feasible. At that time it was decided that the primary task that could be fulfilled as a region was education. As such the functions of collection, disposal, and waste reduction are pursued individually by the counties and cities in the region.

Current issues in the region include accountability for waste reduction. Since each county provides for its own disposal and waste reduction methods, questions arise as

to which localities may be providing adequate measures. During the last several months, counties in the region have also questioned the region's long-term existence. After several meetings, the counties have chosen to keep the region intact.

## 2.8 MUNICIPALITIES PROVIDING DOOR-TO-DOOR COLLECTION

| City/Town    | County     | 1998 Population<br>City/County |
|--------------|------------|--------------------------------|
| Woodbury     | Cannon     | 2,517 / 12,146                 |
| Manchester   | Coffee     | 8,698 / 45,815                 |
| Murfreesboro | Rutherford | 57,657 / 166,086               |
| McMinnville  | Warren     | 12,215 / 36,137                |

Note: 1. The county population for Coffee County includes Tullahoma (1998 pop = 18,083)  
 2. 1998 population data is used because that is the information requested by the state in the Guidelines for the Preparation of the Five-Year Update.

## 2.9 GENERAL DESCRIPTION OF THE REGION

The Central Tennessee Solid Waste Planning Region consists of Cannon, Coffee, Rutherford, and Warren Counties in the central area of Middle Tennessee. Municipalities within the region with populations over 1,000 are Woodbury in Cannon County, Manchester in Coffee County; Murfreesboro, Smyrna, LaVergne in Rutherford County; and McMinnville in Warren County. Tullahoma, located in Coffee County, has joined another planning region and is not incorporated in this plan update. According to the U.S. Census Bureau estimate for 1999 the region had a population of 249,002 and a total area of 1,713 square miles. Generally, the region stretches 40 miles north to south and 50 miles east to west.

Geographically this region lies between Nashville and Chattanooga with the western portion in the Central Basin and the eastern portion in the Highland Rim region of Tennessee. The topography varies from nearly level to very steep with the elevation above sea level ranging from 540 in Rutherford County to 1,050 in Coffee County to 1,150 in Cannon County.

Rutherford and Cannon Counties are in the Cumberland River drainage basin with the main tributary being the Stones River. A portion of Percy Priest Lake, which is on the Stones River, is located in Rutherford County. Coffee County surface waters flow to the Duck and Elk Rivers which are both in the Tennessee River drainage basin. Normandy Lake, on the Duck River, is located in Coffee County. The Elk River forms a portion of the Coffee County/Franklin County line. Warren County surface waters drain through the Collins and Rocky Rivers to the Caney Fork River.

The region is served by several federal and state highways including Interstate 24 which runs from the northwest to the southeast for a total of 63 miles. Federal highways include 41, 70S, 41A, and 231 with a total length of 259 miles. State highways comprise

a total of 297 miles and include State Routes 8, 30, 53, 55, 56, 96, and 99. City and county roads account for 2,855 miles of the region's total roadway of 3,474 miles. All of the major roads are utilized as part of the transportation system.

Railways include CSX Mainline from Nashville to Chattanooga which travels through Murfreesboro and Tullahoma. Also the Caney Fork and Western Short Line railroad travels from Tullahoma through Manchester to McMinnville before terminating in Sparta.

## **2.10 FEES ASSOCIATED WITH SOLID WASTE SERVICES**

### **2.10.1 Cannon County**

During the 1999/00 Fiscal Year the county initiated a commercial and industrial waste charge. The fee is assessed at \$25 per ton. Waste disposal for materials collected at the convenience centers is funded through local tax collections.

### **2.10.2 Town of Woodbury**

The town charges a collection fee against households in the municipal limits. The town assesses a business charge for waste disposal. Any deficits of revenues are corrected through transfers from the general fund.

### **2.10.3 Coffee County**

Waste disposal for materials collected at the convenience centers is funded through local tax collections.

### **2.10.4 City of Manchester**

The city provides curbside collection of Class I waste to residents and businesses. Collection and disposal services are contracted to BFI and are funded entirely through a collection fee levied against residents and businesses within the service area.

### **2.10.5 Rutherford County**

The county assesses a tipping at the Class III/IV landfill. Revenues from this program are used to help offset the operating costs of the facility. Also, the county receives a host fee because BFI Middlepoint Landfill is located in the county.

#### 2.10.6 City of Murfreesboro

The city provides curbside collection for residents and businesses. The city does not assess any solid waste fees and services are funded through the general fund.

#### 2.10.7 Warren County

The county does not assess any solid waste fees.

#### 2.10.8 City of McMinnville

The city provides curbside collection for residents and businesses. Collection is funded through the general fund. The city assesses a tipping fee of \$25.00 for waste entering the transfer station.

### **2.11 COSTS/REVENUE FOR SOLID WASTE PROGRAMS**

The Cannon County solid waste program generally consists of a operating transfer station/convenience center and processing recyclables. Revenues for the program are raised through local taxes, solid waste fees, and state solid waste grants. The budget estimated for 1999/00 indicates the county may have a surplus of approximately \$14,000. For the 1999/00 budget year, the county had not planned any capital expenditures. Current revenue stream appears adequate should the county choose not to implement any new programs.

The Town of Woodbury in Cannon County provides curbside collection for city residents and businesses and hauls waste to the BFI Middlepoint Landfill. Revenues for the solid waste program are obtained from business fees and transfers from the general fund. The estimated budget for 1999/00 does not indicate any capital expenditures.

Coffee County operates 10 convenience centers, collects recyclables at each convenience center, and jointly operates a recycle drop off center with Manchester. Revenues for the solid waste program are obtained from solid waste fees, grants, sale of recyclables, and transfers from the general fund. Funding scenarios appear adequate should the program maintain the status quo.

The City of Manchester provide curbside collection for residents and businesses, hauls waste to the BFI Middlepoint Landfill, provides curbside collection of brush, contracts for composting of brush, operates a recycle drop off center along with the county, and manages a cardboard collection service for participating businesses. The city funds these activities through a solid waste collection fee. The city is currently not planning any capital expenditures.

Rutherford County operates 14 convenience centers, a Class III/IV landfill, and collects recyclables from each convenience center. The solid waste department is funded through tipping fees at the landfill and a host fee from all waste disposed of at the BFI Middlepoint Landfill. For FY 1999/00 no capital expenditures are expected. The revenues now provide for the departments expenses. Should any new programs be developed, the county may need to look for new revenue streams or increase revenues from tipping fees.

The City of Murfreesboro provides curbside collection for residents and businesses, collects brush, and operates a recycle crop off center. Funds for the sanitation department are obtained through transfers from the general fund. Through an agreement with BFI, the city is not charged for waste disposal. The FY 1999/00 budget does not indicate any capital expenditures. Should any new programs be initiated, the city will be required to transfer more moneys from the general fund.

Warren County operates 13 convenience centers, hauls waste to the BFI Middlepoint Landfill, and collects recyclables from the convenience centers. Revenues for the solid waste department are obtained from local taxes, grants, and the sale of recycled materials. The FY 1999/00 budget does not indicate any capital expenditures. The budget also indicates a shortfall, which will be met through deductions from the existing fund balance. Once the fund balance is depleted, the county may need to develop new revenue sources or transfer needed moneys from the general fund.

The City of McMinnville provides curbside collection, operates a transfer station, and collects brush. Revenues are obtained from tipping fees and the general fund. The budget does not indicate any capital expenses for FY 1999/00/

Budgets for each locality for FY 1999/00 are included in Appendix A.

## **2.12 USE OF UNIFORM FINANCIAL ACCOUNTING METHODS**

All localities within the region utilized the uniform financial accounting methods required by the Solid Waste Management Act. No locality in this region operates a publicly owned Class I landfill or incinerator.

## **2.13 PROPOSED 10-YEAR SOLID WASTE BUDGET**

A budget for the region and each locality providing collection and disposal services is provided in Appendix B



## 2.14 CONTACTS REGARDING SOLID WASTE BUDGETS

Table 2-3: Contacts Regarding Solid Waste Budgets

| Name          | Title                       | Organization   | Phone Number   |
|---------------|-----------------------------|----------------|----------------|
| Dale Bush     | County Executive            | Cannon Co.     | (615) 563-2320 |
| Charlene Odom | City Recorder               | Woodbury       | (615) 562-4221 |
| Rennie Bell   | SW Director                 | Coffee Co.     | (615) 723-5139 |
| Paul Hogan    | PW Director                 | Manchester     | (615) 728-6903 |
| Becky Smith   | SW Coordinator              | Rutherford Co. | (615) 898-7739 |
| Vacant        | Manager Landfill Operations | Rutherford Co. | (615) 898-7874 |
| Bud Klika     | Sanitation Director         | Murfreesboro   | (615) 893-3681 |
| Steve Hillis  | SW Director                 | Warren County  | (931) 473-6874 |
| Bill Brock    | PW Director                 | McMinnville    | (931) 473-2553 |

# Chapter 3 Waste Stream

## 3.1 WASTESTREAM GENERATED IN 1999 AND SOURCE

Table 3-1 1999 Class I Waste Stream

| County Name | 1999 Wastestream (tons) |
|-------------|-------------------------|
| Cannon      | 4,103                   |
| Coffee      | 31,890                  |
| Rutherford  | 228,343                 |
| Warren      | 32,285                  |
| Region      | 296,621                 |

Wastestream data for each county is obtained from the following sources:

Cannon County – convenience center waste and commercial accounts - BFI  
 Woodbury – waste collected door-to-door - Town of Woodbury  
 Coffee County – convenience center waste and commercial accounts - BFI  
 Manchester – waste collected door-to-door and commercial accounts - BFI  
 Rutherford County - convenience center waste and commercial accounts - BFI;  
 and commercial accounts - Waste Management  
 Murfreesboro - waste collected door-to-door and commercial accounts - BFI  
 Warren County – convenience center waste - Warren County; commercial  
 accounts - BFI  
 McMinnville - waste collected door-to-door - City of McMinnville

## 3.2 SOURCES OF WASTE BY GENERATOR

Table 3-2

| Wastestream (by %) | Locality |        |            |        |       |
|--------------------|----------|--------|------------|--------|-------|
|                    | Cannon   | Coffee | Rutherford | Warren | Total |
| Residential        | 90       | 27     | 28         | 43     | 30    |
| Commercial         | 10       | 36     | 64         | 32     | 57    |
| Industrial         |          | 34     |            | 22     | 6     |
| Institutional      |          | 3      | 8          | 3      | 7     |
| Other              |          | 0      |            | 0      | 0     |
| Total              | 100      | 100    | 100        | 100    | 100   |

Notes:

1. Cannon County - The sources of waste are only reported by BFI as county convenience center and commercial.
2. Coffee County – The waste stream break out was provided in the Needs Assessment.
3. Rutherford County – The institutional estimate uses tonnage data provided by the VA Hospital, MTSU tonnage provided by BFI, and an estimate of MTMC tonnage. BFI does not break out commercial and industrial tonnage so these were reported together.
4. Warren County - The waste stream break out was provided in the Needs Assessment.

### 3.3 SOURCES OF WASTE BY TYPE

The types of waste in the region were determined through a waste stream characterization study conducted for the preparation of the regional solid waste plan. The region would like to continue to use this data for the five-year update.

Table 3-3: Sources of Waste by Type

| Wastestream<br>(by %)    | Total |
|--------------------------|-------|
| Yard Waste               | 8.0   |
| CDD                      | 13.6  |
| Tires                    | N/R   |
| Recyclables              | N/R   |
| White Goods              | N/R   |
| Regular MSW              |       |
| Paper/Paperboard         | 34.4  |
| Glass                    | 10.5  |
| Ferrous Metals           | 6.2   |
| Aluminum                 | 0.3   |
| Other Non-Fe.<br>Metals  | 0.1   |
| Plastics                 | 7.6   |
| Rubber & Leather         | 0.3   |
| Textiles                 | 6.0   |
| Food Waste               | 9.8   |
| Misc. Inorganic<br>Waste | 2.0   |
| Other                    | 1.2   |
| TOTAL                    | 100   |

Notes:

1. Percentages were taken from the Municipal Solid Waste Regional Plan for the Central Tennessee Solid Waste Planning Region. During preparation of the plan, the region completed a field waste stream characterization. The region would like to continue to use this data for the five-year update.
2. The regional plan did not provide a break out for tires or white goods. A percent was estimated for wood waste and this percentage has been attributed to CDD waste in the above table.

### **3.4 TOTAL GENERATED WASTE STREAM**

The total generated waste stream as identified in Table 3-4 represents the components of the waste stream for which records are kept. These components include Class I waste for the four counties, recyclables accepted at public drop-off centers, Class IV waste accepted at the two Class IV landfills in the region, and tires processed through one of the state's options. Components that may not be included in this table include source reduction materials, in-house recycling programs, materials that are recycled out-of-state, and materials collected by private recyclers in the region.

The tonnage for MSW may be higher than the actual tonnage for the region. The counties in the region rely upon the waste disposal companies to provide tonnages. Disposal companies provide tonnages based upon scale data as trucks enter the landfill or transfer station. The collection routes in Coffee County and Rutherford County cross jurisdictional boundaries. In Coffee County, some routes enter Bedford or Franklin Counties. Also, some routes run in both rural Coffee County and Manchester. In Rutherford County, some collection routes also include portions of Davidson County. When trucks are weighed, no mechanism exists for identifying that waste generated in Coffee County or Bedford or Franklin Counties. Also, Waste from those routes for Rutherford County can not be separated from Davidson County. As a result, 1) counties in the region often appear to be assessed with tonnages not generated in the region, and 2) waste may be double counted between Manchester and Coffee County.

The region has worked diligently to find a solution for this issue. Representatives of the region, Coffee County, and Rutherford County met in 1997, 1998, and 1999 to discuss possible solutions. At one time it was agreed that for routes running outside the region, the disposal company would attribute a percentage of the tonnage to the outlying county. The distribution was to be based on the percentage of the collection route in each county. The system was implemented for less than one year. After several personnel changes at the disposal company, the continuity in the system was lost and all tonnage from the cross-jurisdictional routes was attributed to counties in the region. Recent attempts to resolve the issue have failed. The region's first priority should be obtaining accurate disposal data.

Table 3-4 Total Generated Waste Stream - Tons (1999)

| Strategy                            | 1999 Tons  | % of Wastestream |
|-------------------------------------|------------|------------------|
| Yard Waste                          | 12,102.00  | 2.8              |
| CDD                                 | 3421.32    | 0.8              |
| Tires                               | 1700.20    | 0.4              |
| Recyclables                         | 6663.57    | 1.6              |
| White Goods                         | 379.00     | 0.1              |
| MSW                                 | 296,621.00 | 70.0             |
| Other (Composting)                  | 5,768.10   | 1.3              |
| Source Reduction/In House Recycling | 97,093.00  | 23.0             |
| TOTAL (tons)                        | 423,748.19 | 100              |

Notes:

1. Tonnages taken from the 1999 Annual Progress Report.
2. Tonnages for industrial source reduction were provided by the TDEC – DCA. Information was provided as a total for the region. Data was taken from the 1999 Recycling Operations Report prepared by respondents with in-house recycling programs.
3. Tonnages of yard waste, CDD, tires, recyclables, white goods, and composting represent those materials diverted from the Class I waste stream and may not represent the actual quantity generated. The actual quantity generated may include some materials that disposed of in Class I landfills. The Class I tonnage includes yard waste, CDD, etc. tonnages that are not recycled.
4. Tire tonnages represent the total tonnage collected for 1999 for Cannon, Coffee and Warren Counties. In addition, the tonnage for Rutherford County tires was calculated using the average monthly tire tonnage for 2000.

Table 3-5 Total Generated Waste Stream by County - (1999)  
Percent by commodity and locality

| Percent by Final Destination | Cannon | Coffee | Rutherford | Warren | Region |
|------------------------------|--------|--------|------------|--------|--------|
| Yard Waste                   | 3.0    |        | 3.0        | 11.6   | 3.7    |
| CDD                          |        | 4.0    | 1.0        |        | 1.1    |
| Tires                        | 3.0    | 1.0    |            | 0.4    | 0.2    |
| Recyclables                  | 5.0    | 3.0    | 2.0        | 4.0    | 2.1    |
| White Goods                  |        | 1.0    |            |        | 0.1    |
| MSW                          | 89.0   | 77.0   | 94.0       | 84.0   | 91.0   |
| Other (Composting)           |        | 14.0   |            |        | 1.8    |
| Source Reduction             |        |        |            |        |        |
| TOTAL                        | 100    | 100    | 100        | 100    | 100    |

Table 3-5 does not include the source reduction information provided in Table 3-4 since this data was not provided for each county. A waste flow diagram for each county is included in Appendix C.

#### Comparison of Total Generated Waste Stream to Waste Stream by Final Use

Table 3-6 compares the actual end use of waste in the region to the potential end use for waste. The actual end use percentages were calculated using tonnage data gathered for 1999 Annual Progress Report. The potential end use represents the percentages calculated from waste stream characterization conducted for the regional plan. This table was generated to identify those areas in which the region may create programs to meet waste reduction goals. As the table indicates, the region is recovering approximately half of the yard waste. The region falls short in collecting construction/demolition materials. Finally as the table indicates, recyclables are not being recovered from the waste stream at potential rates identified in the waste study.

Table 3-6 Percent of Material Recovered/Percent of Materials Possible to Recover

|                              | Cannon |      | Coffee |      | Rutherford |      | Warren |      | Region |      |
|------------------------------|--------|------|--------|------|------------|------|--------|------|--------|------|
|                              | PR     | AR   | PR     | AR   | PR         | AR   | PR     | AR   | PR     | AR   |
| Yard Waste                   | 8.0    | 3.0  |        | 0    | 8.0        | 3.0  | 8.0    | 11.6 | 8.0    | 3.7  |
| CDD                          | 13.6   |      | 13.6   | 4.0  | 13.6       | 1.0  | 13.6   |      | 13.6   | 1.1  |
| Tires                        | NE     | 3.0  | NE     | 1.0  | NE         |      | NE     | 0.4  | NE     | 0.2  |
| Recyclables - Easy           | 21.6   | 5.0  | 21.6   | 3.0  | 21.6       | 2.0  | 21.6   | 4.0  | 74.9   | 2.1  |
| Recyclables - More Difficult | 22.6   |      | 22.6   |      | 22         |      | 22.6   |      |        |      |
| White Goods                  | NE     |      | NE     | 1.0  | NE6        |      | NE     |      | NE     | 0.1  |
| MSW                          | 34.2   | 89.0 | 34.2   | 77.0 | 34.2       | 94.0 | 3.5    | 84.0 | 3.5    | 91.0 |
| Other (Composting)           |        |      | 8.0    | 14.0 |            |      |        |      |        | 1.8  |
| Source Reduction             |        |      |        |      |            |      |        |      |        |      |

Notes:

1. PR – Potentially Recyclable: Material exists in the waste stream at this percentage. The rate at which this material may be segregated from the total stream and recycled will be less due to collection methods, costs for separation and mixing of waste.
2. AR – Actually Reduced: The rate at which this material was actually diverted or reduced from the total stream.
3. NE – Not Evaluated: The material was not included as part of the waste stream characterization conducted for the regional plan.
4. Source Reduction data provided only at the regional level. This data represents information provided in the 1999 Recycle Operating Report by those organizations with in-house recycling programs.
5. Recyclables-Easy – The potential recyclable percentage taken from the Region solid Waste Plan as those materials most easily separated from the MSW stream and recycled.
6. Recyclables-More Difficult – The potential recyclable percentage taken from the Regional Solid Waste Plan as those materials that can be recycled but are more difficult to separate from the MSW stream.

### 3.5 DEMOGRAPHIC TRENDS

The demographic trends reported herein have been taken from the Needs Assessments for each county and a review of U.S. Census Bureau data.

#### 3.5.1 Cannon County

The US Census Bureau reports that during the period from 1990 through 1999 Cannon County experienced a 17.0% increase population increase compared to 11% for the state.

#### 3.5.2 Coffee County

During 1990 through 1999, the county population grew only slightly above the average growth for the state.

#### 3.5.3 Rutherford County

The county has experienced significant population growth in the Cities of LaVergne, Smyrna, & Murfreesboro during the past decade. The average rate of growth for the state during the 1990's has been 11% but in Rutherford County the growth rate has been 40%. Estimates provided by the U.S. Census Bureau for 1990-1996 indicate that LaVergne's population increased by 80% and Smyrna's population increased 41%.

Additionally, the numbers of residential building permits increased steadily from 1990 through 1996, dipped for the year of 1997, and appear to be increasing again

through 1998. The total number of permits issued in 1998 was 64% greater than the number issued in 1988. As these numbers indicate the quantity of construction/demolition waste would be significant and the gross tonnage of MSW would increase greatly.

The Rutherford County Board of Education 10-Year Capital Projects Plan provides additional data regarding the growth in the county. The growth in the student population in Rutherford County during the period from 1989 through 1998 was 43.52%. The Plan projects that during the next ten-year period the county can expect a 48.58% increase in the student population. Annually, the county has seen a growth rate of between four and five percent in the student population. The most significant increases have occurred in the Eagleville, Smyrna, and LaVergne areas. Moderate growth has been seen in the Murfreesboro area. The Plan goes on to state that due to factors such as the construction of I-840, the widening of I-24, and a general strengthening of the economy, the school population may grow faster than the averages of the past five years. The findings outlined in the Plan are included in the establishment of a capital improvement plan that includes the construction of several new schools and the expansion of existing schools.

#### 3.5.4 Warren County

During the period of 1990 to 1999, the population of Warren County grew roughly at the same rate as the state's population.

The region will probably continue to grow at a rate above the state average. Much of the growth will continue to be in Rutherford County.

### 3.6 ECONOMIC TRENDS

The economic conditions of the region are based upon a review of U.S. Census Bureau data.

#### 3.6.1 Cannon County

While the population grew by 6% from 1995 to 1998, the work force employed in the county fluctuated and ultimately declined by 7%. The number of non-farm establishments held steady during this period. Taxable retail sales during the period from 1995 through 1998 increased by 36%. Largest employers in the county include:

|                       |               |
|-----------------------|---------------|
| Crane                 | 140 employees |
| Stones River Hospital | 185 employees |
| School system         | 300 employees |



### 3.6.2 Coffee County

During the years of 1995 through 1998, the work force employed in the county grew by 10%. The sectors with above average growth included construction, wholesale trade, and retail trade. The growth rate in number employed in the county was greater than the average population growth rate for the state during the period of 1990 to 1999. Taxable retail sales during the period from 1995 through 1998 increased by 344%

The largest employers in the county include:

|                              |               |
|------------------------------|---------------|
| Batesville Casket Company    | 597 employees |
| M-TEK, Inc.                  | 490 employees |
| PCA Apparel Industries       | 250 employees |
| TEMCO Fireplace Prod., Inc.  | 245 employees |
| Medical Center of Manchester | 200 employees |

### 3.6.3 Rutherford County

Rutherford County is one of the fastest growing counties in Tennessee. Economic data provided by the Business and Economic Research Center at MTSU indicates the growth rate for Rutherford County is well above that for the state and the country. Consider the following data:

Table 3-7: Rutherford County Employment Rates

| Total Employment and Month-to-Month Growth Rate for U.S., Tennessee, and Nashville MSA |             |             |           |             |               |             |                   |             |
|--|-------------|-------------|-----------|-------------|---------------|-------------|-------------------|-------------|
| Date   | USA         | Growth Rate | Tennessee | Growth Rate | Nashville MSA | Growth Rate | Rutherford County | Growth Rate |
| 1992   | 117,610,527 |             | 2,305,897 |             | 510,712       |             | 64,882            |             |
| 1993   | 119,301,382 | 1.4%        | 2,365,709 | 2.6%        | 532,109       | 4.2%        | 67,599            | 4.2%        |
| 1994   | 123,046,859 | 3.1%        | 2,513,250 | 6.2%        | 572,306       | 7.6%        | 72,707            | 7.6%        |
| 1995   | 124,873,274 | 1.5%        | 2,561,987 | 1.9%        | 599,255       | 4.7%        | 76,132            | 4.7%        |
| 1996   | 126,710,833 | 1.5%        | 2,625,350 | 2.5%        | 605,442       | 1.0%        | 79,873            | 4.9%        |
| 1997   | 129,579,583 | 2.3%        | 2,619,333 | -0.2%       | 605,017       | (0.1%)      | 82,728            | 3.6%        |
| 1998   | 131,470,167 | 1.5%        | 2,662,392 | 1.6%        | 625,600       | 3.4%        | 87,327            | 5.6%        |

The unemployment rate in the county has been low, as can be seen in the following data: 1995 – 3.6%; 1996 – 3.5%; 1997 – 3.8%; and 1998 – 2.9%.

The major employers by number of employees includes the following:

|                                       |                 |
|---------------------------------------|-----------------|
| Nissan Motor Manufacturing Corp., USA | 6,200 employees |
| Rutherford County Government          | 2,985 employees |
| Ingram Book company                   | 2,300 employees |
| Whirlpool Corporation                 | 2,000 employees |
| Bridgestone/Firestone, Inc.           | 1,900 employees |
| MTSU                                  | 1,670 employees |

|                                 |                 |
|---------------------------------|-----------------|
| City of Murfreesboro            | 1,324 employees |
| Alvin C. York Veterans          | 1,260 employees |
| Middle Tennessee Medical Center | 1,000 employees |

During the period from 1995 through 1998, taxable retail sales increased by 53%.

Economic growth in the county could be a major factor in the growth and composition of the waste stream. Considering that the growth rate for Rutherford County was typically at least twice the national average and well above the state average, it could be assumed that the waste stream would be impacted by this growth. While many of the major industries have implemented sound waste reduction programs, as documented in the industrial source reduction program implemented by the Central Tennessee Solid Waste Region, many smaller and medium sized businesses may have not developed recycling and source reduction programs.

### 3.6.4 Warren County

During the period from 1995 to 1998, the workforce employed in the county fluctuated and ultimately declined by 10%.

The largest employers in the county include:

|                                  |                 |
|----------------------------------|-----------------|
| Carrier Corporation              | 1,375 employees |
| MagneTek                         | 925 employees   |
| Bridgestone/Firestone, Inc.      | 825 employees   |
| Calsonic Yorozu Corporation      | 800 employees   |
| Sunbeam-Oster Specialty Products | 800 employees   |
| Findlay Industries               | 500 employees   |
| Aquatech, Inc.                   | 365 employees   |
| Dezurik Corporation              | 295 employees   |
| Powermatic                       | 190 employees   |
| Burroughs-Ross-Colville, Inc.    | 175 employees   |
| Bouldin and Lawson               | 115 employees   |

Taxable retail sales during the period from 1995 through 1998 increased by 50%.

U.S. Census Bureau data used in review of economic conditions include:

1. 1998 County Business Profile for Cannon, TN; Coffee, TN; Rutherford, TN; Warren, TN
2. 1997 Economic Census: Summary Statistics
3. State and County *QuickFacts*

Tennessee Department of Revenue data used include:

1. Retail Sales by County and by Retail Classification, For January – December 1998 – Research Report #3, dated April 23, 1999
2. Retail Sales by County and by Retail Classification, For January – December 1995 – Research Report #3, dated October 24, 1996

### 3.7 TOP CONTRIBUTORS TO THE WASTE STREAM

The following table indicates the top potential contributors to the waste stream. Records are not kept for individual waste generators. Surveys of these organizations during the preparation of this report indicates 1) a reluctance to provide data, and 2) a lack of data. Many of the industries listed in Table 3-8 were surveyed for the preparation of the Industrial Waste Reduction Support Program in 1995 and 1995. The results of the survey also indicate that many organizations did not track waste quantities.

Table 3-8: Top Contributors to the Waste Stream

| Contributor               | Contact Name  | Telephone Number | Waste Types              | 1999 Tonnage (estimated) |
|---------------------------|---------------|------------------|--------------------------|--------------------------|
| <b>Cannon County</b>      |               |                  |                          |                          |
| Smith's Cee Bee           | -             | (615) 563-4082   | Mixed comm./food         | 5%                       |
| Crane                     | -             | (615) 563-4800   | Mixed Ind.               | U                        |
| Hospital                  |               | (615) 563-4001   | Med/ofc/food             | U                        |
| School                    | -             | (615) 563-5752   | Ofc/food                 | U                        |
| <b>Coffee County</b>      |               |                  |                          |                          |
| PCA Apparel               | -             | (931) 728-3281   | Textiles/ofc             | U                        |
| Harton Hospital           | -             | (931) 393-3000   | Med/ofc/food             | U                        |
| <b>Rutherford County</b>  |               |                  |                          |                          |
| Alvin C. York VA Hospital | -             | (615) 893-1360   | Mixed Ind. – Hosp        | 4.5%                     |
| Middle TN Medical Ctr     | -             | (615) 849-4100   | Mixed Ind-Hosp           | NR                       |
| MTSU                      | -             | (615) 898-2300   | Mixed                    | 0.8%                     |
| Nissan Motor Manu. Corp.  | Emily Henry   | (615) 459-1400   | Mixed Ind - Auto         | 6%                       |
| Pillsbury                 | Marilyn Smith | (615) 890-9900   | Mixed Ind                | 2%                       |
| Astro/Procraft            | -             | (615) 890-1593   | Mixed Ind – non haz spec | 1.3%                     |
| OMC Fishing Boat Group    | -             | (615) 895-5190   | Mixed Ind                | 1.8%                     |

|                          |              |                |                  |      |
|--------------------------|--------------|----------------|------------------|------|
| Vintec Corp.             | Donna Roland | (615) 895-8060 | Mixed Ind        | 4%   |
| Inter-City Prod. Corp.   | -            | (615) 793-4194 | Mixed Ind        | 0.5% |
| Ruth. Co. Public Schools | Principals   | (615) 893-5612 | Mixed Ofc        | U    |
| Bridgestone/Firestone    | Barry Harper | (615) 793-7581 | Mixed Ind        | U    |
| Warren County            |              |                |                  |      |
| Warren Co. School system | -            | (931) 668-5858 | Mixed Res.       | U    |
| Riverpark Hospital       | -            | (931) 815-4000 | Mixed Comm       | U    |
| Shoneys                  | -            | (931) 473-8941 | Mixed Comm       | U    |
| Nursery Industry         | -            | -              | Mixed<br>Ag/Comm | U    |

Notes:

1. NR – No Responses – Southern Consulting attempted to determine the tonnage but was unable to obtain data from the organization
2. U – Unavailable – The Industrial Waste Reduction Support Program, June 1996, listed the industry but did not provide a tonnage for the industry.

In 1995 and 1996, the region conducted an Industrial Waste Reduction Support Program (IWRSP). The program was identified as a required task in the region's original solid waste plan. In general, the program consisted of surveying industries to determine waste stream quantities and existing reduction efforts, conducting seminars to inform industries representatives of the program, and providing on-site evaluation of individual industries. The First Year Final Report states "It is apparent that as a whole, industry in the Region has substantially reduced the amount of solid waste created and landfilled since 1989, the baseline year established by the State. Our best estimates indicate that a solid waste reduction rate of at least 45% has been achieved by industries seen thus far in the program." However, while it was surmised that a reduction rate was achieved as a result of the IWRSP, no reduction in total region Class I Waste was observed and no documented diversion data was presented in the IWSRP Final Report. Furthermore, the program saw low attendance at the seminars with only 31% of attendees at the seminars actually representing industry. Based upon the results of the first year program, the region opted not to continue the program in subsequent years.

### 3.8 CLEAN UP AND LITTER PREVENTION PROGRAMS

Each county utilizes the litter grant program. The following table identifies the contact person and general use of funds.

Table 3-9 Litter Grant Contacts

| County     | Contact              | Telephone      | Use of Funds           |
|------------|----------------------|----------------|------------------------|
| Cannon     | Thea Prince          | (615) 563-4443 | Clean up and education |
| Coffee     | Wannella Ingleburger | (931) 723-5139 | Clean-up and education |
| Rutherford | Shirley Jones        | (615) 898-7745 | Clean-up and education |
| Warren     | Penny Medley         | (931) 473-2505 | Clean-up and education |

### 3.9 USE OF THE "ECONOMIC GROWTH ADJUSTMENT FORMULA

Using the economic formula to measure waste reduction will provide the region with a more equitable representation of waste reduction. As discussed earlier in the chapter, Rutherford County is one of the fastest growing counties in the state. The economic model appears to more accurately reflect the waste reduction efforts made in the county.

For the Central Tennessee Solid Waste Region, the use of the economic growth model will result in approximately a ten percent reduction compared to use of the population driven model.

### 3.10 USE OF 1995 BASE YEAR

The region was assigned a base year tonnage of 247,043 tons for 1995. The new base year tonnage does not impact the region significantly. The region and counties in the region need to reduce their waste streams to meet the 25% reduction rate. Proposed reduction efforts will be discussed in Chapter 5, Recycling and Chapter 6, Disposal.

Options for changing the base year and the methodology by which waste reduction are measured are now being reviewed by the Division of Community Assistance. A potential change in the base year is to allow each county to choose the best base year between 1989 and 1995. The potential change in calculating waste reduction is to allow counties to choose between a per capita reduction and diversion rate based on diverted and MSW tonnages. The region should track these developments and consider how they affect any proposed reduction programs.

### **3.11 CURRENT REDUCTION EFFORTS IN EACH COUNTY**

The summary of waste reduction efforts was taken from the 1999 Annual Progress Report. The information in the annual progress report represents current reduction efforts in each county. In general, each county is working individually on waste reduction efforts. Typically, all programs are funded through solid waste fees or transfers from each locality's general fund, which is supported by local taxes. For more information regarding funding refer to Chapter 2, Section 10, Fees Associated with Solid Waste Services. A list of the collection sites and materials collected is included in Table 3-10 (p. 38). A map identifying drop-off and disposal sites in the regions may be found on page 12.

#### **3.11.1 Cannon County**

The county continued operations of the recycling center. Materials accepted at the center include cardboard, newspaper, and aluminum cans. Newspaper collection bins have been placed at Westside School, Woodbury Grammar School, and Cannon County High School. A trailer to be used for the collection of aluminum cans is rotated among all the schools to encourage participation in the program. Materials are marketed through RMCET.

The county continues to provide for collection of problem wastes. The county participates in the state household hazardous waste program. The last event was held on October 23, 1999 and 1,677 lbs. of materials were received. Two locations are available for used oil drop off. The county participates in the states tire rebate program and used tire are processed by TTRI.

#### **3.11.2 Coffee County**

Coffee County has continued its many programs aimed towards waste reduction including: operating a recycling center, upgrading the existing recycling program, working with Keep Coffee County Beautiful, sponsoring community activities, and collecting problem wastes.

The county and the City of Manchester operate a joint recycling center. The center accepts clear, brown and green glass; Nos. 1 and 2 plastic; newspaper; mixed office paper; corrugated cardboard; and gray cardboard. The center is open Saturday mornings and Wednesday afternoons.

The county continues to provide for collection of problem wastes. During the last year, the county held a Household Hazardous Waste day on May 1, 1999 in which 3,730 lbs. of materials were collected. A second event was held on September 18, 1999 in which 11,121 lbs. of materials were received. Seven locations have been established to accept used oil. The county continues to contract with TTRI for tire processing.

Keep Coffee County Beautiful sponsors many programs in the county to educate citizens and promote waste reduction. Many of these programs are completed in conjunction with the Rural Coffee County Solid Waste Department and the City of Manchester. A list of the programs completed in 1999 includes:

1. Business cardboard recycling program – volunteers meet with business owners to discuss the benefits of Manchester's commercial cardboards recycling program and encourage businesses to participate.
2. America Recycles Day – speak to school, civic groups, and Chamber of Commerce meetings regarding the importance of increasing recycling efforts and ask people to sign pledge cards to participate in recycling.
3. Boxing Day/Clean Closet – Recycle gift boxes and any unwanted clothing after Christmas.
4. Litter Free Fair and Old Timers Day – volunteers hand out litter bags which contain information about proper waste disposal and recycling at the county fair and Old Timers Day.
5. School programs- provide education programs for grades K – 12.
6. Schools recycling contest – Contests for recycling held twice a year in the schools.
7. Public Lands Day – volunteers clean a public place once a year.
8. Great American Cleanup – County wide clean up held I April of each year.

AEDC continued its extensive recycling program and operations of the Class IV landfill. The base was able to offset approximately 40% of the operating costs for the recycling program through the sale of recyclables. A list of accomplishment at AEDC includes the following:

1. Completed training for 78 employees regarding municipal solid waste.
2. Created a homepage on the local internet, created and publicized a recycling customer survey, and created a general recycling pamphlet.
3. Began a collection program for bulk Styrofoam with 150 lbs. Collected in 1999.
4. Initiated a drum recycling program with 411 – 55 gallon drums recycled.
5. Conducted a pilot recycling program for paper towels. The study was successful and the program will be expanded to several buildings.
6. Began collections of #1 and #2 bottles in two buildings. Other buildings will be included in 2000.

### 3.11.3 Rutherford County

Rutherford County continued operation of the Class IV landfill, began using state Option 3 for tire disposal, and continued accepting recyclables at the convenience centers. Southeast Paper Recycling continues to operate a newspaper collection system in the county.

The county continues to provide for collection of problem wastes. Ten used oil collection sites are available for public use. Two household hazardous waste collection events were held in Rutherford County in 1999. The first event held on May 1, 1999 netted 33,800 pounds and the second event held on September 18, 1999 netted 39,711 pounds. In July 2000, the county contracted with Tennessee Tire Recyclers to process waste tires.

The City of Murfreesboro continues its existing waste reduction programs. The city operates a recycle drop off center. Materials collected at the center are identified in Table 3-10. The city also continues to collect and mulch brush. During 1999, the city developed a video to promote newspaper and aluminum can recycling in the schools.

Recycle Rutherford continues to take an active role in the county's solid waste management. The group sponsored several collection drives for magazines, telephone books, Christmas trees, Christmas cards, and white paper. Recycle Rutherford works with businesses such as Shelbyville Recycled Fibers and groups such as Goodwill to increase recycling opportunities in the county. The organization also conducts quarterly meetings and invites speakers to provide information about new recycling technologies or businesses in the community. The group has established a web page that became operational 1999.

#### 3.11.4 Warren County

During 1999, Warren County continued to enhance existing programs and promote solid waste awareness. The county continued to promote educational programs. On a daily basis the county staff speak with organizations such as civic groups, banks, and industries. They also encourage groups to participate in the "Adopt-A-Highway" program. The county also distributes car litter-bags to convenience stores. They also speak with grocery stores requesting they distribute flyers about littering, convenience center location and hours, and recycling.

The county continues to provide for collection of problem wastes. Seven used oil collection sites are located in the county. The county continues to participate in the household hazardous waste program sponsored by the state. An event was held on September 25, 1999 and netted 21,264 pounds. The county contracts with TTRI for tire processing.

The City of McMinnville continues to operate a cardboard collection program. Additionally, the city instituted a yard waste collection program. The city collects yard waste materials and contracts with a private firm to grind all the material.



### 3.11.5 Region

The region through its contract with MTSU and SWEPT continued to provide solid waste education services. Programs such as "Talkin' Trash in the Community" were presented many times in each county in the region. Other activities conducted under the SWEPT program include providing in-service training for teachers, conducting "Papermaking" seminars, working with many scout groups, conducting the "Wiggle with Worms" seminars, and working with many civic and business organizations to promote awareness of solid waste issues.

Table 3-10: CENTRAL TENNESSEE SOLID WASTE PLANNING REGION CONVENIENCE CENTERS

| CONVENIENCE CENTER   | PERMIT          | ADDRESS                                      | TELEPHONE      | RECYCLABLES   |
|--|-----------------|--|----------------|---|
| <b>CANNON COUNTY</b>   |                 |  |                |   |
| Woodbury CC/TS   | SWP-08-000-0187 | 201 Alexander Drive, Woodbury, TN, 37190     | (615) 563-4922 | Corrugated cardboard, newspaper, aluminum cans              |
| Center Hours: Monday, Tuesday 7:00 a.m. – 3:30 p.m.; Wednesday - Closed; Thursday, Friday 9:30 a.m. – 6:00 p.m.; Saturday 8:00 a.m. – 4:30 p.m.; Sunday 12:00 p.m. – 4:30 p.m. |                 |  |                |   |
| <b>COFFEE COUNTY</b>   |                 |  |                |   |
| Beech Grove  | CCC-16-102-0044 | 90 Oscar Crowell Rd, Beech Grove, TN 37018   | (931) 723-0916 | OCC, ONP, Aluminum cans, Scrap metal                        |
| Belmont  | CCC-16-102-0045 | 4120 New Tullahoma Hwy, Manchester, TN 37355 | (931) 723-3908 | OCC, ONP, Aluminum cans, Scrap metal                        |
| Blanton's Chapel   | CCC-16-102-0046 | 4412 Power's Bridge Rd, Manchester, TN 37355 | (931) 723-3819 | OCC, ONP, Aluminum cans, Scrap metal                        |
| Hillsboro  | CCC-16-102-0047 | 416 Winchester Hwy, Hillsboro, TN 37342      | (931) 596-3405 | OCC, ONP, Aluminum cans, Scrap metal                        |
| Jones Elementary   | CCC-16-102-0042 | 2050 Riley Creek Rd, Tullahoma, TN 37388     | (931) 393-3236 | OCC, ONP, Aluminum cans, Scrap metal                        |
| New Union  | CCC-16-102-0041 | 177 Brandon Rd, Manchester, TN 37355         | (931) 723-3905 | OCC, ONP, Aluminum cans, Scrap metal                        |
| Ninth Model  | CCC-16-102-0043 | 105 Fountain Grove Rd, Manchester, TN 37355  | (931) 723-4554 | No Recyclables  |
| North Coffee   | CCC-16-102-0040 | 75 Cantrell Lane, Manchester, TN 37355       | (931) 723-2966 | OCC, ONP, Aluminum cans, Scrap metal                        |
| Summitville  | CCC-16-102-0048 | 90 School St, Summitville, TN 37382          | (931) 728-9838 | OCC, ONP, Aluminum cans, Scrap metal                        |
| Asbury   | CCC-16-102-0135 | 2922 Hillsboro Hwy, Manchester, TN 37355     | (931) 723-0916 | OCC, ONP, Aluminum cans, Scrap metal, tires (Thursday only) |
| Center Hours: Monday, Wednesday, Friday, Saturday 6:00 a.m. – 11:00 a.m., 2:00 p.m. – 6:00 p.m.; Sunday 1:00 p.m. – 5:00 p.m.  |                 |  |                |   |

## RUTHERFORD COUNTY

|   |                 |   |                |   |
|---|-----------------|---|----------------|---|
| Almaville   | CCC-75-102-0269 | 7693 Almaville Rd, Murfreesboro, TN, 37129        | (615) 895-3835 | Aluminum cans, scrap metal, OCC, newspaper, magazines                     |
| Eagleville  | CCC-75-102-0272 | Hwy 41A S, Eagleville, TN, 37060                  | (615) 274-3240 | Aluminum cans, scrap metal, OCC, newspaper, magazines                     |
| Lascassas   | CCC-75-102-0274 | Lascassas Hwy, Lascassas, TN                      | (615) 273-2693 | Aluminum cans, scrap metal, plastic, newspaper, magazines                 |
| Sand Hill Road  | CCC-75-102-0279 | Sand Hill Rd, La Vergne, TN 37086                 | (615) 793-5159 | Aluminum cans, scrap metal, plastic, newspaper, carpet padding, magazines |
| Weakley Lane  | CCC-75-102-0281 | Weakley Lane, Smyrna, TN 37167                    | (615) 355-4944 | Aluminum cans, scrap metal, OCC, ONP, plastic, magazines                  |
| Christiana  | CCC-75-102-0443 | Route 231 S, Christiana, TN 37037                 | (615) 904-6906 | Aluminum cans, scrap metal, plastic, newspaper, magazines                 |
| Bradyville  | CCC-75-102-0271 | 6615 Bradyville Pike, Murfreesboro, TN 37130      | (615) 890-6979 | Aluminum cans, scrap metal, newspaper, magazines                          |
| Epps Mill   | CCC-75102-0273  | 6271 Epps Mill Road, Murfreesboro, TN 37130       | (615) 896-6950 | Aluminum cans, scrap metal, newspaper, magazines                          |
| Cranor Road   | CCC-75-102-0270 | 1567 Cranor Road, Murfreesboro, TN 37130          | (615) 896-6657 | Scrap metal, newspaper, magazines   |
| Leanna  | CCC-75-102-0275 | 4303 Sulphur Springs Road, Murfreesboro, TN 37130 | (615) 890-8531 | Aluminum cans, scrap metal, newspaper, magazines                          |
| Rock Springs (Midland)  | CCC-102-0276    | 4040 Midland Road, Murfreesboro, TN 37130         | (615) 893-1086 | Aluminum cans, scrap metal, newspaper, carpet padding, magazines          |
| Rock Crusher  | CCC-75-102-0277 | 3895 Shelbyville Highway, Murfreesboro, TN 37129  | (615) 895-2676 | Aluminum cans, scrap metal, newspaper, carpet padding, magazines          |
| Walter Hill   | CCC-75-102-0260 | 5362 Lebanon Pike, Murfreesboro, TN 37129         | (615) 896-8828 | Aluminum cans, scrap metal, newspaper, magazines                          |
| Rockvale  | CCC-75-102-0278 | 8923 Rockvale Road, Rockvale, TN 37153            | (615) 274-2609 | Aluminum cans, scrap metal, newspaper, magazines                          |
| Murfreesboro CC   | Not App.        | 648 W Main St, Murfreesboro, TN 37129             | (615) 893-3681 | OCC, ONP, Clear glass, PET, Oil   |
| Daylight Savings Center Hours: Tuesday, Wednesday, Friday 10:00 a.m. - 6:00 p.m.; Saturday, Sunday 8:00 a.m. - 4:00 p.m.; Monday, Thursday - Closed |                 |   |                |   |
| Standard Center Hours: Tuesday, Wednesday, Friday, Saturday, Sunday 9:00 a.m. - 5:00 p.m.; Monday, Thursday - Closed                                |                 |   |                |   |
| Murfreesboro Center Hours: Monday through Saturday 8:00 a.m. - 4:00 p.m.  |                 |   |                |   |

## WARREN COUNTY

|   |                 |  |                |  |
|---|-----------------|--|----------------|--|
| Campaign  | CCC-89-000-0078 | Campaign, TN, 38550                          | (931) 686-8422 | Corrugated cardboard, newspaper, magazines, aluminum cans  |
| Centertown  | CCC-89-000-0083 | Line Street, McMinnville, TN, 37110          | (931) 939-2864 | Corrugated cardboard, newspaper, magazines, aluminum cans  |
| Green Hill  | CCC-89-000-0084 | Hwy 56, Dibrell, TN 38581                    | (931) 934-3091 | Corrugated cardboard, newspaper, magazines, aluminum cans  |
| Earlyville  | CCC-89-000-0081 | Short Mountain Road, McMinnville, TN, 37110  | (931) 668-4693 | Corrugated cardboard, newspaper, magazines, aluminum cans  |
| Fairgrounds   | CCC-89-000-0094 | Fairgrounds Road, McMinnville, TN 37110      | (931) 473-0853 | Corrugated cardboard, newspaper, magazines, aluminum cans, oil, scrap metal, office mix paper, tires |
| Fairview  | CCC-89-000-0093 | Hwy 56, McMinnville, TN 37110                | (931) 668-4602 | Corrugated cardboard, newspaper, magazines, aluminum cans  |
| Highway 8   | CCC-89-000-0394 | Harrison Ferry Mtn Rd, McMinnville, TN 37110 | (931) 815-2957 | Corrugated cardboard, newspaper, magazines, aluminum cans  |
| Morrison  | CCC-89-000-0079 | Morrison, TN 37357                           | (931) 635-3014 | Corrugated cardboard, newspaper, magazines, aluminum cans  |
| Rock Island   | CCC-89-000-0085 | Rock Island Road, Rock Island, TN 38581      | (931) 686-8422 | Corrugated cardboard, newspaper, magazines, aluminum cans  |
| Rowland Station/Starlight   | CCC-89-000-0082 | Starlight Road, TN                           | (931) 668-8479 | Corrugated cardboard, newspaper, magazines, aluminum cans  |
| Smartt  | CCC-89-000-0080 | Smartt, TN 37378                             | (931) 668-8264 | Corrugated cardboard, newspaper, magazines, aluminum cans  |
| Viola   | CCC-89-000-0182 | Hwy 108, Viola, TN 37394                     | (931) 635-2481 | Corrugated cardboard, newspaper, magazines, aluminum cans  |
| Midway  | CCC-89-000-0181 | Rock Island Road, Rock Island, TN 38581      | (931) 686-8413 | Corrugated cardboard, newspaper, magazines, aluminum cans  |
| Center Hours - Fairgrounds: Monday, Tuesday, Thursday, Friday 6:00 a.m. - 7:00 p.m.; Saturday 6:00 a.m. - 2:00 p.m.;                              |                 |  |                |  |
| Center Hours - All others: Monday, Thursday, Saturday 6:00 a.m. - 2:00 p.m.; Tuesday, Friday 11:00 a.m. - 6:00 p.m.; Wednesday, Saturday - Closed |                 |  |                |  |

## Chapter 4 Collection and Transportation

### 4.1 COLLECTION SERVICES

The following list of collection services was taken from the needs assessments.

Table 4-1: Collection Services

| Service:                 | Available to:               | Paid for by:               | Description:         |
|--------------------------|-----------------------------|----------------------------|----------------------|
| <b>Cannon County</b>     |                             |                            |                      |
| Door to Door             | Woodbury                    | Residential Collection Fee | Throughout city      |
| Door to Door             | South part of County        | Indv Customers             | Private haulers      |
| Convenience Center (CC)  | County                      | County Taxes               | 1 in Woodbury        |
| <b>Coffee County</b>     |                             |                            |                      |
| Door to Door             | Manchester                  | LocalGovt/Customer         | Throughout city      |
| CC                       | Rural Residents             | Local Govt Taxes           | 10 Throughout county |
| <b>Rutherford County</b> |                             |                            |                      |
| Door to Door             | Murfreesboro                | Local govt                 | Throughout city      |
| CC                       | Rutherford County Residents | Local govt                 | 14 Throughout county |
| Private                  | Business/Residences         | Indv. Account              | Waste Management     |
| Private                  | Business/Residences         | Indv. Account              | BFI                  |
| <b>Warren County</b>     |                             |                            |                      |
| Door to Door             | McMinnville                 | Cust. Water Bills          | Throughout city      |
| Door to Door             | Morrison                    | City Taxes                 | Throughout city      |
| Door to Door             | McMinnville & Co.           | Indv. Customers            | B & W Sanitation     |
| CC                       | Warren Co.                  | Co. Taxes                  | 13 throughout co.    |

## 4.2 COLLECTION ASSURANCE REQUIREMENTS

Each county in the region meets the collection requirements of the Solid Waste Management Act of 1991. The minimum number of centers is determined as follows:

- 1) Number of convenience centers equals the service area (area of county) in square miles divided by 180; or
- 2) Number of convenience centers equals the service area (county) population divided by 12,000 people.

Table 4-2: Collection Assurance Requirements

| County     | Population<br>1999 | Square Miles | Centers Req'd |     | Actual No.<br>Centers |
|------------|--------------------|--------------|---------------|-----|-----------------------|
|            |                    |              | Pop           | SM  |                       |
| Cannon     | 12,248             | 266          | 1             | 1.5 | 1                     |
| Coffee     | 28,129             | 429          | 2             | 2   | 11                    |
| Rutherford | 171,401            | 619          | 14            | 3   | 15                    |
| Warren     | 36,421             | 433          | 3             | 2.4 | 13                    |

## 4.3 COLLECTION NEEDS AND TRENDS

The following needs were identified in the needs assessment for each county. In general the systems in place will not change as long as the overall solid waste systems remain as they are today. Changes in collection may need to occur if any locality chooses to implement new programs. A discussion of proposed changes relative to proposed changes in disposal and waste reduction follows in Chapter 4.

### 4.3.1 Cannon

Due to the size and population of the county, no new convenience center is needed at this time. Based upon population and square mileage calculations, only one center is required in the county. Accordingly, the county has not planned to develop another facility. The Town of Woodbury provides curbside collection for residents and businesses.

The county has noted a potential issue in disposal of waste at the convenience centers by property owners who do not reside in the county. As an example, a person who owns land in the county but does not reside in the county would not be allowed to leave waste (generated at his property in the county) at the convenience center. This issue exists for two reasons: 1) only vehicles with a county wheel sticker are allowed to dispose of waste at county convenience centers and 2) the solid waste budget is funded through the county property tax. A proposed resolution for this issue is included in Section 4.4 of this chapter.

#### 4.3.2 Coffee County

The City of Manchester and the county have indicated issues associated reporting by its collection and disposal contractor. Each entity believes the data reported is not accurate and state data is not reported in a timely manner.

#### 4.3.3 Rutherford

Even though the county offers a greater number of convenience centers than required, the county still has trouble handling the waste stream volume. To alleviate some of the problem, the county is adding a second compactor unit at all sites and will add collection trucks. Each convenience center is closed two days per week and at this time, the county has no plans to change this schedule. Additionally, the county does not have plans to develop any new convenience centers.

The City of Murfreesboro reports that the existing collection system appears to be working well. The city does not plan any major changes in the next five years.

#### 4.3.4 Warren

The county plans to pursue separation and to also pursue plastic recycling.

### 4.4. PROPOSED CHANGES IN COLLECTION

#### 4.4.1 Cannon County

The only issue for collection identified from the needs assessments was identified in Cannon County. The issue involves a property owner not being allowed to dispose of waste in the county. To eliminate this potential problem, the county should:

1. Provide written passes for landowners who pay property taxes but who do not reside in the county.
  - a. Passes are provided in person at the courthouse.
  - b. Passes are provided for one time use.
2. Advertise the program.
  - a. Add a note to the property tax bill explaining the program.
  - b. Advertise the program in the local paper.

#### 4.4.2 Coffee County

To resolve the above issues, the city should consider including reporting requirements in future disposal/collection contracts. Information is presented in Section 5.5.5, Agreement for Refuse and Recycle Collection, (page 58) of this report. The sample agreement identifies specific reporting requirements. The city and county should incorporate language similar to this in any new disposal and/or collection contracts.

# Chapter 5 Recycling

## EXISTING SYSTEM

### 5.1 RECYCLING COORDINATORS

The individuals listed below are charged with maintaining records of materials and quantities recycled. All individuals have other responsibilities with their respective localities.

Table 5-1: Recycling Coordinators

| Locality          | Contact                 | Title                  | Address                                       | Number         |
|-------------------|-------------------------|------------------------|---|----------------|
| Cannon County     | Thea Prince             | Volunteer              | 1023 Curlee Church Rd<br>Readyville, TN 37149 | (615) 563-4443 |
| Woodbury          | N/A                     |                        |   |                |
| Coffee County     | Wannella<br>Ingleburger | Recycle<br>Coordinator | 1110 Madison St<br>Manchester, TN 37355       | (931) 723-5139 |
| Manchester        | Debbie Moffitt          | Recycle<br>Coordinator | Manchester, TN 37355                          | (931) 728-6903 |
| Rutherford County | Becky Smith             | SW Coordinator         | 1120 W College St<br>Manchester, TN 37355     | (615) 898-7739 |
| Murfreesboro      | Bud Klika               | Sanitation Director    | PO Box 1739<br>Murfreesboro, 37133            | (615) 893-3681 |
| LaVergne          | Rita Engle              | PW Department          | 5093 Murfreesboro Rd<br>LaVergne, TN 37086    | (615) 793-3768 |
| Smyrna            | Chuck Boyett            | PW Director            | 315 S Lowry Street<br>Smyrna, TN 37167        | (615) 459-2553 |
| Warren County     | Steve Hillis            | Sanitation Director    | PO Box 639<br>McMinnville, TN 37110           | (931) 473-6874 |
| McMinnville       | Brad Hennessey          | Asst PW Dir.           | 1266 Belmont Drive<br>McMinnville, TN 37110   | (931) 473-2553 |

### 5.2 WASTE REDUCTION PROGRAMS IN THE REGION

Localities within the region undertake many activities during 1999 to achieve the waste reduction goal. Activities undertaken in the region are discussed by locality. For contact and address information, refer to Table 5-1. For information regarding drop-off sites, refer to Table 3-10.



### 5.2.1 Cannon County

The county continued operations of the recycling center. Materials accepted at the center include cardboard, newspaper, and aluminum cans. Newspaper collection bins have been placed at Westside School, Woodbury Grammar School, and Cannon County High School. A trailer to be used for the collection of aluminum cans is located at Westside School. Materials are marketed through RMCET.

### 5.2.2 Coffee County

Coffee County has continued its many programs aimed towards waste reduction including: operating a recycling center, upgrading the existing recycling program, working with the Keep Coffee County Beautiful, sponsoring community activities, and collecting problem wastes.

The county and the City of Manchester operate joint recycling center. The center accepts clear, brown and green glass; Nos. 1 and 2 plastic; newspaper; mixed office paper; corrugated cardboard; and gray cardboard. The center is open Saturday mornings and Wednesday afternoons. The site is located at Manchester Drop-Off Center, Coffee County Government Administrative Plaza, McArthur Drive, Manchester, TN 37355

The Keep Coffee County Beautiful (KCCB) sponsored many programs in the county to educate citizens and promote waste reduction. Many of these programs are completed in conjunction with Rural Coffee County solid waste and the City of Manchester. A list of the programs includes:

1. Business cardboard recycling program – volunteers meet with business owners to discuss the benefits of Manchester's commercial cardboards recycling program and encourage businesses to participate.
2. America Recycles Day – Offer presentations to school, civic groups, and Chamber of Commerce meetings regarding the importance of increasing recycling efforts and ask people to sign pledge cards to participate in recycling.
3. Boxing Day/Clean Closet – Recycle gift boxes and any unwanted clothing after Christmas.
4. Litter Free Fair and Old Timers Day – volunteers hand out litter bags which contain information about proper waste disposal and recycling at the county fair and Old Timers Day.
5. School programs - provide education programs for grades K – 12.
6. Schools recycling contest – Contests for recycling held twice a year in the schools.
7. Public Lands Day – volunteers clean a public place once a year.
8. Great American Cleanup – County-wide clean up held in April of each year.

AEDC continued its extensive recycling program and operations of the Class IV landfill. The base was able to offset approximately 40% of the operating costs for the recycling program through the sale of recyclables. A list of accomplishment at AEDC includes the following:

1. Completed training for 78 employees regarding municipal solid waste.
2. Created a homepage on the local internet, created and publicized a recycling customer survey, and created a general recycling pamphlet.
3. Began a collection program for bulk Styrofoam with 150 lbs. collected in 1999.
4. Initiated a drum recycling program with 411 – 55 gallon drums recycled.
5. Conducted a pilot recycling program for paper towels. The study was successful and the program will be expanded to several buildings.
6. Began collections of #1 and #2 bottles in two buildings. Other buildings will be included in 2000.

### 5.2.3 Rutherford County

Rutherford County continued operation of the Class IV landfill, reviewed options for waste tires, and continued accepting recyclables at the convenience centers. Southeast Paper Recycling continues to operate a newspaper collection system in the county. The City of Murfreesboro developed a video to promote newspaper and aluminum can recycling in the schools.

Recycle Rutherford continues to take an active role in the county's solid waste management. The group sponsored several collection drives for magazines, telephone books, Christmas trees, Christmas cards, and white paper. Recycle Rutherford works with businesses such as Shelbyville Recycled Fibers and groups such Goodwill to increase recycling opportunities in the county. The organization also conducts quarterly meetings and invites speakers to provide information about new recycling technologies or businesses in the community. The group has established a web page that became operational 1999. Finally, the group continues to operate four recycle drop-off sites. The locations of these sites are as follows:

Kroger Northfield, 1776 Northfield Blvd, Murfreesboro, TN, 37129  
Kroger South Tennessee, 831 S Tenn Blvd, Murfreesboro, 37130  
Kroger North Lowery, 297 N Lowry, Smyrna, 37167  
Kroger South Lowery, 567 S Lowry, Smyrna, 37167

### 5.2.4 Warren County

During 1999, Warren County continued to enhance existing programs and promote solid waste awareness. The county continued to promote educational programs. On a daily basis the county staff speak with organizations such as civic groups, banks, and industries. They also encourage groups to participate in the

convenience stores. They also speak with grocery stores requesting they distribute flyers about littering, convenience center location and hours, and recycling.

The City of McMinnville continues to operate a cardboard collection program. Additionally, the city instituted a yard waste collection program. The city collects yard waste materials and contracts with a private firm to grind all the material.

### 5.3 Evaluation of Existing Recycling Program

Waste reduction programs are not implemented at the regional level but rather by each locality. The following discussion summarizes the programs implemented by each county and city. The information regarding assistance needed is taken from each county needs assessment. The following needs were identified in the needs assessments, follow-up discussion with local personnel, internal quarterly reports prepared for the regional board, and population/economic data.

#### 5.3.1 Cannon County

While the county has met its reduction goal, the amount of waste reduced from year to year is not increasing significantly. The county has been mulching for almost three years. The state could assist the counties with more grant money (convenience center grants). More media education would also help.

The county utilizes RMCET to market materials.

#### 5.3.2 Coffee County

“The progress is the City of Manchester implemented a new cardboard pick-up for the city and its businesses. There are cardboard dumpsters at all the convenience centers but one. The only setback is garbage in the recycling bins.” (From Needs Assessment)

The county utilizes established markets for its recyclables. These markets include Coffee County Recycling, Cash for Cans, Shelbyville Recycle Fibers, and Pelham’s Iron and Metal.

#### 5.3.3 Rutherford County

The county has made steady progress in increasing the recycling opportunities for citizens. All convenience centers now have collection bins for at least metals and corrugated cardboard. Southeast Paper recycling has established approximately 30 recycling drop-offs for collection of paper and corrugated cardboard. Recycle Rutherford provides on-going recycling opportunities at four Krogers and special recycling collection drives for items such as a Christmas Trees, Christmas cards, and magazines. The county is planning to add bins at the convenience centers to collect additional items. Milestones for expanding the program have not been developed at

recycling collection drives for items such as a Christmas Trees, Christmas cards, and magazines. The county is planning to add bins at the convenience centers to collect additional items. Milestones for expanding the program have not been developed at this time. Private recyclers such as BFI and Clark Iron and Metal have been operating as usual for the past five years. No significant changes have been implemented in these programs.

The county would like to consider several issues for improvement. Some of these issues will be relatively easy to address while others, due to costs and effort required, will be more difficult to address.

1. Currently, several schools in the county are recycling; however, the volume of materials collected is not recorded. The county is working with the schools to address this issue.
2. Some convenience centers are better at handling and preparing white goods and large items for recycling. Several items have been returned to the county because they were not properly prepared. The county is trying to educate center operators to reduce the amount of white goods returned to the county.
3. Since Champion left the county and was replaced by Southeast Paper Recycling, the number of bins for mixed paper has dropped. The county would like to see more drop off centers developed.
4. The county would like to see a sorting facility developed locally. Ultimately, the county would like assistance from the state in investigating sorting facilities and obtaining funding for a facility.
5. The county is having some problems with the contractor responsible for maintaining the recycling bins. The county is working to ensure the bins are emptied in a timely manner and on a regular basis.
6. A comprehensive education program has not been established by the county.

The City of Murfreesboro identifies the need for a second recycle drop off center in the north end of the city as its major need in this area.

#### 5.3.4 Warren County

“The setbacks have occurred from the economics of recycling markets. The prices for recyclables make it hard to be cost effective. The county would like to expand the programs that are already in place and initiate a plastic recycling program. They would also like to promote mulching among the nursery industry. The county plans to push separation harder and to also push plastic recycling.” (From Needs Assessment)

## 5.4 RECYCLE LOCATIONS

Existing Locations include the convenience centers listed in Table 3-10 and those identified in Table 5-2 below.

Table 5-2 Recycle Drop Off Locations

Coffee County

Coffee/Manchester DO Center, McArthur Street, Manchester, TN 37355

Rutherford County

Kroger Northfield, 1776 Northfield Blvd, Murfreesboro, TN, 37129

Kroger South Tennessee, 831 S Tenn. Blvd, Murfreesboro, 37130

Kroger North Lowery, 297 N Lowry, Smyrna, 37167

Kroger South Lowery, 567 S Lowry, Smyrna, 37167

Southeast Paper has many bins stationed in the region for collection of newspaper. A list of these sites is not included in this report.

**5.5 REVIEW OF BUSINESS RECYCLING**

During the preparation of the 1995 base year tonnage and the five-year update, Southern Consulting called all the industries in the region and many small businesses. The results of our calls indicate that most large companies (by number of employees) had well established recycling and waste reduction programs. Smaller businesses appeared to have less formal recycling programs and often no recycling programs. The surveys were informal and no statistics can be derived from the information gathered. Some of the results include:

Table 5-3 Business Recycling

| County                          | No. Businesses Contacted | Recycle - Yes |    |     | Recycle - No |    |    |
|---------------------------------|--------------------------|---------------|----|-----|--------------|----|----|
|                                 |                          | #             | M  | A   | #            | M  | A  |
| Coffee<br>(Excluding Tullahoma) | 31                       | 22            | 28 | 99  | 9            | 9  | 27 |
| Rutherford                      | 192                      | 100           | 40 | 204 | 47           | 25 | 48 |
| Warren                          | 65                       | 26            | 43 | 192 | 20           | 14 | 26 |

Notes:

1. M – Mean number of employees
2. A – Average number of employees

Table 5-3 indicates that smaller businesses (by number of employees) may not implement recycle programs the same rate as larger businesses. The number of businesses contacted is greater than the total number reporting “yes” or “no” to having a recycle program. Some businesses contacted would not provide data or provided incomplete data. The businesses reporting yes may only recycle one commodity such as

corrugated cardboard. Cannon is not included in the table because the number of industries was relatively small compared to the other counties. While the information is not conclusive, it does indicate that the majority of industries in the region have recycle programs and that larger industries recycle at a greater rate than small industries.

## **5.6 POTENTIAL WASTE REDUCTION OPTIONS**

Since the waste reduction goal has not been met, waste reduction is the primary issue for the region. For preparation of the five-year update, several options for waste reduction were considered. Options that we are discussing include:

1. MRF
2. Class IV landfill
3. Composting
4. Vermiposting
5. Regulation/Ordinance
6. Recycling Special Products

### **5.6.1 MRF**

A private recycling company is planning to open a MRF in Murfreesboro in 2001. The owners plan to process approximately 600 to 800 tons of recyclables per month. Currently, Rutherford collects approximately 125 tons of mixed paper, corrugated cardboard, aluminum cans, steel cans, and plastic per month. (Average based upon the quantities collected for July, August, and September 2000) Based upon 1999 data, Murfreesboro collected approximately 110 tons per month of these same materials. BFI and Waste Management collect corrugated cardboard from businesses in the county. The company expects to take some of the market of those recyclables being hauled to Nashville. As such, Rutherford County will not realize a 600 to 800 ton per month reduction. Reduction can be expected to be approximately 200 tons/month from recycling drop-offs. Recommend increasing recycling opportunities and education to increase recycling to 10%

The reduction achieved from presence of a MRF in the county will depend primarily on the addition of collection locations and/or increased opportunities at all drop-off sites and increased education. Recycle opportunities need to be more convenient to small businesses. Also, residents and businesses need to be educated regarding the importance of recycling and the opportunities for recycling in the county. Alliance Recycling states that they can provide bins for the drop off location to increase recycling opportunities. Once additional collection capacity is available, the county needs to aggressively advertise the recycling drop off locations and encourage recycling. Refer to Chapter 8, Solid Waste Education, for a discussion of education activities.

## 5.6.2 Class IV Landfill

Two Class IV landfills operate in the region. The first in Rutherford County accepts waste from the public and contractors in the county. The second at Arnold Air Force Base accepts only CDD waste generated on the base. The improvements to be made with this program are with the Rutherford Class IV Landfill. During 1999, only one percent of waste generated in Rutherford County was disposed of in the Class IV landfill. Based upon the results of the waste characterization study, 13.6% of the waste stream should qualify for disposal in the Class IV landfill.

Increasing the tonnage accepted at the landfill will aid the county and the region in achieving the reduction goal. Also, the county will receive increased revenues that will help offset the cost of landfill operations. Currently, the operating costs for the facility are \$660,000 while the tonnage accepted during 1999 was 1737. The resultant cost per ton for disposal was \$380.

Changes to be made to increase the tonnage accepted at the facility include:

1. Install scales at the landfill
2. Implement a tipping fee that is competitive with other disposal facilities.
3. Change hours of operation to be convenient for waste haulers, etc.
4. Advertise location, operating schedule, and materials accepted at the facility.

## 5.6.3 MSW Composting

The use of composting has been discussed by the Central Tennessee Solid Waste Regional Board as one potential alternative method (alternative to Class I Landfilling) for municipal waste disposal. In addition to providing a potential disposal method for class I wastes, the process of composting is an approved "waste diversion" technology. Therefore this technology or process could be considered as both a "diversion" process as well as a "disposal" process. The discussion presented herein is intended to provide a description of the composting process and the estimated costs.

The composting process in general terms is comprised of the decomposition of organic waste by bacteria, fungi, yeast, and actinomycetes. The composting process can be performed in an aerobic environment (i.e. with oxygen) or in an anaerobic environment (i.e. without oxygen). The byproducts of the aerobic composting process include carbon dioxide gas, water, and a decomposed organic material-humus. The byproduct of the anaerobic composting process includes potentially offensive odors, methane and other gasses (generally inert gases), carbon dioxide, and humus. Anaerobic composting is a slower process, thereby requiring a greater land area when compared to aerobic operations and produces offensive odors. Anaerobic composting will not be further discussed due to the above mentioned negative characteristics and the general lack of commercially available systems.

The resulting humus product is approximately 40 percent by weight of the original waste. The humus material is considered to be a beneficial soil amendment, not fertilizer. The most common methods for performing composting are discussed below.

#### 5.6.3.a In Vessel Composting

In vessel composting is the process of composting the organic waste in a vessel. A commonly known "in vessel" composting process is the Bedminster Process. The Bedminster Process includes processes in addition to the digester, and is discussed in greater detail in Appendix E

The Bedminster Company has undergone changes in regards to the company ownership and is now currently owned by European Company. The transition to an international company has increased the types of ancillary processes that are/or will be improving the overall economic viability. New processes that will be or are now being introduced to the Bedminster systems are: gasification of the non-compostable organic fraction (the plastics etc.) and pelletizing of the composted product with the addition of nitrogen, phosphate and potassium.

The gasification process is intended to reduce the electricity demand from the processing facility, while the pelletizing of the composted product with the addition of fertilizer is intended to improve the marketability of the end product. The pelletized waste is marketed as a soil amendment and slow release fertilizer.

#### 5.6.3.b Windrow Composting

Windrow composting in general terms is comprised of open air composting. In the windrow process, the compostable waste is placed in long rows, "windrows", and managed by turning the waste to promote aeration. There are numerous derivatives of the process including systems with air injected into the windrow. The process requires a large land area due to the relatively slow composting of the material (slow when compared to the in vessel process).

The windrow composting process in addition to the land requirements for administrative functions, operations and maintenance functions, requires approximately 1 acre per 50 tons of organic waste material (to be composted). The windrow process produces offensive odors difficult to control. The windrow process is probably not a viable waste disposal or waste diversion alternative process, due to the relatively large land area required and the offensive nature of the process.

#### 5.6.3.b Cost

The cost for the in vessel system is a function of the anticipated and actual quantity of waste processed through the system. The cost associated with a Bedminster facility is a function of the size of the facility constructed. The "cost" of a system should include the capital costs (costs of construction) and the operating and maintenance costs.



Bedminster has licensed the process to various vendors in the United States and abroad with the following costs provided by "Waste Options, Inc."

Table 5-3 MSW Composting Costs without Residual Waste Disposal

- Current Class I disposal CNTN Region 300,000 TPY (Tons per Year)
- Minimum size of facility 100 TPD (36,000 TPY)
- Sewage Sludge may be accepted at a Ratio of one ton sludge (dewatered) to two tons MSW at no increase in facility size or cost.
- Property requirement @100TPD 5+ acres (1 acre for structures, 4 acres for storage)
- Property requirement @300TPD 40+ acres (3+ acre for structures, 37 acres for storage)
- Capital Cost borne (by operator)
- Tipping fees would be based on a minimum tonnage (i.e. a "Put or Pay")
- Tipping Fee (at 36,000 TPY) \$55+

Table 5-4 MSW Composting Cost Including Residual Waste Disposal

The composting process will provide a useable product and a residual waste requiring disposal. In general, the residual waste is comprised of inorganic materials (metals) and organic synthetic materials (plastic bags, bottles etc.).

The residual waste will be approximately 40% (by weight) of the total influent waste weight. However, with an aggressive recycling program both ahead of the composting facility and as part of the facility, the residual waste may be reduced to as little as 15 percent.

The cost of disposal, therefore, must address the final disposition of the residual waste. The following is an example of the theoretical costs associated with a 100 ton class I wastestream:

***Minimal Recycling***

|                           |                                   |
|---------------------------|-----------------------------------|
| MSW quantity              | 100 ton                           |
| Residual Waste            | 40 ton (100 x 40%)                |
| Compost Tipping Fee       | \$5,500                           |
| Residual Disposal Fee     | \$1,000 (40 x \$25/ton)           |
| Total Fee                 | \$6,500                           |
| <b>Total Cost per ton</b> | <b>\$65 per ton (100/\$6,500)</b> |

***Maximized Recycling***

|                     |                    |
|---------------------|--------------------|
| MSW quantity        | 100 ton            |
| Residual Waste      | 15 ton (100 x 15%) |
| Compost Tipping Fee | \$5,500            |

|                           |                                   |
|---------------------------|-----------------------------------|
| Residual Disposal Fee     | \$375 (15 x \$25/ton)             |
| Total Fee                 | \$5,875                           |
| <b>Total Cost per ton</b> | <b>\$59 per ton (100/\$5,875)</b> |

As you can see, the success of a recycling program would translate to potential money savings.

#### 5.6.4 Vermipost

##### 5.6.4.a Process

Vermipost is similar to composting and in general terms is comprised of the decomposition of organic waste by worms (typically red worms). The byproducts of the composting process include carbon dioxide gas, water, and a decomposed organic material-castings.

The resulting humus/castings product is approximately 40 to 60 percent by volume of the original waste. The humus material is considered to be a beneficial soil amendment, not fertilizer.

##### 5.6.4.b Applicability to Region

The use of a vermipost system was evaluated since the waste stream characterization indicating that food waste represents approximately 9.8% of the region's waste stream. The review focused on the Murfreesboro area since the city is home to three high schools, a university, and two hospitals. Each of the institutions listed was called to determine the quantity of food waste disposed of each location. The original idea was to establish a vermipost system using food waste from the high schools. The schools were chosen since the waste is under county control. Composting food wastes at other locations such as the hospitals or MTSU could only be suggested not mandated. The information gathered indicates that currently a vermipost system may not be feasible.

The results of the survey are as follows:

1. High Schools – All food waste is placed in the sink disposal. No food waste is placed in the waste bins.
2. Veterans Hospital – Food waste is placed in the sink disposal. All other wastes such as cans, paper products, and other miscellaneous wastes are placed in a dumpster together.
3. Middle Tennessee Medical Center – Did not respond to request for information.
4. MTSU – A representative of the university states that due to the high cost of food, the school tries to limit food waste. Leftovers are typically planned into the next day's menu. If any food remains after this process, it is then placed in the sink disposal.

Based upon the survey results, the quantity of food waste generated is approximately 3,000 tons per year.

In addition to conducting the survey, Southern Consulting also estimated the food waste stream based on information presented in the 1999 Statewide Characterization Study, dated December 1999 and prepared for the California Integrated Waste Management Board. The results of this study indicate that the disposal rate in restaurants is 3.1 tons/person/year and that 56% of the restaurant waste stream is food waste. Based upon this data, Rutherford County would dispose of approximately 8,000 tons per year of food waste. Results of the survey and calculations using the California data are included in Appendix F. The complete California study may be viewed on line at [www.ciwmb.gov/wastechar/bizdata.htm](http://www.ciwmb.gov/wastechar/bizdata.htm).

Enough food waste exists to utilize a vermipost system, however, collecting the waste and transporting to a central location may prove too costly.

Should the region consider developing a vermipost system, two options exist:

1. Establish an anchor location such as MTSU or MTMC and institute a voluntary system for participation for other businesses.
2. The county installs the system in a central location (such as the Class IV landfill) and institutes a voluntary system for participation.

The Vermipost system is already used in the Central Tennessee Solid Waste Region. The Arnold Engineering Development Center currently uses the vermipost technology to assist in the processing of food waste from on-site restaurants. Should the region choose to implement Vermipost as a waste reduction technique, the system is being presented herein is one potential alternative method. In addition to providing a potential disposal method for Class I waste, the process of vermipost is an approved "waste diversion" technology. Therefore this technology or process could be considered as both a "diversion" process as well as a "disposal" process. The discussion presented herein is intended to provide a description of the vermipost process and the estimated costs.

Even If the region never chooses to implement a vermipost system, the region and localities in the region can encourage businesses and institutions to consider reducing food waste. Further discussion on this issue is included in Section 6, Recycling Special Products, of this chapter.

#### 5.6.4.c Vermitech System

The Vermitech System utilizes common technology to promote the efficient composting of organic waste with worms. The system is discussed in greater detail in Appendix G.

In general the system is comprised of a vessel or chamber housing the organic waste and red worms. The system temperature is controlled with a thermostatically controlled ventilation system. The system should only be used to compost a select and controlled organic waste. The introduction of non organic waste may prove toxic to the biomass and/or reduce the decomposition rates. In addition to the biomass vessel, the Vermitech system employs a waste shredder to mix and process the waste prior to introduction into the biomass vessel.

The Vermitech system should only be considered for use with a select waste stream. The quality of the waste stream should be controlled or controllable. The use of this system appears to be best suited for a single industrial sector, i.e. restaurant waste, institutional food waste etc.

#### 5.6.4.d Cost

The cost for the in Vermitech system is shown below along with the approximate capacity of the system.

Table 5-5: Vermitech Costs

|                      | <b>Capacity<br/>Lbs/day</b> | <b>Capital Cost<br/>\$1,000's</b> | <b>Yearly Labor Cost<br/>(@\$15/hour)</b> |
|----------------------|-----------------------------|-----------------------------------|---|
| V-50.4 School System | 30-50                       | 18                                | \$2,800                                   |
| V-150.16             | 100-200                     | 35                                | \$4,000                                   |
| V-200.24             | 150-250                     | 42                                | \$5,500                                   |
| V-250.32             | 200-300                     | 49                                | \$6,800                                   |
| V-300.4              | 250-350                     | 57                                | \$9,600                                   |
| V-350.48             | 300-400                     | 64                                | \$11,000                                  |
| V-400.56             | 350-450                     | 70                                | \$12,300                                  |
| V-450.64             | 400-500                     | 78                                | \$15,000                                  |
| V-500.72             | 450-550                     | 85                                | \$16,400                                  |
| V-550.8              | 500-600                     | 93                                | \$17,800                                  |

#### 5.6.5 Diversion By Regulation/Ordinance

The Central Tennessee Solid Waste Regional Board has discussed the use of diversion by regulation. The adoption of this practice while not proposed by the 5 Year Update to the Solid Waste Regional Plan is presented in the event that future waste diversion practices are not successful and new methodologies must be explored/considered.

The Ordinances included herein, are presented as examples for reference only. Obstacles to their successful implementation should be addressed prior to their consideration in the future. The sample ordinances included in appendices of this report address "Pay as You Throw", waste restrictive ordinances, and mandatory recycling.

#### 5.6.5.a Cardboard Restriction Putnam County, TN

Putnam County in Tennessee has enacted an ordinance to restrict the disposal of industrial and commercial waste disposal of cardboard. The sample included herein is a copy of the motion by the County Commission. Refer to Appendix H for a copy of this motion.

#### 5.6.5.b Construction Debris Restriction, Coweta County, Georgia

The county enacted an ordinance restricting the disposal of construction debris and waste on private property. Often contractors will bury debris such as stumps and scrap building materials on a construction site. This debris can have a negative impact on future construction. The ordinance prohibits this type of activity. A copy of the ordinance is included in Appendix I.

#### 5.6.5.c Chicago High Density Residential And Commercial Source Reduction and Recycling Ordinance, Chicago, IL

The City of Chicago Illinois, enacted an ordinance to improve recycling at commercial and office establishments to 30% by weight, high density residential buildings to 12% by weight, and to promote a 25% recycling goal for haulers and recycling service providers. A copy of the ordinance is included in Appendix J. A summary of the ordinance's requirements follows:

##### 1. High Density Residential

The ordinance requires those owners of high-density residential buildings implement and offer the residents an "effective recycling program". The ordinance provides penalties in the form of withholding refuse rebates. The ordinance also defines minimum criteria for meeting the definition of an "effective recycling program". The criteria include the requirement that the program provide for the collection of a minimum of two items from a defined list of recyclable components.

Additionally, the ordinance requires a subsequent implementation of an additionally collection of one new recyclable component or include the addition of two or more source reduction measures.

##### 2. Office and Commercial Establishments

The ordinance requires those owners of office buildings and commercial establishments implement and offer the tenants an "effective recycling program". The ordinance also defines minimum criteria for meeting the definition of an "effective recycling program". The criteria include the requirement that the program provide for the collection of a minimum of two items from a defined list of recyclable components.

Additionally, the ordinance requires a subsequent implementation of an additionally collection of one new recyclable component or include the addition of two or more source reduction measures.

### 3. Hauler Requirements

The ordinance provides that as a condition of receiving/renewing licensure requirements, the hauler must provide certification associated with recycling activities. The haulers must certify that all material separated for recycling are in fact delivered to an appropriate recycling processor.

The ordinance also provides requirements for accurately reporting quantities of materials and other notification requirements including contamination reported to customers.

#### 5.6.5.d "Pay As You Throw"

Pay as you throw is a term used for a type of system in which the waste generator (e.g. the homeowner) pays for waste disposal as a function of the quantity of waste actually disposed. The intent of this type of system is to immediately demonstrate to the waste generators the positive economics of reducing the quantity of waste generated and disposed. The CNTN Solid Waste Board has discussed these types of systems and do recognize the potential benefits, however, in a rural environment, the risk of illegal disposal should be considered.

Athens Clarke County Georgia received much notoriety associated with their Pay as You Throw (PAYT) program due to articles published in waste journals. The ordinance adopted by the County is included in Appendix K along with a few articles published about the ordinance.

#### 5.6.5.e Agreement for Refuse and Recycling Collection

A copy of an agreement for a locality in Georgia and a private waste collection company is included in Appendix L. This agreement contains specific provisions for reporting MSW and recycling tonnages, remedies for customer complaints, collection schedules, and many other issues. Monthly and yearly reports are to be filed and must include information on tonnages, recycling participation rates, education initiatives, and recommendation for program changes.

#### 5.6.5.f Solid Waste Ordinances

Two solid waste ordinances, Coweta County, Georgia and Oconee County, Georgia, are included in Appendix M. These ordinances contain provisions franchises for waste collection, litter control, landfill restrictions, etc.

#### 5.6.5.g Potential Obstacles

The potential obstacles to implementation associated with regulating diversion included, the potential for increased illegal waste disposal activities, an increase in recyclable materials with no recyclable program in place for management, etc. Appendix N contains information from the California Integrated Waste Management Board regarding the pros and cons of "Pay As You Throw" programs.

#### 5.6.6. Recycling Special Products

Members of the regional board and local solid waste staff asked that the five-year update address the recycling of specific products. A summary for each product is provided in this section and additional information for many products is provided in appendices following this report.

##### 5.6.6.a Electronics

Due to decrease in the value of electronic components, many items are being landfilled. Opportunities for recycling electronic components exist in the state. One such opportunity is the Oak Ridge National Recycle Center (TORNRC) located in Oak Ridge, Tennessee. Information regarding the company and materials they accept is included in Appendix O. In general the company accepts any kind of electronics such as computers, televisions, video-cassette recorders, radios, hazardous materials, and heavy metals. A fee from \$.10 to \$.50 is charged for brown goods (televisions, etc.)

Under their "Asset Recovery Program," the company will pay for computers, which are in good working order. The company encourages others to participate in the asset recovery program. The company will provide financial incentives for you to help them increase materials collected under the asset recovery program.

The company maintains a web site ([www.oakridgerecycle.com](http://www.oakridgerecycle.com)) with additional information about the services it provides.

The region can consider the following options for electronics recycling:

1. Hold collection drives to correspond with HHW collection events.
2. Establish a central collection site in each county.
3. Place a drop off box for these materials at manned drop off centers.

An article entitled "Electronics Reuse and Recycling" prepared by the EPA is included in Appendix P. This article provides general information about electronics recycling issues, case studies, and contacts for more information.

#### 5.6.6.b Wire Fencing

Cash For Cans in Manchester, Tennessee provides for the collection of wire fencing. All materials must be brought to the company's office in Tullahoma. Fencing materials must be rolled or compacted as best as possible.

#### 5.6.6.c Pesticides

For a discussion of the collection of pesticides, refer to Chapter 7, Problem Wastes.

#### 5.6.6.d Yard Waste

The solid waste characterization completed for the region solid waste plan indicates that approximately 8.0 % of the region's waste stream is yard waste. Currently, approximately 4.2% of the region's waste stream was reported as yard waste. A summary of yard waste reduction programs follows:

Table 5-6: Yard Waste Reduction Programs – 1999

| COUNTY     | TONNAGE  | PROGRAM                                |
|------------|----------|--|
| Cannon     | 142.50   | Mulch                                  |
| Coffee     | 5768.14  | Compost – Manchester                   |
| Rutherford | 7505.50  | Mulch – Murfreesboro, LaVergne, Smyrna |
| Warren     | 4454.00  | Mulch – McMinnville                    |
| Region     | 17870.14 | All Programs                           |

While the region may have reduced the amount of yard waste entering the Class I waste stream, additional reductions may be made. Assuming the region has reduced the yard waste component of the overall waste stream by 53%, the remaining yard waste component would represent 13,900 tons per year (1999 reported tonnage). By keeping the remaining yard waste out of Class I landfills, the region could potentially reduce its Class I waste stream by 4.7%.

Each city providing curbside collection (except Woodbury) also provides collection of leaves and/or brush. Manchester contracts with H.L. Johnson Mulch Co. to compost these materials. Murfreesboro utilizes its own chipper to process brush. McMinnville contracts with Ecology Systems to chip yard waste. Each system appears to work well for its respective locality.



At this time, increased yard waste reduction should be achieved by developing education programs aimed at reducing yard waste. An education program should be geared towards increasing participation in the existing yard waste programs and keeping yard waste out of the Class I waste stream. An education program should define yard waste, appropriate disposal methods, and existing opportunities for disposal. The program should fall under the purview of all regional education programs as discussed in Chapter 8, Education. The program should emphasize grass-cycling and safe alternatives for fertilizers and pesticides. Additionally, the program should provide specific information regarding each locality's yard waste program and the importance of utilizing each program.

Grass-cycling is the natural practice of leaving clippings on the lawn when mowing. Practicing grass-cycling can reduce the amount of yard waste entering the Class I waste stream. Information regarding grass-cycling and landscaping waste reduction prepared by the Department of Environmental Protection, Montgomery County, MD; the California Integrated Waste Management Board; and the EPA is included in Appendix Q.

Many organic methods exist to control pests and promote healthy vegetation in yards and landscaped areas. Several gardening books and web sites are available that discuss these methods in depth. An education program should include information regarding the reduction of pesticides and other chemicals from use in yards. A sample listing is included below:

1. [www.bio-organics.com](http://www.bio-organics.com) provides organic alternatives to chemical pesticide, fungicides and fertilizers
2. [www.bugstore.com](http://www.bugstore.com) sells a variety of insects beneficial to gardening
3. [www.gardeners.com](http://www.gardeners.com) offers tools and supplies that earth friendly
4. [www.whitneyfarms.com](http://www.whitneyfarms.com) offers a selection of organic fertilizers and soils
5. [www.invisiblegardener.com](http://www.invisiblegardener.com) website for the Invisible Gardeners of America, an organization providing organic gardeners information and services
6. [www.NonprofitNet.com/cog/](http://www.NonprofitNet.com/cog/) Cluppers Organic Gardens -- an organization dedicated to promoting organic gardening; website provides tips on gardening and composting
7. [www.rain.org/~sals/our.html](http://www.rain.org/~sals/our.html) Our Garden -- provides tips on growing plants without chemical fertilizers or pesticides
8. [www.epa.gov/region04/air/pesticides](http://www.epa.gov/region04/air/pesticides) the site offers a pesticide newsletter featuring some articles about organic farming

#### 5.6.6.e Waste Wi\$e

Waste Wise is a program begun by the EPA in 1994 and is intended to encourage waste reduction by businesses, industries, and institutions. At this time nearly 1,000 organizations are members of the program. Waste Wise is voluntary, however, a three-year commitment is required and record keeping during this period is required. The program offers several benefits such as:

1. Information specialists will answer general program questions and specific technical questions regarding waste reduction.
2. An awards program recognizes outstanding achievements of participants.
3. Regional forums are held to recognize the efforts of participants and welcome new participants.
4. Periodic newsletters feature case studies of participants.
5. An on-site visit program offers assistance in developing reduction programs.
6. Publications provide case studies of participants, technical fact sheets, industry sector fact sheets, and general information about the program.

EPA maintains a website for the program at [www.epa.gov/wastewise](http://www.epa.gov/wastewise). The website contains publications and in depth information about the program. Also, the website provides links to many other websites for topics such as recycling, waste prevention, buy-recycled, and sustainable development.

Several recent WasteWi\$e articles are included in Appendix R.

#### 5.6.6.f Organics

As the survey of restaurants and review of California data indicates approximately 3,000 to 8,000 tons of food waste is potentially disposed of in Rutherford County each year. In addition to encouraging vermiposting at restaurants or institutions, the localities in the region should encourage food donation programs and composting.

Donation programs are operated such that food and food scraps are donated to food banks, shelters, or charitable organizations. Several well established food banks exist and can provide information about how to establish a donation program. Two of the more well known organizations are Second Harvest ([www.secondharvest.org](http://www.secondharvest.org)) and Foodchain ([www.foodchain.org](http://www.foodchain.org)) Other local options include Meals On Wheels, local churches, and the Nashville Union Rescue Mission.

Composting is defined as the controlled decomposition of organic material. The major advantage of composting over vermiposting is that it requires less capital costs. The benefits of composting are improved soil through the additions of the composted product, prevention of fertilizer run-off, and reduced disposal costs.

An EPA Waste Wise article regarding organic waste is included in Appendix S. The article provides additional resources for composting and food recovery.

## 5.7 PROPOSED CHANGES/ADDITIONS TO SYSTEM

The following changes are proposed for the region to reduce Class I waste.

### 5.7.1 Cannon County

#### 3. Obtain Accurate Disposal Data

Coordinate with disposal companies to obtain accurate data.

- Establish reporting requirements in new disposal/collection contracts.

#### 4. Establish education campaign

- Utilize existing staff to implement education initiatives.
- Work with other counties in the region to share ideas and costs to launch mass media initiatives.

Annual Cost \$ 0

#### Expand Waste Reduction Activities

- Add bins as needed to accept all common recyclables at the convenience center. (\$6,000/bin) Use grant monies to purchase bins.
- Add a bin to accept Class IV waste at the transfer station. This waste will be hauled to the Rutherford County Class III/IV landfill. Use recycle grant monies to purchase bins.
- Coordinate special collection drives for electronics, pesticides to coincide with HHW collection events
- Since the county appears to have achieved a 25% waste reduction, additional waste reduction activities will show a "Good Faith" effort to continue to reduce the waste stream and assist the region in achieving the reduction goal.

Capital Cost \$ 0

### 5.7.2 Coffee County

#### 1. Obtain Accurate Disposal Data

- Coordinate with disposal companies to obtain accurate data by weight and volume, limited to Manchester and Coffee County. Data must be maintained and furnished upon request to Coffee County Rural Solid Waste. Failure by disposal company to maintain and furnish accurate data may result in termination of contract.
- Establish reporting requirements in new disposal/collection contracts.
- Accurate data may result in as much as a ten percent reduction in the per capita rate.

- This task to be completed by the county and Manchester.

|                     |         |
|---------------------|---------|
| Estimated Reduction | 10%-15% |
| Annual Cost         | \$ 0    |

3. Establish education campaign

- Utilize existing staff to implement education initiatives.
- Education campaign should be continued with existing staff with emphasis on increased public awareness to recycling.
- Work with other counties in the region to share ideas and costs to launch mass media initiatives.

|                     |      |
|---------------------|------|
| Estimated Reduction | 5%   |
| Annual Cost         | \$ 0 |

(To be shared between county and city)

4. Expand Waste Reduction Activities

- Add bins as needed to accept all common recyclables at all convenience centers and recycling center
- Negotiate with BFI to accept Class IV and haul this waste to a Class IV landfill.
- If negotiations with BFI are not successful, then consider constructing a transfer station for collection of Class IV waste.
- Coordinate special collection drives for electronics, pesticides to coincide with HHW collection events.

|  |           |
|--|-----------|
| Estimated Reduction                                    | 13%       |
| Capital Cost (App. as exact no. bins needed not known) | \$ 60,000 |

5.7.3 Rutherford County

1. Obtain Accurate Disposal Data

- Coordinate with disposal companies to obtain accurate data.
- This task to be completed by the county and Murfreesboro.

2. Establish education campaign

- Utilize existing staff to implement education initiatives.
- If needed after one year, hire a full time employee. The county and McMinnville should share the expense of this task.
- Work with other counties in the region to share ideas and costs to launch mass media initiatives.
- Through education attempt to reduce the per capita rate by up to 5%.

- Work with other counties in the region to share ideas and costs to launch mass media initiatives.
- Through education attempt to reduce the per capita rate by up to 5%.

Annual Cost \$ 33,500  
 (To be shared equally between county and city)

3. Expand Waste Reduction Activities

- Add bins for the collection of brush at convenience centers.
- Smyrna and LaVergne operate recycle drop off facilities.
  - a. Each facility funded by each town.
  - b. Collect corrugated cardboard, newspaper, mixed paper, aluminum cans, steel cans, glass and plastic.
  - c. Operations are part time (25 hours per week) initially to determine need and most beneficial operating hours.
  - d. Include a bin for collection of construction and demolition waste at each site.

Capital Cost (County) \$ 84,000  
 Capital Cost (1 recycle center) \$ 60,000  
 Operating Cost (1 recycle center) \$ 12,200

4. Class IV landfill

- Install scales at the landfill
- Implement a tipping fee that is competitive with other disposal facilities
- Change hours of operation to be convenient for waste haulers, etc.
- Advertise location, operating schedule, and materials accepted at the facility

Annual Cost \$ 660,000  
 (Existing Operating Costs)

5. Composting

- If goal is not met within three years evaluate composting and/or ordinances
- Development of an MSW composting facility would not be considered for at least three years.

Annual Cost \$1,964,000

#### 5.7.4 Warren County

##### 1. Obtain Accurate Disposal Data

- At renewal of disposal contract, coordinate with disposal companies to obtain accurate data.
- Establish reporting requirements in new disposal/collection contracts.
- This task to be completed by the county
- Obtaining accurate data is not as great an issue in Warren County as the other counties in the region
- A sample contract with reporting requirements is included in the plan

|                     |      |
|---------------------|------|
| Estimated Reduction | 2%   |
| Annual Cost         | \$ 0 |

##### 2. Establish education campaign

- Utilize existing staff to implement education initiatives.
- If needed after one year, hire a part-time employee to work half time.
- The employee will coordinate with local businesses to increase recycling, launch advertising campaigns, organize special collection drives, act as a resource for industries that do not have in-house personnel, and disseminate information from the five-year update.
- The county and Manchester should share the expense of this task.
- Work with other counties in the region to share ideas and costs to launch mass media initiatives.

|  |           |
|--|-----------|
| Estimated Reduction                    | 5%        |
| Annual Cost                            | \$ 18,000 |
| (To be shared between county and city) |           |

##### 3. Expand Waste Reduction Activities

- Add bins as needed to accept all common recyclables at all convenience centers and recycling center (13 bins @ \$6,000/bin)
- Cooperate with city to establish Class IV waste collection center at transfer station.
- Coordinate special collection drives for electronics, pesticides to coincide with HHW collection events

|   |           |
|---|-----------|
| Estimated Reduction - Recycling                             | 5%        |
| Estimate Reduction – Class IV waste                         | 5%        |
| Capital Cost – Class IV Waste                               | \$ 26,600 |
| Annual Cost – Class IV Waste                                | \$ 8,640  |
| (Class IV waste costs to be shared between county and city) |           |
| Capital Cost – Bins   | \$ 78,000 |

### 5.7.5 Future Disposal Options

If goal is not met within three years the region should evaluate composting and/or ordinances.

#### 1. Composting

- Composting is one potential alternative method MSW disposal.
- Approved "waste diversion" technology.
- In vessel composting - process of composting the organic waste in a vessel, commonly known in vessel system - Bedminster Process
- Cost function of anticipated/actual quantity of waste & size of the facility constructed
- Costs include capital, operating and maintenance costs
- Bedminster has licensed the process to various vendors in the United States and abroad with the following costs provided by "Waste Options, Inc."

- Regional Class I disposal (1999) 300,000 TPY
- Minimum size of facility 100 TPD (36,000 TPY)
- Sewage Sludge may be accepted at a Ratio of one ton sludge (dewatered) to two tons MSW at no increase in facility size or cost.
- Property requirement @100TPD 5± ac. (1 ac. for structures, 4 ac. for storage)
- Property requirement @300TPD 40± ac. (3± ac. for structures, 37 ac. for storage)
- Capital Cost borne by operator
- Tipping fees would be based on a min. (.e. a "Put or Pay")
- Composting will provide a useable product and a residual waste requiring disposal
- Residual waste is comprised of inorganic materials (metals) and organic synthetic materials (plastic bags, bottles etc.)
- Residual waste will be approximately 40% (by weight) of the total influent waste weight
- With an aggressive recycling program both ahead of the composting facility and as part of the facility, the residual waste may be reduced to as little as 15 percent
- Disposal costs must address the final disposition of the residual waste
- Example of the theoretical costs:

|                           | <i>Minimal Recycling</i>          | <i>Maximized Recycling</i>        |
|---------------------------|-----------------------------------|-----------------------------------|
| MSW quantity              | 100 ton                           | 100 ton                           |
| Residual Waste            | 40 ton (100 x 40%)                | 15 ton (100 x 15%)                |
| Compost Tipping Fee       | \$5,500                           | \$5,500                           |
| Residual Disposal Fee     | \$1,000 (40 x \$25/ton)           | \$375 (15 x \$25/ton)             |
| Total Fee                 | \$6,500                           | \$5,875                           |
| <b>Total Cost per ton</b> | <b>\$65 per ton (100/\$6,500)</b> | <b>\$59 per ton (100/\$5,875)</b> |

|                          |             |
|--------------------------|-------------|
| Estimated Reduction      | 12%         |
| Annual Cost – Cannon     | N/A         |
| Annual Cost – Coffee     | \$245,000   |
| Annual Cost - Rutherford | \$1,964,000 |
| Annual Cost – Warren     | \$329,000   |

## 2. Regulation/Ordinance

The regulations presented below are examples of the region may consider in the future.

- Chicago high-density residential and commercial source reduction and recycling ordinance
  - Chicago enacted an ordinance to improve recycling at commercial and office establishments to 30% by weight, high density residential buildings to 12% by weight, and to promote a 25% recycling goal for haulers and recycling service providers.
  - As a condition of receiving/renewing licensure requirements, the hauler must provide certification associated with recycling activities. The haulers must certify that all material separated for recycling are in fact delivered to an appropriate recycling processor.
  - Provides requirements for accurately reporting quantities of materials and other notification requirements including contamination reported to customers.
- Pay as you throw
  - A type of system in which the waste generator (e.g. the homeowner) pays for waste disposal as a function of the quantity of waste actually disposed.
  - Intent is to immediately demonstrate to the waste generators the positive economics of reducing the quantity of waste generated and disposed.
  - In a rural environment, the risk of illegal disposal should be considered.
  - Athens Clarke County, GA: example ordinance



- Cardboard Restriction, Putnam County, TN: Restrict the disposal of industrial and commercial waste disposal of cardboard. Sample included in plan
  
- Agreement for Refuse and Recycling Collection
  - This agreement contains specific provisions for reporting MSW and recycling tonnages, remedies for customer complaints, collection schedules, and many other issues.
  - Monthly and yearly reports are to be filed and must include information on tonnages, recycling participation rates, education initiatives, and recommendation for program changes.

Costs estimates for each proposed program are included in Appendix T.

# Chapter 6 Disposal

## 6.1 REGIONAL DISPOSAL FACILITY

During the past five years, each county in the region has continued to contract for disposal services. Several localities have changed the disposal facility where waste is accepted.

The following disposal facilities and transfer stations are in operation in the region.

|   |  |
|---|--|
| Name of Facility:                       | Middlepoint Landfill                         |
| Owner:                                  | BFI  |
| Operator/Contact:                       | Bubba Smith                                  |
| Phone Number:                           | 615-896-2075                                 |
| Address/Location:                       | 750 E Jefferson Pike, Murfreesboro, TN 37130 |
| Classification of Landfill (I – IV):    | I  |
| Jurisdictions Served:                   | Region                                       |
| Permit Number:                          | SNL_751020219                                |
| Tipping fee per ton:                    | \$9.50/cy                                    |
| Special Tipping Fees? (list)            | Quoted on an individual basis                |
| Materials the facility receives/limits: | MSW/construction demolition debris (CDD)     |
| Does the Facility Produce Energy?       | Yes  |
| Transfer from Where to Where?           | N/A  |

|   |  |
|---|--|
| Name of Facility:                       | Rutherford County Landfill                 |
| Owner:                                  | Rutherford County                          |
| Operator/Contact:                       | Dainton Rahn                               |
| Phone Number:                           | 615-898-7874                               |
| Address/Location:                       | 6000 Landfill Road, Murfreesboro, TN 37130 |
| Classification of Landfill (I – IV):    | IV   |
| Jurisdictions Served:                   | county                                     |
| Permit Number:                          | DML 750000047                              |
| Tipping fee per ton:                    | \$9.00/cy                                  |
| Special Tipping Fees? (list)            | No   |
| Materials the facility receives/limits: | CDD  |
| Does the Facility Produce Energy?       | No   |
| Transfer from Where to Where?           | N/A  |

|                                      |                                   |
|--------------------------------------|-----------------------------------|
| Name of Facility:                    | Cannon County Transfer Station    |
| Owner:                               | Cannon County                     |
| Operator/Contact:                    | Linda Smitty                      |
| Phone Number:                        | 615-563-4922                      |
| Address/Location:                    | 201 Alexander Drive, Woodbury, TN |
| Classification of Landfill (I – IV): | I                                 |
| Jurisdictions Served:                | county                            |
| Permit Number:                       |                                   |

Tipping fee per ton: \$25.00/ton – private hauler  
 Special Tipping Fees? (list) No  
 Materials the facility receives/limits: Limits on shingles, tires, hazardous waste  
 Does the Facility Produce Energy No  
 Transfer from Where to Where? From county convenience center to BFI Middlepoint LF

Name of Facility: McMinnville Transfer Station  
 Owner: City of McMinnville  
 Operator/Contact: Bill Brock  
 Phone Number: (931) 473-1219  
 Address/Location: Sunset point Rd, McMinnville, TN 37110  
 Classification of Landfill (I – IV): I  
 Jurisdictions Served: county  
 Permit Number: SWP 890001062  
 Tipping fee per ton: \$25.00/ton  
 Special Tipping Fees? (list) No  
 Materials the facility receives/limits: Limits on tires  
 Does the Facility Produce Energy No  
 Transfer from Where to Where? From city to USA Waste Cedar ridge LF in Lewisburg, TN

## 6.2 EXPORTED/IMPORTED WASTE

The Class I waste exported from and imported to the region is identified in the table 6-1 below.

Table 6-1: Waste Imported/Exported into and out of the Region

### EXPORTS

| Exported to:<br>County/ State | Exported to:<br>Facility Name<br>And Owner | Estimated<br>Percentage of Total<br>Class I Waste<br>Generated in the<br>Region |
|-------------------------------|--|---|
| Benton County, TN             | W Camden LF, WMX                           | 14  |
| Marshall County, TN           | Cedar Ridge LF                             | 7   |

### IMPORTS

| Imported from:<br>County/ State | Imported to:<br>Facility Name<br>And Owner | Estimated<br>Percentage of Total<br>Class I Waste<br>Disposed at Facility |
|---------------------------------|--|---|
| Various Middle TN<br>Counties   | BFI Middlepoint Landfill                   | Not Known   |

### **6.3 DISPOSAL NEEDS**

Cannon County has a three year contract with BFI for disposal at Middlepoint landfill. The original tipping fee was established at \$25.00/ton.

In June 1998, Coffee County executed a five-year contract for disposal at the BFI Middlepoint Landfill.

The county and City of Murfreesboro receive free tipping at BFI Middlepoint Landfill through separate agreements with BFI. The county has no plans to change any aspects of disposal for the next five years. The City of Murfreesboro has expressed concern regarding the remaining life of the BFI Middlepoint Landfill. The city would like to consider the tasks and timeframe needed to establish a disposal system prior to the closure of the Middlepoint landfill.

McMinnville has a five-year contract that expires in 2002 to use the landfill for \$21.20/ton. Warren County has a contract through May 31, 2003 at \$23.75/ton.

### **6.4 DISPOSAL CAPACITY ASSURANCE**

All waste in the region over which the local governments have control is disposed of at the BFI Middlepoint Landfill or the USA Waste (Waste Management) Cedar Ridge Landfill. The Middlepoint landfill accepts 80% of the region's waste stream. It has been estimated that the Middlepoint Landfill has six to eight years of life remaining. Due to the relatively short life expectancy for the Middlepoint landfill, several localities in the region are interested in future disposal options.

Future disposal options include disposing of waste at another private facility, developing a waste-to-energy facility, or establishing an MSW composting facility. For the five-year update, the three disposal options listed above have been evaluated.

### **6.5 FINANCIAL ACCOUNTING**

No county in the region operates a Class I landfill, therefore, none of the counties utilizes an Enterprise Fund.

### **6.6 POTENTIAL DISPOSAL OPTIONS**

#### **6.6.1 Landfill**

Disposal at another private facility is dependent upon the location of the facility. Costs associated with disposal will include transportation costs. At this time, no new Class I landfills are planned in the region. Waste Management operates a Class I disposal facility in Benton County. The company operates a transfer station in Davidson County to serve the landfill located in Benton County. Waste Management is also planning to develop a new Class I disposal facility in Van Buren County. A rail spur is planned to

serve this facility. USA Waste (Waste Management) currently operates a Class I landfill in Marshall County (Cedar Ridge).

In finding disposal services, each locality will issue a request for bids from the area disposal firms. New landfills will be located out of the region. As such, the counties should require the disposal company to provide hauling to the landfill as part of the bid. The disposal company may then choose to develop a transfer station if one is needed.

#### 6.6.2 Waste-to-Energy

The second disposal option available is developing a waste-to energy facility. The use of Waste to Energy (WTE) facilities has been discussed by the Central Tennessee Solid Waste Regional Board as one potential alternative method (alternative to Class I landfilling) for municipal waste disposal. The discussion presented herein is intended to provide a description of the WTE process and the estimated costs.

The WTE process in general is the use of solid waste, in the context of this report, municipal solid waste (typical household garbage) as a combustible fuel in the production of energy. There are several methods in which waste is combusted. The waste may be processed to form pellets or unprocessed and burned in mass. The waste is combusted in a furnace producing heat that is then used to produce steam. The steam may be used directly (as with the Nashville Thermal Plant located in downtown Nashville) or to drive a turbine thereby producing electricity.

Included in Appendix U to this report are manufacture/vendor brochures describing the WTE system including schematic diagrams showing the typical WTE process (process flow diagram).

The cost for WTE systems is a function of the anticipated and actual quantity of waste processed (burned) through the system. The cost associated with a WTE facility is a function of the size of the facility constructed. The "cost" of a system should include the capital costs (costs of construction) and the operating and maintenance costs.

The costs presented in this report were obtained from two WTE operating vendors. In general, the costs and size information are outlined below:

Table 6-2 WTE Costs

- Current Class I disposal CNTN Region 300,000 TPY (Tons per Year)
- General size of facility 900 TPD (300,000 TPY)
- Property requirement 15± acres
- Capital Cost (generally by operator) \$100± million
- Tipping fees would be based on a minimum tonnage (i.e. a "Put or Pay") 300,000 TPY
- Tipping Fee (at 300,000 TPY) \$60±
- The tipping fee is offset with Electricity sales revenue \$0.05 per kWh assumed
- Potential Revenue from metal sales from ash \$10 per ton
  
- Ash requires disposal in Class I Landfill

6.6.3 MSW Composting

A discussion of an MSW composting facility is included in Chapter 5, Recycling. A larger facility will be required if the region chooses to use composting as its primary means for disposal rather than solely for waste reduction. The facility would be designed to accommodate the waste stream under local control. A facility serving the region will be required to process a minimum of 260 tons per day. Costs and land requirements for an MSW composting facility used for disposal are included in Table 6-3 below.

Table 6-3: MSW Compost for Disposal

| Waste Stream Under Local Control (1999) |                          |          |
|---|--------------------------|----------|
| County                                  | Annual Tonnage (rounded) | TPD (7)  |
| Cannon                                  | 4,650                    | 13       |
| Coffee                                  | 7,130                    | 20       |
| Rutherford                              | 64,800                   | 178      |
| Warren                                  | 18,800                   | 52       |
| Region                                  | 95,380                   | 263      |
| MSW Quantity                            |                          | 260      |
| Residual Waste                          |                          | 104      |
| Compost Tipping Fee                     |                          | \$11,700 |
| Residual Tipping Fee                    |                          | \$2,600  |
| Total                                   |                          | \$14,300 |
| Cost Per Ton                            |                          | \$55     |

The tonnage to be processed at the facility will be that waste stream which is currently under the control of the region. This waste includes Class I waste collected at convenience centers and waste collected through curbside programs by local governments. Waste collected by private haulers is not included in the estimates provided in Table 6-3.

Assuming a minimum requirement of 100 tons per day, an MSW composting facility is only feasible for the region or Rutherford County.

## Chapter 7 Problem Wastes

The counties in the Central Tennessee Solid Waste Planning Region provide for the collection of household hazardous wastes, waste tires, waste oil, automotive fluids, and lead acid batteries. Although not mentioned in the guidelines provided for the five-year update, the region is interested in the safe disposal of pesticides. A discussion of each waste type follows.

### 7.1 HOUSEHOLD HAZARDOUS WASTE EVENTS

Each county has offered at least one household hazardous waste event during each of the last two years. A summary of each event is provided below.

#### Cannon County –

|                  |  |
|------------------|--|
| October 23, 1999 | 1,677 lbs. of material   |
| October 24, 1998 | 2,637 lbs. of material, 62 households participated<br>(1.29% of total) |

#### Coffee County –

|                    |                         |
|--------------------|-------------------------|
| May 1, 1999        | 3,730 lbs. of material  |
| September 18, 1999 | 11,121 lbs. of material |
| April 4, 1998      | 10,260 lbs. of material |
| September 19, 1999 | 5,902 lbs. of material  |

#### Rutherford County –

|                    |                         |
|--------------------|-------------------------|
| May 1, 1999        | 33,800 lbs. of material |
| September 18, 1999 | 39,711 lbs. of material |
| May 2, 1998        | 26,439 lbs. of material |
| September 12, 1998 | 44,219 lbs. of material |

#### Warren County –

|                    |                         |
|--------------------|-------------------------|
| September 25, 1999 | 21,264 lbs. of material |
| October 3, 1998    | 8,445 lbs. of material  |

### 7.2 PERMANENT HOUSEHOLD HAZARDOUS WASTE FACILITY

None of the counties in the region has developed a permanent household hazardous waste collection facility. As part of the update, the potential for a permanent HHW collection site in Rutherford County was evaluated. In determining the feasibility, the costs and operations for the Knox County HHW collection facility were reviewed.



Information was gathered from Knox County solid waste department staff. Prior to building a permanent collection facility, the county participated in annual collection events. The last two events resulted in the following tonnages: April 5, 1997 - 45,351 lbs. of material and July 13, 1996 - 116,168 lbs. of material. During 1999 the county collected approximately 40 to 60 tons (80,000 to 120,000 lbs.).

Knox County reported the following information regarding costs associated with the center.

|                 |           |
|-----------------|-----------|
| Capital Costs   | \$400,000 |
| Operating Costs | \$100,000 |

The center requires two full time employees. The cost per ton for operations alone ranges from \$2,500 to \$1,667. Based upon the information provided by the Knox County, it appears that developing a permanent HHW collection site is not economical for Rutherford County.

### **7.3 RECOMMENDED CHANGES IN HHW EVENTS**

Counties in the region would like the state to provide two collection events per county per year. Allowing for collection of miscellaneous materials such as pesticides, bulky items, etc. would be favorable for each county as well. The localities fear that reducing the number of collection events will result in the illegal dumping of these wastes.

### **7.4 WASTE TIRES**

Each county in the region provides a location for waste tire collection. All the counties are utilizing Option 3 of the State waste tire grant program. The sites available for tire collection in the region include:

Table 7-1 Tire Collection Sites

Cannon County – County CC, 201 Alexander Drive, Woodbury, TN, 37190  
Coffee County – Asbury CC, 2922 Hillsboro Hwy, Manchester, 37355  
Rutherford County – Class III/IV LF, 6000 Landfill Rd, Murfreesboro, TN 37130  
Warren County - Fairgrounds Road, McMinnville, TN 37110

### **7.5 RECOMMENDED CHANGES IN WASTE TIRE COLLECTION**

Two changes in the state program are recommended by the localities in the region. Under the state program, counties would also like to be able to accept tires from salvage yards. Additional reimbursements for costs such as transportation have been requested.

## 7.6 WASTE TIRE DUMPS

A review of the needs assessments for each county indicates that waste tire dumps are not a significant issue in any of the counties.

Once tires are collected TTRcyclers haul the tires to Chattanooga for processing.

## 7.7 WASTE OIL, AUTOMOTIVE FLUIDS, LEAD ACID BATTERIES

Each county in the region provides for the collection of oil, automotive fluids, and batteries. Some of the requirements are met through public drop-off site operated by the localities and others are operated by private businesses. A list of the sites follows:

Table 7-2 Waste Oil and Automotive Fluids Drop-Off Sites

| Name                        | Address                                      | Telephone      |
|-----------------------------|--|----------------|
| <b>Cannon County</b>        |  |                |
| Cannon Co. Hwy Garage       | 900 Old McMinnville Rd, Woodbury, TN 37190   | (615) 563-4213 |
| Davenport's Service Station | 335 McMinnville Hwy, Woodbury, TN 37190      | (615) 563-8889 |
| <b>Coffee County</b>        |  |                |
| J & W Repair                | 2030 Murfreesboro Rd, Manchester, TN 37355   | (931) 728-1583 |
| Auto Zone                   | 2161 Hillsboro Blvd, Manchester, TN 37355    | (931) 728-8084 |
| Advance Auto Parts #3100    | 1751 Hillsboro Blvd, Manchester, TN 37355    | (931) 728-4811 |
| Mike's Auto & Truck Repair  | 120 Mark Avenue, Hillsboro, TN               | (931) 596-3660 |
| Jernigan Motor Company      | 812 McArthur Street, Manchester, TN 37355    | (931) 728-2436 |
| H.L. Johnson Mulch Co.      | 2930 Old Tullahoma Hwy, Manchester, TN 37355 | (931) 728-4358 |
| Smith's Auto Repair         | 535 Hillsboro Blvd, Manchester, TN 37355     | (931) 728-1147 |
| <b>Rutherford County</b>    |  |                |
| Tractor Supply Company      | 135 John Rice Blvd, Murfreesboro, TN         | (615) 896-1561 |
| Taeor's Exxon Auto Service  | I-24 & Almaville Rd, Smyrna, TN 37167        | (615) 355-1730 |
| Murfreesboro Conv. Ctr.     | 648 W Main Street, Murfreesboro, TN 37130    | (615) 893-3681 |
| Farms Sales & Service       | 637 S Main, Eagleville, TN                   | (615) 274-2200 |
| Advance Auto Parts #3230    | 1343 NW Broad St, Murfreesboro, TN 37130     | (615) 896-0937 |
| Advance Auto Parts #3510    | 389 S Lowry St, Smyrna, TN 37167             | (615) 459-9064 |
| Auto Zone                   | 1729 Memorial Blvd, Murfreesboro, TN 37130   | (615) 893-6442 |
| Advance Auto Parts #3710    | 510 SE Broad St, Murfreesboro, TN            | (615) 904-7550 |
| Auto Zone                   | 221 S Lowry, Smyrna, TN 37167                | (615) 355-6898 |
| Auto Zone                   | 230 SE Broad St, Murfreesboro, TN            | (615) 890-7096 |
| <b>Warren County</b>        |  |                |
| Turner Auto Salvage         | 2429 Nashville Hwy, McMinnville, TN 37110    | (931) 668-4157 |
| Perry's Garage              | 506-B Sparta St, McMinnville, TN 37110       | (931) 473-5568 |

|                             |                                       |                |
|-----------------------------|---------------------------------------|----------------|
| Greg Hullett Automotive     | 311 South Fair St, Morrison, TN       | (931) 635-2868 |
| Tractor Supply Company      | 200 Hobson St, McMinnville, TN 37110  | (931) 473-2411 |
| Warren Co. Sanitation Dept. | Fairgrounds Rd, McMinnville, TN 37110 | (931) 473-2505 |
| Auto Zone                   | 509 N Chancery, McMinnville, TN 37110 | (931) 473-1545 |
| Advance Auto Parts #3480    | 627 N Chancery, McMinnville, TN 37110 | (931) 473-3113 |

## 7.8 PESTICIDES

Members of the regional board requested that information regarding pesticide collection be included in the five-year update. The Tennessee Department of Agriculture will provide collection of pesticides. The department will work with counties to collect pesticide at HHW collection events or provide farm to farm collection. In 1999 the department collected over 100,000 lbs.

To schedule a pick-up:

1. Call Ken Nofa, Tennessee Department of Agriculture  
(615) 837-5523
2. Provide the amount of pesticides to be collected
3. Provide the types of materials to be collected.
4. State will schedule a collection date.

For more information visit the Department of Agriculture's web site at

[www.state.tn.us/agriculture](http://www.state.tn.us/agriculture)

The Agricultural Container Research Council (ACRC) is a non-profit organization that promotes the collection and recycling of HDPE product containers. The organization's web site ([www.acrecycle.org](http://www.acrecycle.org)) provides information regarding contractors who accept HDPE containers and information on the end uses of these materials. Also, the web site offers instructions on how to have these materials collected. Information regarding the ACRC is included in Appendix V.

# Chapter 8 Solid Waste Education

## 8.1 PERSONS ACTIVE IN SOLID WASTE EDUCATION

A list of current those individuals active in solid waste education in the region follows:

1. Thea Prince  
Cannon County  
(615) 563-4443  
1023 Curlee Church Road, Readyville, TN 37149  
Audience - Residents, students
  - Booth at Good Ole Days, team with Ms. Karen Hargrove for presentations at schools.
  
1. Wannella Ingleburger  
Coffee County  
(931) 723-5139  
1110 Madison Street, Manchester, TN  
Audience - Residents, businesses
  - Litter Free Fair and Old Timers Day – hand out litter bags that contain information about proper waste disposal and recycling at the county fair and Old Timers Day
  
2. Tina Fisher  
Keep Coffee County Beautiful  
(931) 728-6729  
PO Box 576, Manchester, TN 37349  
Audience - Students, residents, businesses
  - School recycling programs – sponsor recycling contests, sponsor environmental club in middle school, provide education for grades K-12,
  - Business cardboard recycling program – assist the City of Manchester by educating business owners about the benefits of cardboard recycling
  - American Recycles Days -- lectures to local organizations about the importance of recycling, pledge program to encourage support for recycling
  - Litter Free Fair and Old Timers Day – hand out litter bags that contain information about proper waste disposal and recycling at the county fair and Old Timers Day
  - Public Lands Day – volunteers clean a public place once a year
  - Great American Clean Up – county wide clean up held in April each year

3. Linda Stevens  
 Recycle Rutherford  
 (615) 896-6212  
 PO Box 1804, Murfreesboro, TN 37133-1804  
 Audience – General Public
  - Educational campaigns at Kroger drop-offs
  - Booth at Stones River Mall for America Recycles Day
  - Contests associated with Earth Day
  - Recyclables collection drives throughout the year
  - Quarterly meeting with speakers discussing relevant recycling issues
  
4. Becky Smith  
 Rutherford County  
 (615) 898-7339  
 1225 W College Street, Murfreesboro, TN 37130  
 Audience – General Public
  - Developing handouts for general public and businesses
  - Provided information to public on an as-requested basis
  
5. Bud Klika  
 City of Murfreesboro  
 (615) 893-3681  
 PO Box 1739, Murfreesboro, TN 37133-1739  
 Audience – General Public
  - Developed video to be aired on public access channel regarding recycling
  - Provide information to general public in an as-requested basis
  
6. Steve Hillis/Mary Lou Ward  
 Warren County  
 (931) 473-6874/(931) 473-2381  
 201 Locust Street, Suite 1, McMinnville, TN 37110  
 Audience – General Public
  - Periodic presentations to civic groups, businesses, industries
  - Encourage groups to participate in “Adopt-A-Highway” program
  - Distributes car litter bags to convenience stores
  - Provide grocery stores with flyers regarding litter, convenience center operations, and recycling. Flyers are given away at the check out
  
7. Brad Hennessey  
 City of McMinnville  
 (931) 473-2553  
 1266 Belmont Drive, McMinnville, TN 37110  
 Audience – General Public
  - Presentations to local organizations as requested

8. Karen Hargrove  
 MTSU/SWEPT  
 (615) 898-5920  
 \\1301 E Main Street, Murfreesboro, TN 37130  
 Audience – Students, Educators, Civic groups

- In Service training for teachers
- Workshops for civic groups
- Workshops for children's groups

## 8.2 OUTSTANDING NEEDS

The region solid waste plan identified the education needs for the region as "the expansion of the existing educational programs into Warren County (outside of McMinnville), Coffee County, and Woodbury. In addition, the region needs an expansion of the existing educational and promotional programs in an organized approach to prepare and motivate the community concerning all of the programs available under the comprehensive solid waste plan." (p. IX-2, Regional Solid Waste Plan) A schedule provided in the plan also indicates that all activities would be initiated by early 1996. The plan lists three goals and objectives associated with addressing the education needs in the region. The goals and objectives are listed below along with a comment as to whether the objective has been implemented.

| Item  | Comments   |
|---|--|
| <b>Goal 1 – Increase Source Reduction and Program Involvement through Education</b> |  |
| a. Education in area industries   | Regional Ind. Source Red. Program – 1995             |
| b. Education programs in schools  | MTSU – SWEPT on-going                                |
| c. Backyard composting program  | No   |
| d. Education in area offices  | No   |
| e. Education in area stores   | No   |
| f. Seminars for civic groups  | MTSU – SWEPT on-going                                |
| g. Increased Mass Media Involvement   | Murfreesboro – Video to air on public access channel |
| <b>Goal 2 – Increase Rural Interest and Participation in Programs</b>               |  |
| a. Increase area yard sales/garage sales  | No   |
| b. Work with churches/pastor's organizations  | No   |
| <b>Goal 3 – Develop Markets for Recyclables and Recycled Materials</b>              |  |
| a. Recommended governmental/school purchasing                                       | No   |

- b. Coord. Area businesses for mass buys of recycled products No
- c. Work with Warren County nurseries for compost markets No

Education is provided primarily at the regional level. Programs sponsored by the region include the MTSU/SWEPT and the Industrial Source Reduction Program. These two programs have met with varying successes. The industrial source reduction program was initiated in 1995 and as a result of documented success was cancelled in 1996. Reasons for cancellation are discussed in Chapter 5, Recycling. Likewise, the SWEPT program was started in 1995 and continues today. Regional education programs have been used to meet some of the objectives outlined in the solid waste plan.

Originally, the SWEPT program was used solely for training educators about solid waste. The program has been successful in this area, with many teacher in-service trainings held since 1995. Beginning in 1996, the program was expanded to include seminars geared toward adult civic groups and youth organizations. Each month, especially during the school year, several seminars are provided. Seminars provided general information about solid waste management and recycling. The region offers educational services solely through the SWEPT program.

Several of the objectives listed in the ten-year plan have not been implemented. Some of these were never started because the associated program was never implemented. For example, the backyard composting program was never initiated so the associated education program was not implemented. Other education programs not implemented for the same reason include: increase area yard sales, work with churches pastor's organizations, coordinating with area businesses for mass buys of recycled products, and work with Warren County nurseries for compost markets. These programs will most likely not be implemented due to a lack of interest.

Of the remaining objectives, the following should be implemented: education in area offices, education in area stores, increased mass media involvement, recommended governmental/school purchasing, coordinate with area businesses for mass buys of recycled products, and work with Warren County nurseries for compost markets.

### **8.3 PROPOSED CHANGES IN SOLID WASTE EDUCATION**

Since one of the goals for the region is to increase recycling and reduce Class I waste, an education program should be developed to educate businesses about the importance of reducing waste. As discussed in chapter 5, Recycling, businesses in the region without recycling programs tend to be smaller businesses (by number of employees). Components of this program will include developing brochures aimed towards different types of businesses, assisting businesses in establishing recycling programs, conducting seminars geared towards specific business types, and developing an awards program to recognize those businesses that recycle. When preparing the education plan and any educational campaigns for the public, excellent information is

available from other communities. Southern Consulting has access to some of these information packets and would be glad to provide this information to the region.

Education through mass media is an important tool that needs to be utilized in the region. Radio, television, newspaper, and public service announcements should be regularly distributed throughout the area. Announcements should inform individuals regarding:

- the state mandate,
- the region's progress towards meeting these mandates,
- importance of waste reduction,
- appropriate methods for recycling,
- recycling opportunities in the region, and
- recognize individuals and businesses who have made positive contributions to recycling in the region.

The last three items identified in Goal 3 in Section 8.2 of this chapter: increased mass media involvement, recommended governmental/school purchasing, and work with Warren County nurseries for compost markets are all associated with developing markets for recyclables and recycled materials. The counties in the region should coordinate with one another to maintain a master list of markets where recycled content materials may be purchased. The designated recycle coordinator in each county will be responsible for educating purchasing agents regarding buying recycled products and on topics such as "post consumer content." The recycle coordinator in each county should work with the purchasing department to establish goal quantities for recycled materials. Each county will be responsible for implementing these objective, however, the counties should work together by sharing information about markets.

Education about the methods and opportunities for recycling should include information regarding all the specific products discussed in Chapter 5. Appendices O – S contain information that may be used in an education campaign. These appendices also identify many other sources of information about recycling specific products. Prior to launching a media campaign, the localities should consider gathering data from these sources.

In implementing the objectives outlined in this chapter, the region should utilize the information provided in the *Pathways to Community Solid Waste Education*. Two counties, Coffee and Warren, have prepared education plans and submitted those to the state. Changes in staffing in Warren County have reduced the likelihood that the plan will be implemented. As such, each county should now work through chapter 5, Close to Home – Education Action Plan and Chapter 6 – Project Guides. The education coordinators in each county should work together to form the core solid waste education team members. Utilizing the state's education guidelines will give the region and the counties in the region a universal framework to implement education programs.



#### 8.4 PROPOSED STAFFING FOR SOLID WASTE EDUCATION

Although several individuals in the region are responsible for education, these individuals also have many other duties. The counties should consider hiring personnel whose primary responsibility is solid waste education. The following staff additions are recommended:

|            |   |
|------------|---|
| Cannon     | None                                      |
| Coffee     | 1 Part Time Employee at 20 hours per week |
| Rutherford | 1 Full Time Employee                      |
| Warren     | 1 Part Time Employee at 20 hours per week |

Refer to Chapter 5, Recycling, for costs associated with hiring additional employees and other waste reduction measures. Refer to Implementation Schedule, page 13, for general time frame.

# Chapter 9 Flow Control and Permit Review

## 9.1 FLOW CONTROL

Flow control has become a complex issue due to the number of court cases and the associated rulings in these cases. To date, the region has made no attempts to control the flow of waste. The region and counties in the region should seek legal counsel prior to initiating any steps to control the intra-region or inter-region flow of waste.

The most significant flow control now is the control of materials that may be recycled. Should the region choose to develop an MSW composting facility, the region will have to ensure that the minimum tonnage is available for its operation. Please refer to Chapter 5, Recycling for a discussion of minimum required waste stream for a composting facility. At this time, the counties in the region do appear to control enough waste to allow for operation of a composting facility. If this situation changes and the minimum required waste stream is not in the counties' control, then the region or counties in the region may consider flow control.

## 9.2 PERMIT APPLICATION REVIEW

The region has not reviewed any permit applications. The region is aware that its review of any permit would only be to determine the permit's consistency with the region's solid waste plan. Should a permit review be required, the following is the proposed permit review process with estimated time periods:

### 9.2.1 Basis for Review

The review of a application for the siting of any solid waste disposal facility, incinerator, or the expansion of any solid waste disposal facility within the Central Tennessee Solid Waste Planning Region will be based upon compliance with the intent of the plan as written, approved, and adopted. The primary questions which must be answered will be as follows:

- a. Will the additional landfill volume be needed for the Region to maintain environmentally acceptable and cost-effective Class I, Class III, or Class IV disposal volume for the waste generated within the region?
- b. Will the location of the new landfill or extension within the region provide for more cost-effective disposal of Class I, Class III, or Class IV waste without sacrificing environmental acceptability?
- c. Is the location of the facility suitable for a landfill to serve the Central Tennessee Region? In other words, landfills which are located at the outer edges of the region (away from major Central Tennessee Region

population centers) and designed to serve out-of-region waste will be considered to be not suitably located to serve the region.

- d. Will the cost impacts for providing infrastructure (roads, water, etc.) for bringing out-of-region waste into the county exceed the cost savings provided by the additional landfill facility?

#### 9.2.2 Application and Review Procedure

- a. A copy of the Part I Solid Waste Disposal Facility Permit Application shall be submitted to the executive committee of the Central Tennessee Solid Waste Planning Board prior to submittal of said document to the Division of Solid Waste Management. In addition to the DSWM part I Application, this submittal shall include the following information:
  - i. Estimated Total Volume of the Facility in Tons of Waste
  - ii. Estimate Daily Tonnage of the Facility
  - iii. Proposed Service Area of the Facility
  - iv. Map showing the location of the site suitable for advertisement.
  - v. Map showing current zoning of the site with a description of any special permits or re-zonings required and the status of same.
- b. The executive committee will then place an advertisement in the local newspapers of the county in which the disposal facility is proposed as well as in the newspapers of any counties, which have a portion of their land mass within 5 miles of the proposed facility. This advertisement will include the following information:
  - i. Date, time, and location of public hearing (must be at least 28 days after advertisement runs).
  - ii. Road address and location relative to incorporated or unincorporated municipalities.
  - iii. Map showing the location of the site.
  - iv. Dates of public comment period.
  - v. Address for mailing of public comments.
- c. The executive committee will send copies of the application to each member of the Planning Board as well as to the design consultant for the board.
- d. The executive committee will call a special meeting of the board which will act as the public hearing.
- e. The public hearing will be in presentation format. The applicant will present a 15 minute discussion of the proposed project. This will be followed by a fifteen minute report from the design consultant for the solid

waste planning board, this will be followed by the public comment period. Comments will be limited to 5 minutes in duration.

- f. At the end of the public hearing, the Planning Board will schedule another special meeting to be a minimum of two weeks and a maximum of four weeks after the public hearing.
- g. At the second special meeting the Planning Board will discuss the issue and then will vote and render a decision to the owner. The vote will be decided by simple majority. In the event of a tie vote, any abstentions will be re-pollled for a vote. In the event that the vote remains tied, the option with the fewest votes will be dropped and the other two options will be re-voted. In the event that the vote remains tied at this point, a new special meeting will be called within two weeks and the application will be voted on again. IN the event that the outcome remains a tie, the application will be automatically table until the Part II Permit Application is available. One of three votes will be possible:
  - i. Reject the application;
  - ii. Do not reject the application;
  - iii. Table the application until a Part II Permit Application is available.
- h. The region may reject an application for a new solid waste disposal facility or incinerator, or expansion of an existing solid waste disposal facility or incinerator within the region only upon determining that the application is inconsistent with the solid waste management plan adopted by the region and approved by the state planning office. The region shall document in writing the specific grounds on which the application is inconsistent with the plan.
  - i. In the event that the Planning Board votes to table the application until the Part II Permit Application is available, the Board will have the option of foregoing to the public hearing at that point.
  - j. Also in the event that the Planning Board votes to table the application until the Part II Permit application is available, the Board will be required to render an opinion within eight weeks after the Part II Permit Application is submitted. In the event of a tie, the abstentions will be re-pollled. In the event there remains a tie vote, a second special meeting will be called within two weeks for a re-vote. In the event of a tie at that point, the vote will automatically be considered to be "Do not reject the application". The two options for a vote at this point will be:
    - i. Reject the application;
    - ii. Do not reject the application.

- k. If the Board does not reject the application, the applicant can proceed with the full permitting process of the State. The State review process will determine the technical acceptability of the proposal. The Board's decision is based on siting and need for the facility.
- l. Rejection of the proposal will result in the decision that the proposal is not consistent with the Central Tennessee Solid Waste Management plan and therefore the facility cannot proceed through the State permitting process. Where a region rejects an application, the DSWM shall not issue the permit unless they find that the decision of the region is arbitrary and capricious and unsupported in the record developed before the region.
- m. Appeal of final actions of the region, shall be taken by an aggrieved person within thirty (30) days to the Davidson County Chancery Court. The Court shall exercise the same review as it would in a case arising under Tennessee Code Annotated, Title 4, Chapter 5. For the purposes of this section, an "aggrieved person" shall be limited to persons applying for permits, persons who own property for permitting, or cities and counties in which the proposed facility is located.

The following information was taken from the region's solid waste plan and is included in the update because it is still appropriate. The information was provided Mr. Williams, an attorney in Nashville.

### **9.3 INTER-REGION FLOW CONTROL**

The region or authority may restrict access to any landfills and incinerators which dispose of municipal solid waste by excluding waste originating with persons or entities outside the region in order to effectuate the plan. If a facility within a region has accepted waste from a specific source outside the region prior to July 1, 1991, the region may not prohibit that facility from continuing to accept waste from that source, unless the facility's acceptance of that waste significantly impairs the region's ability to effectuate its plan.

The only landfill facility within the region which is accepting significant amounts of waste from outside the region is BFI's Middlepoint Landfill. Middlepoint was accepting waste from throughout Middle and Southeastern Tennessee prior to July 1, 1991. Also as can be seen from the calculations in Table II-11 and again in Table VIII-8, the BFI Middlepoint Landfill has sufficient capacity to handle the solid waste of the entire region plus well in excess of an additional 1,500 tons per day of out-of-region waste through the planning period 2003. Therefore, it is not considered viable or worthwhile for the region to attempt to ban out-of-region waste from this facility.

This is not meant, however, to preclude any city, county, authority, or the planning region from invoking a ban on out of-region waste if it can demonstrated that the above definition is met at some point in the future.

#### 9.4 INTRA-REGION FLOW CONTROL

Due to the fact that the BFI Middlepoint was in operation prior to July 1, 1991, the region would have to prove all of the following points to order to use flow control to direct waste away from the landfill:

1. The BFI Middlepoint is environmentally unsound or inadequate to meet the region's 10-year needs;
2. Costs for the use of the BFI Middlepoint facility are inconsistent with comparable facilities within the State of Tennessee;
3. The BFI Middlepoint facility is operating in a manner which is inconsistent with the plan;
4. The public regional facility meets all state and federal regulations.

As it is not possible at this time to prove all of those statements, flow control directing the waste of the region completely away from BFI Middlepoint is not considered feasible. By this statement, the region is not forfeiting its right to use flow control should all of the above statements become provably true at any point during the planning period.

The legal opinion stated that limited flow control might be legally viable which did not direct solid waste away from the BFI Middlepoint Landfill but instead directed it through a processing facility of some type (which was designed specifically to meet the 25% waste reduction goals as required in the Solid Waste Act of 1991) prior to ultimate disposal at the BFI landfill.

Intra-region Flow Control is not needed to effectuate the plan. Therefore there is no flow control designed into the plan at this time. With this statement, the region (or any counties or municipalities therein) is not forfeiting the right to utilize flow control to direct solid waste through a processing facility whose primary purpose is the diversion of solid waste away from Class I landfilling should such a facility be constructed at some point in the future.

## **Chapter 10 Five-Year Update Review and Approval**

The Solid Waste Management Act of 1991 does not provide a schedule by which the public hearing and county commission approval of the plan is to be completed. The Central Tennessee Solid Waste Planning Region chose to utilize the following steps.

1. Review and approval by the solid waste region
2. Review by local planning commissions
3. Advertise public hearing
4. County commission approval
5. Submittal to the State

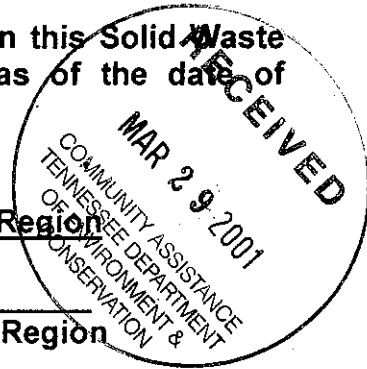
A review of the plan was completed by the planning commission in each county. Letters indicating review by each commission along with detailed comments are included in Appendix W.

A public hearing for the plan was conducted in each county. The public hearings were advertised for a minimum of 7 to 10 days in a paper of general circulation in each county. The dates of each public hearing were as follows: Cannon – January 13, 2001, Coffee – January 16, 2001, Rutherford – January 11, 2001, and Warren – January 22, 2001. No comments were received at any of the public hearings.

On the same date of each public hearing, the county commission in each county approved the five-year update. Copies of the resolutions for each county are included in Appendix X.

The following four pages are the approval pages signed by the county executives and the regional board chairman.

To the best of my knowledge all statements and figures included in this Solid Waste Management Annual Progress Report are accurate and correct as of the date of submission of this report.



Region Name: Central Tennessee Solid Waste Planning Region

Thea Prince

Typed Name of the Chairman of the Solid Waste Planning Region

Thea Prince

Signature of the Chairman of the Solid Waste Planning Region

3/22/01

Date

To the best of my knowledge all statements and figures included in this Solid Waste Management Annual Progress Report are accurate and correct as of the date of submission of this report.

Nancy R. Allen

Typed Name of the County Executive(s)

Nancy R. Allen

Signature of the County Executive(s)

March 28, 2001

Date

**SUBMIT THE ORIGINAL OF THIS REPORT AND ONE COPY BY MARCH 31, 2001 TO:**

**Tennessee Department of Environment and Conservation  
Division of Community Assistance  
8th Floor, L & C Tower  
401 Church Street  
Nashville, TN 37243-1533**

This report must be submitted to TDEC-DCA  
by March 31, 2001







**Central Tennessee Solid Waste Planning Region**  
**REGION NAME**

**To the best of my knowledge, the foregoing information is accurate as of the date of submission of this report.**

Thea Prince

Typed Name of the Chairman of the Solid Waste Planning Region



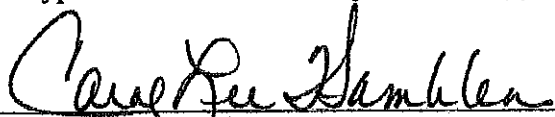
Signature of the Chairman of the Solid Waste Planning Region

Date

**To the best of my knowledge, the foregoing information is accurate as of the date of submission of this report.**

Carol Hamblen - Warren County

Typed Name of the County Executive(s)



Signature of the County Executive(s)

1-22-01  
Date

**APPENDIX A**

FY 1999/00 Budgets

Cannon County, Tennessee  
Solid Waste/Sanitation Fund  
Statement of Proposed Operations  
For the Fiscal Year Ending June 30, 2000

| Account No. | Description  | Actual 1997-1998 | Estimated 1998-1999 | Estimated 1999-2000 |
|-------------|--|------------------|---------------------|---------------------|
|             | Estimated Revenues   |                  |                     |                     |
| 40000       | LOCAL TAXES  |                  |                     |                     |
| 40100       | County Property Taxes  |                  |                     |                     |
| 40110       | Current Property Tax   | \$ 90,348        | \$ 98,000           | \$ 100,330          |
| 40120       | Trustee's Collections - Prior Year                               | 6,713            | 6,700               | 7,000               |
| 40130       | Circuit/Clerk & Master Collections - Prior Years                 | 537              | 600                 | 600                 |
| 40140       | Interest and Penalty   | 1,044            | 1,100               | 1,200               |
| 40200       | County Local Option Taxes  |                  |                     |                     |
| 40210       | Local Option Sales Tax   | 0                | 0                   | 54,000              |
| 40300       | Statutory Local Taxes  |                  |                     |                     |
| 40320       | Bank Excise Tax  | 1,223            | 1,598               | 1,600               |
|             | TOTAL LOCAL TAXES  | \$ 99,865        | \$ 107,998          | \$ 164,730          |
| 43000       | CHARGES FOR CURRENT SERVICES                                     |                  |                     |                     |
| 43100       | General Service Charges  |                  |                     |                     |
| 43106       | Commercial and Industrial Waste Collection Charge                | \$ 0             | \$ 0                | \$ 61,200           |
|             | TOTAL CHARGES FOR CURRENT SERVICES                               | \$ 0             | \$ 0                | \$ 61,200           |
| 46000       | STATE OF TENNESSEE   |                  |                     |                     |
| 46100       | General Government Grants  |                  |                     |                     |
| 46170       | Solid Waste Grants   | \$ 32,941        | \$ 16,000           | \$ 16,000           |
|             | TOTAL STATE OF TENNESSEE   | \$ 32,941        | \$ 16,000           | \$ 16,000           |
|             | Total Estimated Revenues   | \$ 132,806       | \$ 123,998          | \$ 241,930          |
|             | Estimated Expenditures   |                  |                     |                     |
| 55000       | PUBLIC HEALTH AND WELFARE  |                  |                     |                     |
| 55710       | Sanitation Management  |                  |                     |                     |
| 149         | Laborers   | \$ 0             | \$ 0                | \$ 40,000           |
| 310         | Contracts with Other Public Agencies                             | 113,173          | 128,663             | 180,000             |
| 336         | Maintenance & Repair Services- Equipment                         | 1,288            | 0                   | 0                   |
| 399         | Other Contracted Services  | 5,563            | 0                   | 0                   |
| 510         | Trustee's Commission   | 1,977            | 2,600               | 2,600               |
| 733         | Solid Waste Equipment  | 32,517           | 0                   | 5,000               |
|             | Total Sanitation Management                                      | \$ 154,518       | \$ 131,263          | \$ 227,600          |
|             | Total Estimated Expenditures                                     | \$ 154,518       | \$ 131,263          | \$ 227,600          |
|             | Excess of Estimated Revenues Over (Under) Estimated Expenditures | \$ (21,712)      | \$ (7,265)          | \$ 14,330           |
|             | Estimated Beginning Fund Balance - July 1                        | 54,036           | 32,324              | 25,059              |
|             | Estimated Ending Fund Balance - June 30                          | \$ 32,324        | \$ 25,059           | \$ 39,389           |

65,231.50  
113,600.00  
179,431.50

**TOWN OF WOODBURY, TENNESSEE**  
**Solid Waste/Sanitation Fund**  
**Statement of Revenues, Expenditures and Changes**  
**In Fund Balance, Budget and Actual**  
 Actual For the Nine Months Ended March 31, 1999  
 Actual for Fiscal Year Ending June 30, 1998  
**Budgets for Fiscal Year Ending June 30, 1999 and 2000**

Adopted  
6/29/99

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| <u>Revenues</u>                         | <u>Actual<br/>Year Ended<br/>6/30/98</u> | <u>1998-99<br/>Budget</u> | <u>Actual<br/>Nine Months<br/>3/31/99</u> | <u>1999-2000<br/>Budget</u> |
|---|--|---------------------------|---|-----------------------------|
| Commercial Charges                      | \$                                       | \$                        | \$ 11,665.00                              | \$                          |
| Business Charges & Dump Fees            | 19,479.64                                | 12,000.00                 | 3,679.64                                  | 60,000.00                   |
| Revenue from Cannon County              |  | 112,874.00                | 84,542.44                                 |                             |
| Sale of Fixed Assets                    |  |                           |   |                             |
| Capital Expend. Assist. - Cannon County | 102,997.32                               |                           | 1,401.00                                  |                             |
| <b>Total Revenues</b>                   | <b>\$ 122,476.96</b>                     | <b>\$ 124,874.00</b>      | <b>\$ 101,288.08</b>                      | <b>\$ 60,000.00</b>         |
| <b>Expenditures</b>                     |  |                           |   |                             |
| Operating Expenditures:                 |  |                           |   |                             |
| Waste Collection:                       |  |                           |   |                             |
| Salaries - Public Works Manager         | \$                                       | \$                        | \$  | \$                          |
| Salaries - Waste Collection             | 63,411.71                                | 65,783.00                 | 47,007.11                                 | 61,700.00                   |
| Salaries - Waste Collection Overtime    |  | 4,047.00                  | 5,947.72                                  | 6,190.00                    |
| Payroll Increases                       |  | 2,095.00                  |   |                             |
| Truck Expense                           | 16,266.11                                |                           |   |                             |
| Truck Repairs & Maintenance             |  | 7,400.00                  | 6,138.99                                  | 10,000.00                   |
| Truck Fuel                              |  | 7,000.00                  | 3,825.50                                  | 5,500.00                    |
| Uniforms                                | 1,078.50                                 | 1,200.00                  | 682.50                                    | 1,200.00                    |
| Other Expense - Waste Collection        |  | 2,500.00                  | 3,020.29                                  | 2,500.00                    |
| Total                                   | <b>\$ 80,756.32</b>                      | <b>\$ 90,025.00</b>       | <b>\$ 66,622.11</b>                       | <b>\$ 87,090.00</b>         |
| Trash Compactor:                        |  |                           |   |                             |
| Salaries - Trash Compactor              | \$ 31,153.20                             | \$ 28,562.00              | \$ 22,236.59                              | \$                          |
| Salaries - Trash Compactor Overtime     |  | 1,941.00                  | 3,068.42                                  |                             |
| Payroll Increases                       |  | 915.00                    |   |                             |
| Supplies & Expense                      | 13,210.45                                | 3,500.00                  | 240.40                                    |                             |
| Utilities & Telephone                   | 2,241.36                                 | 2,200.00                  | 1,674.93                                  |                             |
| Equipment Repairs & Maintenance         |  | 2,500.00                  | 1,582.40                                  |                             |
| Uniforms                                |  | 750.00                    | 455.00                                    |                             |
| Truck Expense - Tractor-Trailer         |  | 2,200.00                  | 5,090.97                                  |                             |
| Tractor-Trailer Fuel                    |  | 6,500.00                  | 244.68                                    |                             |
| Other Expense - Trash Compactor         |  | 1,500.00                  | 577.61                                    |                             |
| Total                                   | <b>\$ 46,605.01</b>                      | <b>\$ 50,568.00</b>       | <b>\$ 35,171.00</b>                       | <b>\$ 0.00</b>              |
| General:                                |  |                           |   |                             |
| Payroll Taxes                           | \$ 7,142.67                              | \$ 8,000.00               | \$ 5,758.63                               | \$ 5,194.00                 |
| Employee Insurance                      | 8,772.03                                 | 10,460.00                 | 8,098.22                                  | 7,200.00                    |
| Employee Retirement                     | 4,164.58                                 | 4,210.00                  | 3,161.63                                  | 2,753.00                    |
| Hauling Trash to Landfill               | 47,757.16                                | 38,000.00                 | 47,479.00                                 |                             |
| Audit, Quarterly Accounting, Budget     | 2,151.00                                 | 2,400.00                  | 1,450.00                                  | 2,400.00                    |
| Insurance - General                     | 6,000.00                                 | 6,000.00                  | 1,535.45                                  | 5,000.00                    |
| Miscellaneous Expense                   | 3,163.72                                 | 1,000.00                  | 519.23                                    |                             |
| Total                                   | <b>\$ 79,151.16</b>                      | <b>\$ 70,070.00</b>       | <b>\$ 68,002.16</b>                       | <b>\$ 22,547.00</b>         |
| Landfill:                               |  |                           |   |                             |
| Landfill Fees                           | \$ 110,919.59                            | \$ 120,000.00             | \$ 79,867.48                              | \$ 75,000.00                |
| Maintenance Fee to State                | 2,150.00                                 | 2,200.00                  | 2,000.00                                  |                             |
| Total                                   | <b>\$ 113,069.59</b>                     | <b>\$ 122,200.00</b>      | <b>\$ 81,867.48</b>                       | <b>\$ 75,000.00</b>         |
| <b>Total</b>                            | <b>\$ 319,582.08</b>                     | <b>\$ 332,863.00</b>      | <b>\$ 251,662.75</b>                      | <b>\$ 184,637.00</b>        |

See Accountants' Compilation Letter

HALL, DAVIDSON & ASSOCIATES, CERTIFIED PUBLIC ACCOUNTANTS

**TOWN OF WOODBURY, TENNESSEE**  
**Solid Waste/Sanitation Fund**  
**Statement of Revenues, Expenditures and Changes**  
**In Fund Balance, Budget and Actual**  
 Actual For the Nine Months Ended March 31, 1999  
 Actual for Fiscal Year Ending June 30, 1998  
 Budgets for Fiscal Years Ending June 30, 1999 and 2000

Adopted  
6/29/99

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|   | Actual<br>Year Ended<br>6/30/98 | 1998-99<br>Budget | Actual<br>Nine Months<br>3/31/99 | 1999-2000<br>Budget |
|---|---------------------------------|-------------------|----------------------------------|---------------------|
| <b>Capital Expenditures:</b>  |                                 |                   |                                  |                     |
| Sanitation Department Equipment   | \$                              | \$                | \$                               | \$                  |
| Compactor Improvements  |                                 |                   |                                  |                     |
| Fencing   |                                 |                   |                                  |                     |
| Trash Trailer   |                                 |                   |                                  |                     |
| Used Truck  |                                 | 14,000.00         |                                  |                     |
| Total   | \$ 0.00                         | \$ 14,000.00      | \$ 0.00                          | \$ 0.00             |
| <b>Payments on Long-Term Debt:</b>  |                                 |                   |                                  |                     |
| Principal   | \$ 5,853.34                     | \$                | \$                               | \$ 13,286.60        |
| Interest  | 303.86                          |                   |                                  | 3,140.62            |
| Total   | \$ 6,157.20                     | \$ 0.00           | \$ 0.00                          | \$ 16,427.22        |
| <b>Total Expenditures</b>   | \$ 325,739.28                   | \$ 346,863.00     | \$ 251,662.75                    | \$ 201,064.22       |
| <b>Excess (Deficit) of Revenues<br/>Over Expenditures</b>   | \$ -203,262.32                  | \$ -221,989.00    | \$ -150,374.67                   | \$ -141,064.22      |
| <b>Operating Transfers from General Fund</b>  | 203,464.62                      | 223,500.00        | 157,143.41                       | 142,000.00          |
| <b>Other Financing Sources</b>  |                                 |                   |                                  |                     |
| Lease-Purchase Financing for Trailer  |                                 |                   |                                  |                     |
| <b>Excess (Deficit) of Revenues, Transfers, and<br/>Other Financing Sources Over Expenditures</b> | \$ 202.30                       | \$ 1,511.00       | \$ 6,768.74                      | \$ 935.78           |
| <b>Fund Balance, July 1</b>   | -14,354.45                      | 1,336.00          | -14,152.16                       | -11,821.56          |
| <b>Fund Balance, End of Period</b>  | \$ -14,152.15                   | \$ 2,847.00       | \$ -7,383.42                     | \$ -10,885.78       |
| <br><b>Cash Balances</b>  |                                 |                   |                                  |                     |
| Cash Balance, July 1 - Estimated  |                                 | \$ 1,336.00       |                                  | \$ 19,407.66        |
| Budgeted Excess (Deficit) of Revenues Over Expenditures   |                                 | 1,511.00          |                                  | 935.78              |
| Budgeted Cash Balance, June 30  |                                 | \$ 2,847.00       |                                  | \$ 20,343.44        |

See Accountants' Compilation Letter

HALL, DAVIDSON & ASSOCIATES, CERTIFIED PUBLIC ACCOUNTANTS

# Coffee County Rural Solid Waste



Rennie Bell, Director

1110 Madison Street  
Manchester, TN 37355-2224  
(931) 723-5139  
Fax (931) 723-8211

February 24, 2000

Mr. Trent Smith  
Southern Consulting  
101-B West Railroad Street  
Dickson, TN 37055

Dear Trent:

The following is the information you requested so it can be included in the Central TN Planning Region Annual Report. Coffee County has nine convenience centers that accept recyclable materials. Each center is open 40 hours per week, and approximately 30 percent of each operator's time is devoted to the oversight of those recyclables. We have three truck drivers that haul recyclables, and approximately 35 percent of their time goes toward that effort. We have a tire storage facility that is open 8 hours per week. The attendant's time at that facility is devoted 100 percent to tire recycling.

Also enclosed is a copy of the Coffee County Rural Solid Waste Budget for the fiscal year 1999-2000 as per your request.

Sincerely,

A handwritten signature in cursive script that reads "Rennie Bell".

Rennie Bell

RAB/wi  
Enclosure



## Rural Solid Waste 1999-2000

| 15710                   |                       | 1999-00          | Prior Year       | Increase        | %          | 1998-99          | 1997-98          | 1996-97          |
|-------------------------|-----------------------|------------------|------------------|-----------------|------------|------------------|------------------|------------------|
| Sanitation Management   |                       | Budget           | Budget           | (Decrease)      | Increase   | Estimated        | Estimated        | Actual           |
|                         |                       |                  |                  | vs Prior Yr     | (Decrease) |                  |                  |                  |
| 105                     | Supervisor/Director   | \$33,241         | \$33,241         | \$0             | 0%         | \$33,241         | \$32,257         | \$31,021         |
| 161                     | Secretary             | \$19,584         | \$19,015         | \$569           | 3%         | \$19,015         | \$18,642         | \$18,099         |
| 187                     | Overtime              | \$1,000          | \$1,000          | \$0             | 0%         | \$1,000          | \$1,089          | \$547            |
| 196                     | In-Service Training   | \$600            | \$600            | \$0             | 0%         | \$600            | \$0              | \$280            |
| 307                     | Communications        | \$4,000          | \$3,000          | \$1,000         | 33%        | \$3,000          | \$2,657          | \$2,134          |
| 335                     | Maint/Bldg.           | \$5,000          | \$5,000          | \$0             | 0%         | \$5,000          | \$2,962          | \$4,432          |
| 355                     | Travel                | \$1,000          | \$1,000          | \$0             | 0%         | \$1,000          | \$131            | \$372            |
| 452                     | Utilities             | \$5,000          | \$5,000          | \$0             | 0%         | \$5,000          | \$4,853          | \$4,220          |
| 499                     | Other Supp. & Mat.    | \$6,500          | \$6,500          | \$0             | 0%         | \$6,500          | \$2,577          | \$6,127          |
| 510                     | Trustee's Comm.       | \$10,000         | \$10,000         | \$0             | 0%         | \$10,000         | \$9,607          | \$10,000         |
| 599                     | Other Charges         | \$10,800         | \$8,750          | \$2,050         | 23%        | \$8,750          | \$9,133          | \$8,400          |
| <b>Sub/San. Mgt.</b>    |                       | <b>\$96,725</b>  | <b>\$93,106</b>  | <b>\$3,619</b>  | <b>4%</b>  | <b>\$93,106</b>  | <b>\$83,908</b>  | <b>\$85,632</b>  |
| 15731                   |                       |                  |                  |                 |            |                  |                  |                  |
| Waste Pickup            |                       |                  |                  |                 |            |                  |                  |                  |
| 147                     | Truck Drivers         | \$76,976         | \$75,860         | \$1,116         | 1%         | \$75,860         | \$73,269         | \$72,096         |
| 160                     | Guard                 | \$17,923         | -0-              | \$17,923        |            | \$0              | \$0              | \$0              |
| 187                     | Overtime              | \$10,000         | \$10,000         | \$0             | 0%         | \$10,000         | \$11,989         | \$8,420          |
| 309                     | Contracts/Gov't       | \$25,000         | \$25,000         | \$0             | 0%         | \$5,500          | \$11,884         | \$15,850         |
| 312                     | Contracts/Private     | \$240,000        | \$240,000        | \$0             | 0%         | \$200,000        | \$200,047        | \$216,000        |
| 336                     | Maint/Equip.          | \$1,000          | \$1,000          | \$0             | 0%         | \$1,000          | \$165            | \$188            |
| 338                     | Maint/Vehicles        | \$25,000         | \$25,000         | \$0             | 0%         | \$25,000         | \$7,044          | \$7,481          |
| 340                     | Medical Serv.         | \$500            | \$500            | \$0             | 0%         | \$500            | \$475            | \$325            |
| 2                       | Diesel                | \$12,000         | \$12,000         | \$0             | 0%         | \$9,500          | \$9,377          | \$9,359          |
| 424                     | Garage Supplies       | \$4,700          | \$4,700          | \$0             | 0%         | \$4,700          | \$3,101          | \$4,495          |
| 425                     | Gasoline              | \$6,300          | \$6,300          | \$0             | 0%         | \$2,000          | \$2,650          | \$3,042          |
| 450                     | Tires & Tubes         | \$10,000         | \$10,000         | \$0             | 0%         | \$10,000         | \$3,415          | \$8,296          |
| 451                     | Uniforms              | \$2,000          | \$2,000          | \$0             | 0%         | \$1,500          | \$1,343          | \$1,934          |
| 499                     | Other Supp. & Mat.    | \$4,000          | \$4,000          | \$0             | 0%         | \$4,000          | \$2,763          | \$2,532          |
| 511                     | Vehicle & Equip. Ins. | \$3,500          | \$0              | \$3,500         |            | \$0              | \$6,329          | \$6,879          |
| <b>Sub/Waste Pickup</b> |                       | <b>\$438,899</b> | <b>\$416,360</b> | <b>\$22,539</b> | <b>5%</b>  | <b>\$349,560</b> | <b>\$333,851</b> | <b>\$356,897</b> |

## Rural Solid Waste 1999-2000

|                               |                              | 1999-00<br>Budget | Prior Year<br>Budget | (Decrease)<br>vs Prior Yr | Increase<br>(Decrease) | 1998-99<br>Estimated | 1997-98<br>Estimated | 1996-97<br>Actual |
|-------------------------------|------------------------------|-------------------|----------------------|---------------------------|------------------------|----------------------|----------------------|-------------------|
| <b>2</b>                      |                              |                   |                      |                           |                        |                      |                      |                   |
| <b>Convenience Centers</b>    |                              |                   |                      |                           |                        |                      |                      |                   |
| 164                           | Attendants                   | \$109,262         | \$109,262            | \$0                       | 0%                     | \$109,262            | \$105,390            | \$99,525          |
| 187                           | Overtime                     | \$8,350           | \$8,350              | \$0                       | 0%                     | \$8,350              | \$4,637              | \$2,034           |
| 189                           | Other Salaries & Wages       | \$11,420          | \$11,420             | \$0                       | 0%                     | \$11,420             | \$8,021              | \$1,670           |
| 307                           | Communications               | \$6,200           | \$6,200              | \$0                       | 0%                     | \$6,200              | \$5,544              | \$4,963           |
| 335                           | Maint/Bldg.                  | \$3,000           | \$1,000              | \$2,000                   | 200%                   | \$6,252              | \$554                | \$719             |
| 336                           | Maint/Equip.                 | \$6,000           | \$6,000              | \$0                       | 0%                     | \$6,000              | \$3,721              | \$10,400          |
| 351                           | Rentals                      | \$5,400           | \$5,400              | \$0                       | 0%                     | \$5,400              | \$4,860              | \$4,455           |
| 409                           | Crushed Stone                | \$1,000           | \$2,000              | (\$1,000)                 | -50%                   | \$2,000              | \$2,674              | \$626             |
| 415                           | Utilities                    | \$5,400           | \$5,400              | \$0                       | 0%                     | \$5,400              | \$5,532              | \$4,483           |
| 790                           | Other Equipment              | \$5,000           | \$26,000             | (\$21,000)                | -81%                   | \$26,000             | \$55,036             | \$18,284          |
|                               | <b>Sub/Con. Ctrs.</b>        | <b>\$161,032</b>  | <b>\$181,032</b>     | <b>(\$20,000)</b>         | <b>-11%</b>            | <b>\$186,284</b>     | <b>\$195,969</b>     | <b>\$147,159</b>  |
| <b>55739</b>                  |                              |                   |                      |                           |                        |                      |                      |                   |
| <b>Other Waste Collection</b> |                              |                   |                      |                           |                        |                      |                      |                   |
| 105                           | Supervisor                   | \$5,681           | \$5,681              | \$0                       | 0%                     | \$5,681              | \$5,570              | \$5,718           |
| 161                           | Secretary                    | \$3,648           | \$3,648              | \$0                       | 0%                     | \$3,648              | \$3,576              | \$3,427           |
| 164                           | Attendant                    | \$3,550           | \$3,550              | \$0                       | 0%                     | \$3,550              | \$2,944              | \$2,543           |
| 307                           | Communications               | \$0               | \$0                  | \$0                       |                        | \$0                  | \$116                | \$319             |
| 312                           | Contracts/Private            | \$31,785          | \$31,785             | \$0                       | 0%                     | \$31,785             | \$22,387             | \$28,632          |
| 315                           | Contracts/Vehicle Owners     | \$9,000           | \$9,000              | \$0                       | 0%                     | \$9,000              | \$4,900              | \$5,580           |
| 335                           | Maint/Building               | \$100             | \$100                | \$0                       | 0%                     | \$100                | \$83                 | \$259             |
| 409                           | Crushed Stone                | \$200             | \$200                | \$0                       | 0%                     | \$200                | \$0                  | \$58              |
|                               | <b>Sub/Other Waste Coll.</b> | <b>\$53,964</b>   | <b>\$53,964</b>      | <b>\$0</b>                | <b>0%</b>              | <b>\$53,964</b>      | <b>\$39,576</b>      | <b>\$46,536</b>   |
| <b>55759</b>                  |                              |                   |                      |                           |                        |                      |                      |                   |
| <b>Other Waste Disposal</b>   |                              |                   |                      |                           |                        |                      |                      |                   |
| 309                           | Contracts/Govt.              | \$0               | \$7,000              | (\$7,000)                 | -100%                  | \$7,000              | \$11,938             | \$11,810          |
| 364                           | Contract/Development Cost    | \$0               | \$0                  | \$0                       |                        | \$0                  | \$0                  | \$16,259          |
|                               | <b>Sub/Other Waste Disp.</b> | <b>\$0</b>        | <b>\$7,000</b>       | <b>(\$7,000)</b>          | <b>-100%</b>           | <b>\$7,000</b>       | <b>\$11,938</b>      | <b>\$28,069</b>   |
| <b>58400</b>                  |                              |                   |                      |                           |                        |                      |                      |                   |
| <b>Other Charges</b>          |                              |                   |                      |                           |                        |                      |                      |                   |
| 499                           | Other Charges                | \$0               | \$10,000             | (\$10,000)                | -100%                  | \$0                  | \$0                  | \$0               |
| <b>58600</b>                  |                              |                   |                      |                           |                        |                      |                      |                   |
| <b>Employee Benefits</b>      |                              |                   |                      |                           |                        |                      |                      |                   |
| 201                           |                              | \$22,925          | \$21,420             | \$1,505                   | 7%                     | \$21,468             | \$18,954             | \$0               |
| 204                           |                              | \$10,889          | \$10,124             | \$765                     | 8%                     | \$10,124             | \$5,996              | \$0               |
| 207                           |                              | \$46,030          | \$42,058             | \$3,972                   | 9%                     | \$42,058             | \$34,275             | \$0               |
| 208                           |                              | \$3,610           | \$3,325              | \$285                     | 9%                     | \$3,325              | \$2,426              | \$0               |
| 210                           |                              | \$3,264           | \$3,264              | \$0                       | 0%                     | \$3,264              | \$1,141              | \$0               |
|                               | <b>Sub/Emp.Ben.</b>          | <b>\$86,718</b>   | <b>\$80,191</b>      | <b>\$6,527</b>            | <b>8%</b>              | <b>\$80,239</b>      | <b>\$62,792</b>      | <b>\$0</b>        |
| <b>TOTAL</b>                  |                              | <b>\$837,338</b>  | <b>\$841,653</b>     | <b>(\$4,315)</b>          | <b>-1%</b>             | <b>\$770,153</b>     | <b>\$728,034</b>     | <b>\$664,293</b>  |

**CITY OF MANCHESTER  
PUBLIC WORKS DEPARTMENT**

156 Freedom Drive

Debbie Moffitt  
Administrative Assistant  
931-728-6903

FAX  
931-728-6090

Please reply to:  
200 W. Fort St.  
Manchester, Tennessee 37355

City of Manchester - Sanitation Budget Breakdown

**BRUSH & JUNK DISPOSAL:** Brush is picked up 5 days a week using **two men 100%** of the time. This same truck usually picks up Junk to be hauled to the landfill 5 days a week, splitting the days work up. The Brush is taked to a recycle center and made into mulch and the junk is placed in large roll off containers and hauled by BFI to their landfill in Murfreesboro.

The salaries for these two men runs \$46,593 per year @ 100%

Occasionally we will have to run two trucks for a day or two to get caught up. Their salaries would run the same.

The use of one truck and two men are used approximately 25% of the time picking up metal and old tires to be recycled. These items are recycled and not placed in a landfill. The salary for these two men runs the same as above. (25% of \$46,493 = \$11,649).

**CARDBOARD RECYCLING:** Cardboard is collected from businesses throughout town two days a week by one man. Approximately 20% of this mans salary which would be (\$4,306)

**LEAF PICKUP:** Leaves are not picked up on a year round basis. One truck is used 40% of the time with 4 men (40% of their salary = \$25,33) A second truck is used 30% of the time with 4 men on it also.

---

Sanitation Budget for salaries for 1999-2000 is: \$ **113,087.00**

**BREAKDOWN OF SALARIES BY SERVICES:** (No overtime included in these figures)

Brush & Junk: \$46,593

Metal and Tires: \$11,649

Cardboard: \$4,306

Leaves @ 30%: \$24,610

Leaves @ 40%: \$25,336

---

**TOTAL: \$ 112,494**

The mechanic works on vehicles and equipment for Sanitation pickup at least 40% of the time which would be \$10,225. This amount is not paid out of the Sanitation Budget. His salary is paid out of the Street Budget since he works on Street and other city vehicles most of the time.

These are approximate figures, but it is how we reach an amount to be budgeted each year. I hope this is what you need.

Debbie

CITY OF MANCHESTER

STATEMENT OF EXPENDITURES  
JANUARY 31, 2000

Sanitation Fund

02/02/00

PAGE-0

| FUND ACCOUNT#    | ACCOUNT TITLE             | ORIG APP. CHANGE | TOTAL APPROPRIATION |
|------------------|---------------------------|------------------|---------------------|
| 260 43200 111    | SALARIES                  | 113,087.00       | 113,087.00          |
| 260 43200 112    | OVERTIME                  | 15,000.00        | 15,000.00           |
| 260 43200 141    | FICA                      | 10,354.00        | 10,354.00           |
| 260 43200 147    | UNEMPLOYMENT TAX          | 642.00           | 642.00              |
| 260 43200 254    | BRUSH DISPOSAL            | 40,000.00        | 40,000.00           |
| 260 43200 259    | BFI                       | 967,200.00       | 967,200.00          |
| 260 43200 330    | REPAIR & MAINTENANCE      | 35,000.00        | 35,000.00           |
| 260 43200 331    | GAS & OIL                 | 12,000.00        | 12,000.00           |
| 260 43200 334    | TIRES                     | 8,000.00         | 8,000.00            |
| 260 43200 730    | KEEP COFFEE CTY BEAUTIFUL | 7,000.00         | 7,000.00            |
| 260 43200 940    | EQUIPMENT                 | .00              | .00                 |
| 260 43200 950    | OLD TULL. HWY. WATERLINE  | .00              | .00                 |
| SANITATION DEPT. |                           | 1,208,283.00     | 1,208,283.00        |
| 260 51640 760    | TRANSFER TO OTHER FUNDS   | .00              | .00                 |

Michael R. Hunter  
Mail Stop 1800  
1100 Kindel Drive  
Arnold Air Force Base, TN 37389-1800  
(931) 454-3901 Fax (931) 454-5538



# Fax

**To:** Mr. Trent Smith **From:** Michael R. Hunter  
**Fax:** (615) 740-0504 **Pages:** 1  
**Phone:** (615) 740-8777 **Date:** 3/17/00  
**Re:** AEDC Solid Waste 2000 Budget **CC:** Mr. Clark Brandon

Urgent  For Review  Please Comment  Please Reply  Please Recycle

**• Comments:**

Mr. Trent Smith  
Southern Consulting  
101B West Railroad Street  
Dickson, TN 37055

Dear Mr. Smith:

I have reviewed your request with several people on base and developed the following data for the AEDC Municipal Solid Waste Program Budget -- FY2000 (10/1/99 -- 9/30/00)

- \$123,000 Collection and Disposal
- 25,000 Landfill Diversion (Recycling Program) - \$41,000 estimated operating cost is to be partially offset by \$16,000 in revenues from the sale of recycled materials
- 19,000 Recycling facility and equipment improvements
- \$167,000 Total appropriated fund budget (estimate)

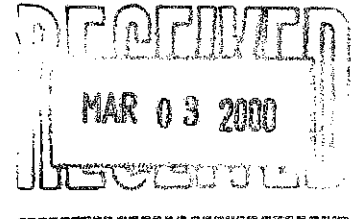
I hope this information satisfies your needs. If you have any questions, please don't hesitate to give me a call.

*Mike Hunter*

**County of Rutherford**  
**OFFICE OF SOLID WASTE MANAGEMENT**

1220 W. College  
Murfreesboro, TN 37130  
(615) 898-7739  
Fax: 898-7859

*Rebecca G. Smith*  
Solid Waste Coordinator



MEMO

TO: TRENT SMITH  
101 B WEST RAILROAD ST.  
DICKSON, TN 37055

FROM: BECKY SMITH, SOLID WASTE COORDINATOR

DATE: MARCH 1, 2000

SUBJECT: WASTE DIVERSION

Trent,

We currently have 35 operators at our Convenience Centers that work on waste diversion, approximately 50% daily.

Our line item #116-55739-312 is targeted for hauling all recyclable materials, which would be 100% diversion.

If you have further questions, please feel free to call me.

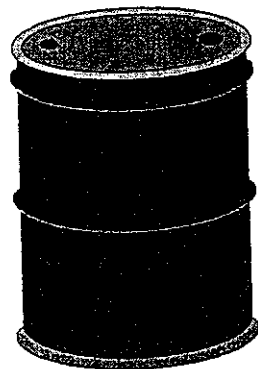
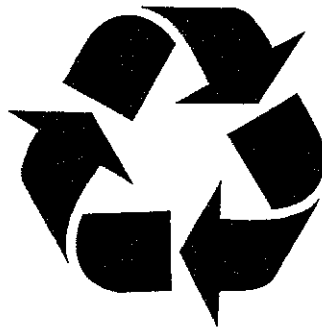
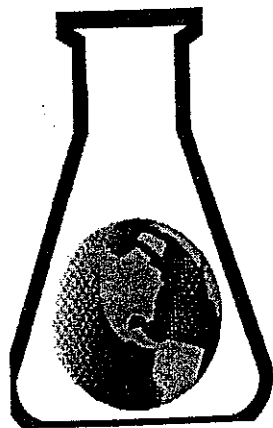
Sincerely,

A handwritten signature in cursive script that reads "Becky Smith".

Becky Smith

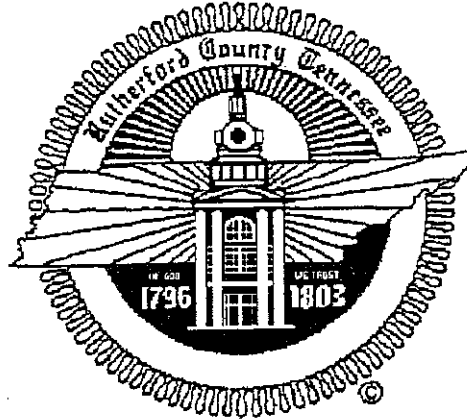
## **SOLID WASTE/SANITATION FUND**

The Solid Waste/ Sanitation Fund is used to account for Rutherford County's demolition landfill and convenience center operations. The major source of funding for this fund was property taxes in prior years. Currently host agency surcharges are the major source of funding.



# SOLID WASTE/SANITATION

Dainton Rahn, Landfill Ops. Manager  
6000 Landfill Road  
Becky Smith, Solid Waste Coordinator  
1220 West College Street



County Employees

## MISSION STATEMENT

The Solid Waste Department provides solid waste collection and transport services for the unincorporated areas of the county and limited service in incorporated areas of the county. Limited disposal services are provided by operation of a Class III / IV, construction and demolition wastes, landfill, and a waste tire collection and storage area. Recycling services are coordinated by the department.

The department provides solid waste collection and transport service for all county and city schools. The department operates fourteen solid waste collection centers (convenience centers) throughout the county. Eleven of the convenience centers are located in unincorporated areas and the remaining three are in the incorporated areas of Smyrna, LaVergne, and Eagleville.

The department has recycling and waste reduction/diversion goals to implement that are mandated by the ten-year Central Tennessee Regional Solid Waste Plan.

| LANDFILL PERSONNEL |           |           | CONV. CTR. PERSONNEL |           |           |
|--------------------|-----------|-----------|----------------------|-----------|-----------|
| YEAR               | Full Time | Part Time | YEAR                 | Full Time | Part Time |
| 97/98              | 4         | 3         | 97/98                | 13        | 25        |
| 98/99              | 5         | 1         | 98/99                | 16        | 29        |
| 99/00              | 6         | 1         | 99/00                | 17        | 32        |



**SOLID WASTE/SANITATION**  
**ESTIMATED REVENUES, EXPENDITURES**  
**AND AVAILABLE FUNDS**  
**FOR THE FISCAL YEAR ENDED JUNE 30, 2000**

|                                      | 1997-1998           | 1998-1999 BUDGET    |                     | 1998-1999           | 1999-2000           |
|--------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                                      | Audited Actual      | Original            | Amended             | Unaudited Actual    | Estimated           |
| <b>REVENUES</b>                      |                     |                     |                     |                     |                     |
| <b>LOCAL TAXES</b>                   |                     |                     |                     |                     |                     |
| 40110 CURRENT PROPERTY TAX           | \$ 676,277          | \$ 651,228          | \$ 666,000          | \$ 666,749          | \$ 699,079          |
| 40120 TRUSTEE'S COLLECT. - PRIOR YR. | 13,478              | 14,000              | 12,406              | 12,406              | 11,750              |
| 40130 CLERK & MASTER COLLECTIONS     | 7,198               | 7,000               | 7,000               | 8,158               | 6,900               |
| 40140 INTEREST AND PENALTY           | 2,252               | 2,200               | 4,600               | 4,453               | 2,400               |
| 40150 PICK-UP TAXES                  | 1,708               | 2,000               | 12,500              | 12,172              | 3,000               |
| 40161 PAY IN LIEU OF TAXES - TVA     | 180                 | 180                 | 180                 | 163                 | 150                 |
| 40270 BUSINESS TAX                   | 15,194              | 19,000              | 15,500              | 16,000              | 15,500              |
| <b>TOTAL LOCAL TAXES</b>             | <b>\$ 716,297</b>   | <b>\$ 695,608</b>   | <b>\$ 718,186</b>   | <b>\$ 720,101</b>   | <b>\$ 738,779</b>   |
| <b>CHARGES FOR SERVICES</b>          |                     |                     |                     |                     |                     |
| 43110 TIPPING FEES                   | \$ 21,024           | \$ 30,000           | \$ 1,500            | \$ 1,305            | \$ 1,500            |
| 43112 SURCHARGE - HOST AGENCY        | 572,327             | 600,000             | 770,000             | 770,000             | 800,000             |
| <b>TOTAL CHARGES FOR SERVICES</b>    | <b>\$ 593,351</b>   | <b>\$ 630,000</b>   | <b>\$ 771,500</b>   | <b>\$ 771,305</b>   | <b>\$ 801,500</b>   |
| <b>OTHER LOCAL REVENUES</b>          |                     |                     |                     |                     |                     |
| 44145 SALE OF RECYCLED MATERIALS     | \$ -                | \$ -                | \$ 14,000           | \$ 16,113           | \$ 16,000           |
| 44170 MISCELLANEOUS REFUNDS          | 74                  | -                   | -                   | -                   | -                   |
| 44530 SALE OF EQUIPMENT              | 300                 | -                   | -                   | -                   | -                   |
| <b>TOTAL OTHER LOCAL REVENUES</b>    | <b>\$ 374</b>       | <b>\$ -</b>         | <b>\$ 14,000</b>    | <b>\$ 16,113</b>    | <b>\$ 16,000</b>    |
| <b>STATE REVENUES</b>                |                     |                     |                     |                     |                     |
| 46170 SOLID WASTE GRANTS             | \$ 25,750           | \$ 25,750           | \$ 25,750           | \$ 24,631           | \$ 26,000           |
| 46430 LITTER PROGRAM                 | 75,943              | 73,515              | 78,000              | 94,227              | 74,000              |
| 46851 STATE REVENUE SHARING - T.V.A. | 161,281             | 740,240             | 835,995             | 835,992             | 751,773             |
| 46980 OTHER STATE GRANTS             | 2,930               | -                   | -                   | -                   | -                   |
| 46990 OTHER STATE REVENUES           | 53,801              | 42,000              | 57,800              | 58,448              | 48,000              |
| <b>TOTAL STATE REVENUES</b>          | <b>\$ 319,705</b>   | <b>\$ 881,505</b>   | <b>\$ 997,545</b>   | <b>\$ 1,013,298</b> | <b>\$ 899,773</b>   |
| <b>TOTAL REVENUE</b>                 | <b>\$ 1,629,717</b> | <b>\$ 2,207,113</b> | <b>\$ 2,501,231</b> | <b>\$ 2,520,817</b> | <b>\$ 2,456,052</b> |
| <b>EXPENDITURES</b>                  |                     |                     |                     |                     |                     |
| SANITATION EDUC/INFORMATION          | \$ 72,808           | \$ 82,335           | \$ 82,335           | \$ 73,634           | \$ 83,952           |
| CONVENIENCE CENTERS                  | 845,156             | 1,213,708           | 1,137,256           | 1,048,811           | 1,217,936           |
| OTHER WASTE COLLECTION               | 201,012             | 229,571             | 349,571             | 345,722             | 284,500             |
| LANDFILL OPER & MAINT                | 494,399             | 626,807             | 625,307             | 598,491             | 660,564             |
| POSTCLOSURE CARE COSTS               | 215,336             | 52,000              | 52,000              | 49,372              | 135,000             |
| EMPLOYEE BENEFITS                    | 21,000              | 35,000              | 36,500              | 35,179              | 35,000              |
| MISCELLANEOUS                        | 33,104              | 33,110              | 40,320              | 38,964              | 39,100              |
| <b>TOTAL EXPENDITURES</b>            | <b>\$ 1,882,815</b> | <b>\$ 2,272,531</b> | <b>\$ 2,323,239</b> | <b>\$ 2,190,173</b> | <b>\$ 2,456,052</b> |
|                                      |                     |                     |                     | <b>\$ 489,457</b>   | <b>\$ 820,101</b>   |
|                                      |                     |                     |                     | <b>\$ 820,101</b>   | <b>\$ 820,101</b>   |

Beginning Fund Balance July 1,

Ending Fund Balance June 30,

**FUND 116**  
**SOLID WASTE/SANITATION**  
**STATEMENT OF APPROPRIATIONS**

|                                    |                                  | 1997-1998         | 1998-1999 BUDGET |                  | 1998-1999           | 1999-2000        |
|------------------------------------|----------------------------------|-------------------|------------------|------------------|---------------------|------------------|
|                                    |                                  | Audited<br>Actual | Original         | Amended          | Unaudited<br>Actual | Estimated        |
| <b>EXPENDITURES</b>                |                                  |                   |                  |                  |                     |                  |
| 55720                              | SANITATION EDUC/INFORM.          | \$ 41,341         | \$ 42,352        | \$ 42,352        | \$ 42,108           | \$ 43,749        |
| 149                                | LABORERS                         | 2,563             | 2,630            | 2,630            | 2,592               | 2,720            |
| 201                                | SOCIAL SECURITY                  | 3,084             | 3,300            | 3,300            | 3,281               | 3,410            |
| 204                                | STATE RETIREMENT                 | 5,511             | 5,520            | 5,520            | 5,511               | 5,520            |
| 205                                | EMPLOYEE AND DEPENDENT INSURANCE | 600               | 620              | 620              | 606                 | 640              |
| 212                                | EMPLOYER MEDICARE                | 13,370            | 18,400           | 18,400           | 14,510              | 18,400           |
| 429                                | INSTRUCTIONAL SUPP & MAT         | 6,339             | 9,513            | 9,513            | 5,026               | 9,513            |
| 499                                | OTHER SUPPLIES AND MATERIALS     | -                 | -                | -                | -                   | -                |
| 718                                | MOTOR VEHICLES                   | -                 | -                | -                | -                   | -                |
| <b>SANITATION EDUC/INFORMATION</b> |                                  | <b>\$ 72,808</b>  | <b>\$ 82,335</b> | <b>\$ 82,335</b> | <b>\$ 73,634</b>    | <b>\$ 83,952</b> |
| 55732                              | CONVENIENCE CENTERS              | \$ 29,577         | \$ 30,169        | \$ 30,169        | \$ 30,169           | \$ 31,314        |
| 105                                | SUPERVISOR/DIRECTOR              | -                 | -                | -                | -                   | 22,320           |
| 141                                | FOREMAN                          | -                 | -                | -                | -                   | 204,083          |
| 147                                | TRUCK DRIVERS                    | 120,283           | 188,827          | 188,827          | 181,293             | 250,567          |
| 149                                | LABORERS                         | 190,148           | 221,110          | 225,890          | 225,782             | 17,129           |
| 162                                | CLERICAL PERSONNEL               | 15,764            | 16,162           | 16,162           | 16,162              | 18,683           |
| 167                                | MAINTENANCE PERSONNEL            | 17,500            | 18,000           | 18,000           | 18,000              | 6,000            |
| 169                                | PART-TIME PERSONNEL              | 4,623             | 8,000            | 5,000            | 4,932               | 15,000           |
| 187                                | OVERTIME PAY                     | 15,837            | 15,000           | 15,000           | 14,699              | 1,000            |
| 196                                | IN-SERVICE TRAINING              | 578               | 1,000            | 1,000            | 832                 | 35,160           |
| 201                                | SOCIAL SECURITY                  | 22,995            | 30,835           | 30,945           | 28,964              | 26,690           |
| 204                                | STATE RETIREMENT                 | 15,482            | 23,460           | 23,590           | 20,957              | 41,310           |
| 205                                | EMPLOYEE AND DEPENDENT INSURANCE | 19,907            | 38,580           | 38,580           | 32,427              | 8,230            |
| 212                                | EMPLOYER MEDICARE                | 5,618             | 7,215            | 7,245            | 7,024               | 14,500           |
| 307                                | COMMUNICATION                    | 12,642            | 16,000           | 16,000           | 14,127              | 4,000            |
| 312                                | CONTRACTS W/PRIVATE AGENCIES     | -                 | 6,000            | 6,000            | 4,680               | 1,000            |
| 322                                | EVALUATION AND TESTING           | 727               | 1,000            | 1,000            | 583                 | 8,000            |
| 336                                | MAINT & REPAIR SERVICE - EQUIP.  | -                 | -                | -                | -                   | 100              |
| 338                                | MAINT & REPAIR SERVICE - VEHIC   | 48,761            | 50,000           | 74,966           | 74,850              | 60,000           |
| 348                                | POSTAL CHARGES                   | -                 | -                | -                | -                   | 13,400           |
| 351                                | RENTALS                          | 9,962             | 13,400           | 13,400           | 12,660              | 2,000            |
| 353                                | TOW-IN SERVICES                  | 897               | 2,000            | 2,000            | 440                 | 600              |
| 355                                | TRAVEL                           | 151               | 600              | 600              | 256                 | 15,000           |
| 399                                | OTHER CONTRACTED SERVICES        | 22,932            | 15,000           | 15,000           | 14,176              | 8,000            |
| 409                                | CRUSHED STONE                    | 7,503             | 8,000            | 8,000            | 7,891               | 800              |
| 411                                | DATA PROCESSING SUPPLIES         | 764               | 800              | 800              | 573                 | 24,000           |
| 412                                | DIESEL FUEL                      | 17,640            | 24,000           | 24,000           | 18,965              | 53,000           |
| 418                                | EQUIPMENT & MACHINERY PARTS      | 45,740            | 53,000           | 53,000           | 49,692              | 5,000            |
| 425                                | GASOLINE                         | 3,426             | 6,000            | 6,000            | 3,045               | 850              |
| 435                                | OFFICE SUPPLIES                  | 987               | 850              | 850              | 667                 | 23,000           |
| 450                                | TIRES AND TUBES                  | 19,700            | 22,000           | 22,000           | 22,433              | 6,000            |
| 451                                | UNIFORMS                         | -                 | 7,500            | 7,500            | 3,891               | 11,000           |
| 452                                | UTILITIES                        | 8,976             | 11,000           | 11,000           | 8,976               | 25,000           |
| 467                                | FENCING                          | 10,500            | 25,000           | 25,000           | 9,165               | 19,000           |
| 499                                | OTHER SUPPLIES AND MATERIALS     | 17,154            | 19,000           | 19,000           | 18,027              | 6,000            |
| 706                                | BUILDING CONSTRUCTION            | 4,360             | 6,000            | 6,000            | 5,678               | 27,200           |
| 707                                | BUILDING IMPROVEMENTS            | -                 | -                | -                | -                   | 1,000            |
| 708                                | COMMUNICATION EQUIPMENT          | -                 | -                | -                | -                   | -                |
| 709                                | DATA PROCESSING EQUIPMENT        | 1,250             | 1,200            | 1,200            | 1,017               | -                |

**FUND 116**  
**SOLID WASTE/SANITATION**  
**STATEMENT OF APPROPRIATIONS**

|                                     |   | 1997-1998         | 1998-1999 BUDGET    |                     | 1998-1999           | 1999-2000           |
|-------------------------------------|---|-------------------|---------------------|---------------------|---------------------|---------------------|
| <b>EXPENDITURES</b>                 |   | Audited<br>Actual | Original            | Amended             | Unaudited<br>Actual | Estimated           |
| 718                                 | MOTOR VEHICLES                          | 83,742            | 217,000             | 192,034             | 192,034             | 102,000             |
| 724                                 | SITE DEVELOPMENT                        | 21,866            | 50,000              | 3,548               | 3,345               | 50,000              |
| 733                                 | SOLID WASTE EQUIPMENT                   | 47,164            | 60,000              | 27,950              | 399                 | 60,000              |
| <b>TOTAL CONVENIENCE CENTERS</b>    |   | <b>\$ 845,156</b> | <b>\$ 1,213,705</b> | <b>\$ 1,137,256</b> | <b>\$ 1,049,511</b> | <b>\$ 1,217,936</b> |
| 55739                               | <b>OTHER WASTE COLLECTION</b>           |                   |                     |                     |                     |                     |
| 302                                 | ADVERTISING                             | \$ 1,771          | \$ 2,500            | \$ 2,500            | \$ 2,500            | \$ 2,500            |
| 308                                 | CONSULTANTS                             | 7,000             | -                   | -                   | -                   | -                   |
| 309                                 | CONTRACTS W/GOVERNMENT AGENC            | 35,571            | 35,571              | 35,571              | 35,571              | -                   |
| 312                                 | CONTRACTS W/PRIVATE AGENCIES            | 105,170           | 140,000             | 260,000             | 258,388             | 230,000             |
| 733                                 | SOLID WASTE EQUIPMENT                   | 51,500            | 51,500              | 51,500              | 49,263              | 52,000              |
| <b>TOTAL OTHER WASTE COLLECTION</b> |   | <b>\$ 201,012</b> | <b>\$ 229,571</b>   | <b>\$ 349,571</b>   | <b>\$ 345,722</b>   | <b>\$ 284,500</b>   |
| 55754                               | <b>LANDFILL OPER. &amp; MAINTENANCE</b> |                   |                     |                     |                     |                     |
| 101                                 | COUNTY OFFICIAL/ADMINISTRATIVE          | \$ 37,577         | \$ 38,077           | \$ 38,077           | \$ 38,077           | \$ 39,522           |
| 142                                 | MECHANICS                               | -                 | -                   | -                   | -                   | 23,090              |
| 149                                 | LABORERS                                | 76,863            | 82,737              | 82,737              | 81,793              | 84,554              |
| 162                                 | CLERICAL PERSONNEL                      | -                 | 16,963              | 16,963              | 16,890              | 17,948              |
| 169                                 | PART-TIME PERSONNEL                     | 11,191            | 10,000              | 10,000              | 9,535               | 5,000               |
| 187                                 | OVERTIME PAY                            | 14                | 5,000               | 5,000               | 4,999               | 5,000               |
| 196                                 | IN-SERVICE TRAINING                     | 1,250             | 1,500               | 1,500               | 1,502               | 1,500               |
| 201                                 | SOCIAL SECURITY                         | 7,713             | 9,480               | 9,480               | 9,272               | 10,860              |
| 204                                 | STATE RETIREMENT                        | 8,312             | 11,130              | 11,130              | 10,942              | 13,260              |
| 205                                 | EMPLOYEE AND DEPENDENT INSURA           | 10,558            | 13,800              | 13,800              | 9,270               | 16,540              |
| 212                                 | EMPLOYER MEDICARE                       | 1,804             | 2,220               | 2,220               | 2,169               | 2,540               |
| 302                                 | ADVERTISING                             | -                 | 1,500               | 1,500               | 1,448               | 500                 |
| 307                                 | COMMUNICATION                           | 1,992             | 2,100               | 2,100               | 2,062               | 5,000               |
| 312                                 | CONTRACTS W/PRIVATE AGENCIES            | 182,152           | 200,000             | 218,700             | 218,700             | 250,000             |
| 321                                 | ENGINEERING SERVICES                    | 5,229             | 7,500               | 7,500               | 7,395               | -                   |
| 336                                 | MAINT. & REPAIR SERV. - EQUIP.          | 18,930            | 15,000              | 11,000              | 9,525               | 15,000              |
| 338                                 | MAINT & REPAIR SERVICE - VEHICLE        | 12,617            | 15,000              | 11,500              | 10,945              | 10,000              |
| 348                                 | POSTAL CHARGES                          | 15                | 100                 | 100                 | 61                  | 100                 |
| 351                                 | RENTALS                                 | 2,316             | 2,500               | 3,400               | 3,449               | 350                 |
| 355                                 | TRAVEL                                  | 600               | 1,000               | 1,000               | 1,000               | 1,000               |
| 363                                 | CONTRACTS FOR LANDFILL FACILITY         | -                 | -                   | -                   | -                   | -                   |
| 399                                 | OTHER CONTRACTED SERVICES               | 2,565             | 3,000               | 3,000               | 968                 | 2,500               |
| 409                                 | CRUSHED STONE                           | 19,706            | 25,000              | 25,000              | 24,816              | 25,000              |
| 410                                 | CUSTODIAL SUPPLIES                      | -                 | 500                 | 500                 | 419                 | 500                 |
| 411                                 | DATA PROCESSING SUPPLIES                | 299               | 750                 | 750                 | 750                 | 500                 |
| 412                                 | DIESEL FUEL                             | 5,483             | 10,000              | 4,500               | 2,455               | 7,500               |
| 415                                 | ELECTRICITY                             | 2,328             | 2,500               | 2,500               | 2,349               | 5,000               |
| 418                                 | EQUIPMENT & MACHINERY PARTS             | 17,110            | 15,000              | 15,000              | 12,213              | 15,000              |
| 420                                 | FERTILIZER, LIME, CHEMICALS &           | 8,618             | 20,000              | 16,500              | 12,445              | 10,000              |
| 424                                 | GARAGE SUPPLIES                         | -                 | 10,000              | 10,000              | 9,319               | 7,500               |

**FUND 116**  
**SOLID WASTE/SANITATION**  
**STATEMENT OF APPROPRIATIONS**

|   |  | 1997-1998         | 1998-1999 BUDGET  |                   | 1998-1999           | 1999-2000         |
|---|--|-------------------|-------------------|-------------------|---------------------|-------------------|
| <b>EXPENDITURES</b>                           |  | Audited<br>Actual | Original          | Amended           | Unaudited<br>Actual | Estimated         |
| 55754   | <b>LANDFILL OPER. &amp; MAINTENANCE</b><br>(continued) |                   |                   |                   |                     |                   |
| 425   | GASOLINE   | 5,478             | 6,500             | 4,000             | 1,879               | 5,500             |
| 427   | ICE  | -                 | 200               | 200               | -                   | 150               |
| 433   | LUBRICANTS   | -                 | 1,000             | 1,000             | 636                 | 750               |
| 435   | OFFICE SUPPLIES  | -                 | 2,000             | 2,000             | 1,693               | 2,500             |
| 438   | PIPE   | 1,609             | 1,500             | 1,500             | 1,500               | 1,500             |
| 443   | ROAD SIGNS   | -                 | 500               | 500               | -                   | -                 |
| 446   | SMALL TOOLS  | 1,441             | 2,000             | 2,000             | 1,615               | 1,500             |
| 450   | TIRES AND TUBES  | -                 | 10,000            | 6,500             | 6,121               | 5,000             |
| 451   | UNIFORMS   | -                 | 2,500             | 3,900             | 3,829               | 3,000             |
| 459   | DRAINAGE MATERIALS                                     | 9,764             | 10,000            | 10,000            | 9,816               | 10,000            |
| 467   | FENCING  | -                 | -                 | -                 | -                   | 5,000             |
| 499   | OTHER SUPPLIES AND MATERIALS                           | 36,980            | 18,000            | 18,000            | 17,091              | 18,000            |
| 706   | BUILDING CONSTRUCTION                                  | 1,964             | -                 | -                 | -                   | -                 |
| 708   | COMMUNICATION EQUIPMENT                                | -                 | 1,500             | 1,500             | 469                 | 5,000             |
| 709   | DATA PROCESSING EQUIPMENT                              | 1,921             | 1,250             | 1,250             | 1,215               | 400               |
| 711   | FURNITURE AND FIXTURES                                 | -                 | -                 | -                 | -                   | 2,000             |
| 718   | MOTOR VEHICLES   | -                 | 10,000            | 10,000            | 10,014              | 10,000            |
| 724   | SITE DEVELOPMENT                                       | -                 | -                 | -                 | -                   | -                 |
| 733   | SOLID WASTE EQUIPMENT                                  | -                 | 37,500            | 37,500            | 37,845              | 15,000            |
| <b>TOTAL LANDFILL OPER. &amp; MAINTENANCE</b> |  | <b>\$ 494,399</b> | <b>\$ 626,807</b> | <b>\$ 625,307</b> | <b>\$ 598,491</b>   | <b>\$ 660,564</b> |
| 55770   | <b>POSTCLOSURE CARE COSTS</b>                          |                   |                   |                   |                     |                   |
| 101   | COUNTY OFFICIAL/ADMINISTRATIVE                         | \$ -              | \$ -              | \$ -              | \$ -                | \$ -              |
| 307   | COMMUNICATION  | -                 | 1,500             | 1,500             | 1,497               | -                 |
| 312   | CONTRACTS W/PRIVATE AGENCIES                           | 5,478             | 25,000            | 25,000            | 25,061              | 20,000            |
| 321   | ENGINEERING SERVICES                                   | -                 | 5,000             | 5,000             | 3,983               | 25,000            |
| 336   | MAINT. & REPAIR SERV. - EQUIP.                         | -                 | -                 | -                 | -                   | -                 |
| 361   | PERMITS  | -                 | 1,000             | 1,000             | 585                 | -                 |
| 366   | CONTRACTS FOR POSTCLOSURE CARE                         | 209,858           | -                 | -                 | -                   | 30,000            |
| 409   | CRUSHED STONE  | -                 | -                 | -                 | -                   | -                 |
| 412   | DIESEL FUEL  | -                 | -                 | -                 | -                   | -                 |
| 415   | ELECTRICITY  | -                 | 10,000            | 10,000            | 9,801               | -                 |
| 420   | FERTILIZER, LIME, CHEMICALS &                          | -                 | -                 | -                 | -                   | -                 |
| 425   | GASOLINE   | -                 | -                 | -                 | -                   | -                 |
| 463   | TESTING  | -                 | 5,000             | 5,000             | 3,905               | 40,000            |
| 467   | FENCING  | -                 | 2,000             | 2,000             | 2,040               | -                 |
| 499   | OTHER SUPPLIES AND MATERIALS                           | -                 | -                 | -                 | -                   | -                 |
| 706   | BUILDING CONSTRUCTION                                  | -                 | -                 | -                 | -                   | 20,000            |
| 711   | FURNITURE AND FIXTURES                                 | -                 | 2,500             | 2,500             | 2,500               | -                 |
| <b>TOTAL POSTCLOSURE CARE COSTS</b>           |  | <b>\$ 215,336</b> | <b>\$ 52,000</b>  | <b>\$ 52,000</b>  | <b>\$ 49,372</b>    | <b>\$ 135,000</b> |

**FUND 116**  
**SOLID WASTE/SANITATION**  
**STATEMENT OF APPROPRIATIONS**

|   |                                 | 1997-1998           | 1998-1999 BUDGET    |                     | 1998-1999           | 1999-2000           |
|---|---------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|   |                                 | Audited Actual      | Original            | Amended             | Unaudited Actual    | Estimated           |
| <b>EXPENDITURES</b>                         |                                 |                     |                     |                     |                     |                     |
| 58600                                       | <b>EMPLOYEE BENEFITS</b>        |                     |                     |                     |                     |                     |
| 210   | UNEMPLOYMENT COMPENSATION       | \$ -                | \$ 5,000            | \$ 6,500            | \$ 5,179            | \$ 5,000            |
| 513   | WORKER'S COMPENSATION INSURANCE | 21,000              | 30,000              | 30,000              | 30,000              | 30,000              |
| <b>TOTAL EMPLOYEE BENEFITS</b>              |                                 | <b>\$ 21,000</b>    | <b>\$ 35,000</b>    | <b>\$ 36,500</b>    | <b>\$ 35,179</b>    | <b>\$ 35,000</b>    |
| 58900                                       | <b>MISCELLANEOUS</b>            |                     |                     |                     |                     |                     |
| 502   | BUILDING AND CONTENTS INSURANCE | \$ 1,034            | \$ 790              | \$ 790              | \$ 787              | \$ 500              |
| 506   | LIABILITY INSURANCE             | 10,545              | 7,320               | 7,320               | 6,369               | 6,800               |
| 510   | TRUSTEE'S COMMISSION            | 21,525              | 25,000              | 32,210              | 31,808              | 31,800              |
| <b>TOTAL MISCELLANEOUS</b>                  |                                 | <b>\$ 33,104</b>    | <b>\$ 33,110</b>    | <b>\$ 40,320</b>    | <b>\$ 38,964</b>    | <b>\$ 39,100</b>    |
| <b>EXPENDITURES, SOLID WASTE/SANITATION</b> |                                 | <b>\$ 1,882,815</b> | <b>\$ 2,272,531</b> | <b>\$ 2,323,269</b> | <b>\$ 2,190,173</b> | <b>\$ 2,456,052</b> |



## CITY of MURFREESBORO

*Solid Waste Department*

630 WEST MAIN STREET  
P.O. BOX 1739  
MURFREESBORO, TENNESSEE 37133-1739  
AREA CODE 615 893-3681  
FAX 615 849-2679

D. W. (BUD) KLIKA, SUPERINTENDENT

February 23, 2000

Ms. Ilia C. Jefferson  
Chief Manager  
Southern Consulting, LLC  
101-B West Railroad Road  
Dixon, TN 37055

Dear Ilia:

In response to Trent Smith's request, enclosed is a copy of the City of Murfreesboro's 1999-2000 Solid Waste Budget.

Trent also asked that I indicate how much of this budget is allocated toward waste reduction. I believe the personnel costs of our convenience center and all efforts and cost pertaining to the collection and processing of yard waste would fall into the category of waste reduction.

The convenience center was originally set up to provide a drop off location for recycling materials such as corrugated cardboard, newsprint, glass, plastic bottles, aluminum and steel cans. A motor oil tank and a filter crusher have been added. Yes, garbage is also collected. However we are dealing only with personnel costs and they would remain even if garbage were not collected.

All yard waste collected is taken to a mulching operation where the resulting raw mulch is offered to the public. A private mulch company then collects all remaining raw mulch not used by the public. They use it as a base for finished mulch, which they in turn sell. 100% of all collected yard waste is recycled.

Based on the above comments, the following is a breakdown of the budget that would apply to waste reduction:

|  |              |
|--|--------------|
| Salaries of three (3) part time<br>personnel at the convenience<br>Center. | \$ 16,224.00 |
|--|--------------|

**Mulching Operation:**

Salaries of two (2) operators. \$ 60,692.28

Portion of budget for  
maintenance. 9,000.00

Total \$ 69,692.28

**Yard Waste Collection:**

Salaries of four (4) drivers & \$ 210,233.96

Four (4) operators

Portion of budget for  
maintenance 13,520.00

Total \$ 223,753.96

Above maintenance is 16% of total  
equipment maintenance therefore:

16% of four (4) mechanics  
salaries applies \$ 21,644.24

Twenty-one (21) people are assigned  
to garbage collection and ten (10)  
people are assigned to yard waste  
therefore:

50% of three (3) supervisors  
salaries and one (1) office  
individual applies \$ 76,053.56

Total Convenience Center and Yard  
Waste (to include collection, processing,  
support and supervision. \$ 407,368.04

This figure represents 30.6% of the  
total salaries (line 9) and vehicles and  
maintenance (line 11) therefore, 30.6%  
of the following should also apply:

|                               |                   |
|-------------------------------|-------------------|
| Total Supplies (line 25)      | \$ 77,200.00      |
| Total Insurance (line 32)     | 555,014.94        |
| Total Miscellaneous (line 46) | 392,450.00        |
| less debt service             | - 331,000.00      |
| less carts                    | <u>-54,000.00</u> |
|                               | \$ 639,664.94     |

30.6% of \$639,664.94 in other expenses \$ 195,737.45

In addition, 30.6% of salaries for five (5)  
unassigned back-up personnel amounting to  
\$109,564.00 should also apply \$ 33,526.58

TOTAL PORTION OF 1999-2000 SOLID  
WASTE BUDGET PERTAINING TO  
WASTE REDUCTION \$ 636,632.07

THIS IS 26.4% OF THE TOTAL BUDGET

I hope the information presented will meet with your approval.

Sincerely,



D. W. (Bud) Klika



Murfreesboro

|        |  | 1999 - 2000 TENTATIVE BUDGET |                 |                 |                   | Page 42             |
|--------|--|------------------------------|-----------------|-----------------|-------------------|---------------------|
|        |  | SOLID WASTE FUND             |                 |                 |                   |                     |
| ITEM # | DESCRIPTIONS                               | 96/97<br>ACTUAL              | 97/98<br>ACTUAL | 99/00<br>BUDGET | 99/99<br>ESTIMATE | 1999/2000<br>BUDGET |
| 1      | REVENUES                                   |                              |                 |                 |                   |                     |
| 2      | FROM GENERAL FUND                          | 1,696,758.06                 | 2,140,070.93    | 2,213,294.07    | 2,138,752.00      | 2,404,760.02        |
| 3      | CART SALES                                 | 3,837.01                     | 2,644.32        | 2,500.00        | 1,860.00          | 2,500.00            |
| 4      | INTEREST                                   | 556.68                       | 602.51          | 600.00          | 950.00            | 600.00              |
| 5      | TOTAL REVENUES                             | 1,701,151.75                 | 2,143,317.76    | 2,216,394.07    | 2,141,562.00      | 2,407,860.02        |
| 6      | EXPENDITURES                               |                              |                 |                 |                   |                     |
| 7      | SALARIES                                   |                              |                 |                 |                   |                     |
| 8      | AS SHOWN ON SALARY SCHEDULE                | 953,528.69                   | 1,012,471.08    | 1,112,962.81    | 1,080,000.00      | 1,190,805.08        |
| 9      |  | 953,528.69                   | 1,012,471.08    | 1,112,962.81    | 1,080,000.00      | 1,190,805.08        |
| 10     | OPERATION AND MAINTENANCE                  |                              |                 |                 |                   |                     |
| 11     | VEHICLES & MACHINERY                       | 121,860.42                   | 164,185.14      | 127,400.00      | 135,000.00        | 139,190.00          |
| 12     | RADIOS                                     | 297.00                       | 1,055.00        | 1,000.00        | 1,000.00          | 1,000.00            |
| 13     | BUILDINGS                                  | 5,070.74                     | 5,460.99        | 4,500.00        | 6,000.00          | 5,000.00            |
| 14     |  | 127,228.16                   | 170,701.13      | 132,900.00      | 142,000.00        | 145,190.00          |
| 15     | SUPPLIES                                   |                              |                 |                 |                   |                     |
| 16     | OFFICE                                     | 1,803.37                     | 1,565.46        | 2,500.00        | 1,800.00          | 2,500.00            |
| 17     | ADVERTISING                                | 0.00                         | 28.36           | 2,000.00        | 0.00              | 500.00              |
| 18     | EMPLOYEE                                   | 1,636.74                     | 1,318.82        | 1,000.00        | 1,000.00          | 1,000.00            |
| 19     | JANITORIAL                                 | 1,075.13                     | 2,463.50        | 1,500.00        | 1,800.00          | 1,500.00            |
| 20     | BULK GASOLINE                              | 47,774.81                    | 41,222.24       | 50,000.00       | 42,000.00         | 45,000.00           |
| 21     | HAND TOOLS & HARDWARE                      | 2,474.71                     | 1,220.32        | 2,000.00        | 2,000.00          | 2,000.00            |
| 22     | CLOTHING                                   | 18,474.90                    | 17,479.13       | 19,125.00       | 19,000.00         | 20,700.00           |
| 23     | SAFETY SUPPLIES                            | 400.83                       | 3,830.24        | 2,500.00        | 3,000.00          | 3,000.00            |
| 24     | MISCELLANEOUS SUPPLIES                     | 458.24                       | 349.17          | 1,000.00        | 600.00            | 1,000.00            |
| 25     |  | 74,096.75                    | 69,477.24       | 81,625.00       | 71,200.00         | 77,200.00           |
| 26     | INSURANCE                                  |                              |                 |                 |                   |                     |
| 27     | WORKER'S COMPENSATION                      | 46,900.00                    | 47,589.00       | 54,000.00       | 51,682.00         | 61,538.00           |
| 28     | AUTOMOBILE                                 | 89,765.00                    | 91,063.00       | 92,000.00       | 79,000.00         | 92,000.00           |
| 29     | SOCIAL SECURITY                            | 70,541.68                    | 74,814.85       | 85,141.64       | 79,550.00         | 91,096.59           |
| 30     | MEDICAL - DENTAL                           | 124,538.75                   | 135,308.44      | 145,050.00      | 143,870.00        | 197,400.00          |
| 31     | RETIREMENT                                 | 84,173.94                    | 88,814.16       | 105,064.82      | 89,280.00         | 112,980.35          |
| 32     |  | 415,919.40                   | 437,389.45      | 481,256.46      | 443,362.00        | 555,014.94          |
| 33     | TRAVEL AND SUSBSISTENCE                    |                              |                 |                 |                   |                     |
| 34     | USE OF EMPLOYEE'S AUTO:                    |                              |                 |                 |                   |                     |
| 35     | RECORDS KEEPER                             | 1,200.16                     | 1,200.16        | 1,200.00        | 1,200.00          | 1,200.00            |
| 36     |  | 1,200.16                     | 1,200.16        | 1,200.00        | 1,200.00          | 1,200.00            |
| 37     | MISCELLANEOUS EXPENSE                      |                              |                 |                 |                   |                     |
| 38     | CELLULAR TELEPHONE                         |                              | 293.88          | 300.00          | 300.00            | 300.00              |
| 39     | DEBT SERVICE                               |                              | 349,940.00      | 345,000.00      | 341,000.00        | 331,000.00          |
| 40     | DISPOSAL FEES                              | 550.00                       | 2,835.00        | 1,000.00        | 50.00             | 1,000.00            |
| 41     | LICENSE FEES                               | 2,750.00                     | 2,750.00        | 3,000.00        | 800.00            | 3,000.00            |
| 42     | DISPOSAL CARTS                             | 42,340.03                    | 67,659.21       | 54,000.00       | 54,000.00         | 54,000.00           |
| 43     | ASSOCIATION DUES                           | 105.00                       | 113.00          | 150.00          | 150.00            | 150.00              |
| 44     | TRAINING PERSONNEL                         | 1,192.86                     | 279.28          | 1,500.00        | 0.00              | 1,500.00            |
| 45     | OTHER MISCELLANEOUS                        | 17,346.12                    | 1,733.90        | 1,500.00        | 1,900.00          | 1,500.00            |
| 46     |  | 64,284.01                    | 425,604.27      | 406,450.00      | 398,200.00        | 392,450.00          |
| 47     | TOTAL SOLID WASTE FUND<br>OPERATING BUDGET | 1,636,257.17                 | 2,116,843.33    | 2,216,394.07    | 2,135,962.00      | 2,361,860.02        |
| 48     | ADDITION TO FIXED ASSET                    |                              |                 |                 |                   |                     |
| 49     | NORMAL REPLACEMENT - OFFICE EQ.            |                              |                 |                 |                   | 1,500.00            |
| 50     | KNUCKLEBOOM & TRAILER                      |                              |                 |                 |                   | 35,000.00           |
| 51     | USED PICKUP TRUCK                          |                              |                 |                 |                   | 7,500.00            |
| 52     | (2) RADIOS                                 |                              |                 |                 |                   | 2,000.00            |
| 53     |  | 50,670.39                    | 90,785.14       | 500.00          | 5,600.00          | 46,000.00           |
| 54     | TOTAL SOLID WASTE FUND                     | 1,686,927.56                 | 2,207,628.47    | 2,216,894.07    | 2,141,562.00      | 2,407,860.02        |

*Office of County Executive  
Carol Lee Hamblen  
201 Locust Street, Suite One  
McMinnville, TN 37110  
phone 931-473-2505 fax 931-473-0635  
Email: countyexec@multi-pro.com*

March 2, 2000

Mr. Trent Smith  
Southern Consulting  
101 B West Railroad Street  
Dickson, Tn 37055

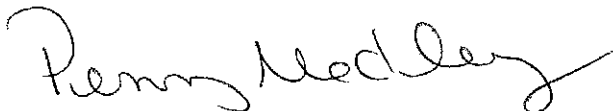
Dear Mr. Smith:

As a result of our conversation on Monday, February 28th, 2000, I have researched your question of how many Warren County employees perform recycling as a part of their job duties. The following is the information I have for you:

- 1) Warren County has one (1) Sanitation Director who spends approximately 25% - 30% of his time directing and performing recycling duties and programs.
- 2) Warren County has thirteen (13) convenient centers employing fourteen (14) employees. Of the fourteen (14) employees, twelve (12) spend approximately 25% of their time encouraging those dropping off their trash to recycle - and then helping them to sort their trash. Two (2) other site employees spend up to 70% of their time recycling - as their site is devoted specifically to recycling products.
- 3) Warren County has one (1) employee who oversees our litter and recycling grants. She spends approximately 10% of her time on these projects.
- 4) Approximately fifteen (15) Warren County School Custodians spend only 5% of their time assisting in recycling at our schools. This is an area Director Hillis is working to improve.

If you have any further questions please feel free to contact me.

Sincerely,



Penny Medley  
Administrative Assistant

Warren County, Tennessee  
Solid Waste/Sanitation Fund  
Statement of Proposed Operations  
For the Fiscal Year Ending June 30, 2000

| Account No.                      | Description                                      | Actual 1997-1998  | Estimated 1998-1999 | Estimated 1999-2000 |
|----------------------------------|--|-------------------|---------------------|---------------------|
| <b>Estimated Revenues</b>        |  |                   |                     |                     |
| <b>LOCAL TAXES</b>               |  |                   |                     |                     |
| 40000                            | County Property Taxes                            |                   |                     |                     |
| 40100                            | Current Property Tax                             | \$ 360,003        | \$ 250,089          | \$ 309,473          |
| 40110                            | Trustee's Collections - Prior Year               | 5,100             | 16,124              | 10,000              |
| 40120                            | Circuit/Clerk & Master Collections - Prior Years | 3,753             | 2,215               | 2,000               |
| 40130                            | Interest and Penalty                             | 1,481             | 1,889               | 1,200               |
| 40140                            | Payments in Lieu of Taxes - T.V.A.               | 2,557             | 1,234               | 1,100               |
| 40161                            | Payments in Lieu of Taxes - Local Utilities      | 3,893             | 2,748               | 1,800               |
| 40162                            | Payments in Lieu of Taxes - Other                | 15,832            | 11,231              | 10,000              |
| 40163                            | Statutory Local Taxes                            |                   |                     |                     |
| 40300                            | Bank Excise Tax                                  | 7,569             | 5,665               | 4,000               |
| 40320                            | Wholesale Beer Tax                               | 154,652           | 142,350             | 140,000             |
| 40330                            |  |                   |                     |                     |
|                                  | <b>TOTAL LOCAL TAXES</b>                         | <b>\$ 554,840</b> | <b>\$ 433,545</b>   | <b>\$ 479,573</b>   |
| <b>LICENSES AND PERMITS</b>      |  |                   |                     |                     |
| 41000                            | Permits  |                   |                     |                     |
| 41500                            | Beer Permits                                     | \$ 0              | \$ 294              | \$ 0                |
| 41510                            |  |                   |                     |                     |
|                                  | <b>TOTAL LICENSES AND PERMITS</b>                | <b>\$ 0</b>       | <b>\$ 294</b>       | <b>\$ 0</b>         |
| <b>OTHER LOCAL REVENUES</b>      |  |                   |                     |                     |
| 44000                            | Recurring Items                                  |                   |                     |                     |
| 44100                            | Sale of Recycled Materials                       | \$ 24,516         | \$ 21,240           | \$ 20,000           |
| 44145                            | Miscellaneous Refunds                            | 3,271             | 0                   | 0                   |
| 44170                            |  |                   |                     |                     |
|                                  | <b>TOTAL OTHER LOCAL REVENUES</b>                | <b>\$ 27,787</b>  | <b>\$ 21,240</b>    | <b>\$ 20,000</b>    |
| <b>STATE OF TENNESSEE</b>        |  |                   |                     |                     |
| 46000                            | General Government Grants                        |                   |                     |                     |
| 46100                            | Solid Waste Grants                               | \$ 50,802         | \$ 71,888           | \$ 50,000           |
| 46170                            | Other State Revenues                             |                   |                     |                     |
| 46800                            | State Revenue Sharing - T.V.A.                   | 194,402           | 204,823             | 190,000             |
| 46851                            |  |                   |                     |                     |
|                                  | <b>TOTAL STATE OF TENNESSEE</b>                  | <b>\$ 245,204</b> | <b>\$ 276,711</b>   | <b>\$ 240,000</b>   |
|                                  | <b>Total Estimated Revenues</b>                  | <b>\$ 827,831</b> | <b>\$ 731,790</b>   | <b>\$ 739,573</b>   |
| <b>Estimated Expenditures</b>    |  |                   |                     |                     |
| <b>PUBLIC HEALTH AND WELFARE</b> |  |                   |                     |                     |
| 55000                            | Waste Pickup                                     |                   |                     |                     |
| 55731                            | Supervisor/Director                              | \$ 26,865         | \$ 28,759           | \$ 29,800           |
| 105                              | Truck Drivers                                    | 63,868            | 73,747              | 93,000              |
| 147                              | Laborers   | 10,854            | 12,945              | 13,000              |
| 149                              | Social Security                                  | 7,712             | 6,592               | 10,400              |
| 201                              | State Retirement                                 | 2,213             | 3,587               | 4,600               |
| 204                              | Medical Insurance                                | 7,875             | 9,100               | 10,500              |
| 207                              | Unemployment Compensation                        | 594               | 689                 | 1,000               |
| 210                              | Communication                                    | 661               | 918                 | 1,000               |
| 307                              | Contracts with Government Agencies               | 38,818            | 41,199              | 36,000              |
| 309                              |  |                   |                     |                     |

Warren County, Tennessee  
Solid Waste/Sanitation Fund  
Statement of Proposed Operations (Cont.)

| Account No. | Description                              | Actual 1997-1998 | Estimated 1998-1999 | Estimated 1999-2000 |
|-------------|--|------------------|---------------------|---------------------|
|             | Estimated Expenditures (Cont.)           |                  |                     |                     |
| 55000       | PUBLIC HEALTH AND WELFARE (Cont.)        |                  |                     |                     |
| 55731       | Waste Pickup (Cont.)                     |                  |                     |                     |
| 329         | Laundry Service                          |                  |                     |                     |
| 333         | Licenses                                 | \$ 2,197         | \$ 2,354            | \$ 2,500            |
| 336         | Maintenance & Repair Services-Equipment  | 127              | 200                 | 214                 |
| 338         | Maintenance & Repair Services-Vehicles   | 0                | 153                 | 500                 |
| 340         | Medical and Dental Services              | 11,111           | 12,038              | 16,000              |
| 348         | Postal Charges                           | 295              | 360                 | 0                   |
| 351         | Rentals                                  | 64               | 131                 | 300                 |
| 355         | Travel                                   | 0                | 0                   | 500                 |
| 412         | Diesel Fuel                              | 766              | 1,378               | 2,000               |
| 425         | Gasoline                                 | 14,756           | 14,249              | 20,000              |
| 433         | Lubricants                               | 1,122            | 472                 | 2,000               |
| 450         | Tires and Tubes                          | 931              | 1,766               | 1,800               |
| 452         | Utilities                                | 7,088            | 13,487              | 16,000              |
| 499         | Other Supplies and Materials             | 1,147            | 1,439               | 2,000               |
| 513         | Worker's Compensation Insurance          | 287              | 1,288               | 1,487               |
| 718         | Motor Vehicles                           | 3,344            | 3,321               | 6,000               |
| 790         | Other Equipment                          | 82,788           | 0                   | 130,000             |
|             |  | 0                | 0                   | 1,000               |
|             | Total Waste Pickup                       | \$ 285,462       | \$ 232,151          | \$ 401,601          |
| 55732       | Convenience Centers                      |                  |                     |                     |
| 189         | Other Salaries & Wages                   | \$ 161,358       | \$ 166,822          | \$ 191,300          |
| 201         | Social Security                          | 12,293           | 14,331              | 14,650              |
| 204         | State Retirement                         | 1,081            | 3,003               | 6,450               |
| 207         | Medical Insurance                        | 8,400            | 9,100               | 10,500              |
| 210         | Unemployment Compensation                | 1,983            | 2,601               | 3,300               |
| 307         | Communication                            | 4,520            | 5,844               | 6,000               |
| 312         | Contracts with Private Agencies          | 219,404          | 178,051             | 230,000             |
| 332         | Legal Notices, Recording and Court Costs | 108              | 0                   | 300                 |
| 338         | Maintenance & Repair Services-Equipment  | 1,984            | 6,937               | 10,000              |
| 351         | Rentals                                  | 6,739            | 7,020               | 7,000               |
| 452         | Utilities                                | 5,677            | 6,404               | 7,000               |
| 499         | Other Supplies and Materials             | 2,893            | 4,375               | 0                   |
| 513         | Worker's Compensation Insurance          | 4,812            | 4,779               | 7,500               |
| 733         | Solid Waste Equipment                    | 36,854           | 58,626              | 15,000              |
| 790         | Other Equipment                          | 0                | 2,500               | 10,000              |
|             | Total Convenience Centers                | \$ 468,106       | \$ 492,393          | \$ 519,000          |
| 55759       | Other Waste Disposal                     |                  |                     |                     |
| 506         | Liability Insurance                      | \$ 9,000         | \$ 6,426            | \$ 9,000            |
| 510         | Trustee's Commission                     | 11,188           | 8,935               | 11,000              |
| 589         | Other Charges                            | 1,988            | 29,074              | 15,000              |
|             | Total Other Waste Disposal               | \$ 22,176        | \$ 44,435           | \$ 35,000           |
|             | Total Estimated Expenditures             | \$ 775,744       | \$ 768,979          | \$ 955,601          |

Warren County, Tennessee  
Solid Waste/Sanitation Fund  
Statement of Proposed Operations (Cont.)

| Account<br>No. | Description  | Actual<br>1997-1998 | Estimated<br>1998-1999 | Estimated<br>1999-2000 |
|----------------|--|---------------------|------------------------|------------------------|
|                | Excess of Estimated Revenues<br>Over (Under) Estimated<br>Expenditures | \$ 52,087           | \$ (37,189)            | \$ (216,028)           |
|                | Estimated Beginning Fund Balance -<br>July 1                           | 336,423             | 368,510                | 351,321                |
|                | Estimated Ending Fund Balance -<br>June 30                             | \$ 388,510          | \$ 351,321             | \$ 135,293             |

McMinnville

IWA

Here is the information that you requested yesterday.

Overall Budget for Solid Waste — \$1,004,965

Brush Collection — 2 full-time employees — 100% of time  
committed to yard waste

Cardboard Collection — 1 parttime employee — 40% of time  
4 full time employees — 10% of time

If you have any questions, please give me a call  
at (931) 473-1219. Thank you.

Brad Hennessee

McMinville

SANITATION COLLECTION  
RESIDENTIAL AND COMMERCIAL

123.43230

F/Y 1999-2000

Code Description.100 PERSONAL SERVICES

|      |                                    |                 |
|------|------------------------------------|-----------------|
| .121 | Wages-Permanent Employees          | 169,850.00      |
| .122 | Wages-Permanent Employees-Overtime | 9,000.00        |
| .141 | OASI (Employer's Share)            | 13,685.00       |
| .142 | Hospital and Health Insurance      | 25,750.00       |
| .143 | Retirement-Current                 | 6,690.00        |
| .146 | Workmen's Compensation             | 7,950.00        |
| .147 | Unemployment Insurance             | <u>1,000.00</u> |
| .100 | Total - Personal Services          | 233,925.00      |

.200 CONTRACTUAL SERVICES

|      |                                       |                   |
|------|---------------------------------------|-------------------|
| .211 | Postage                               | 20.00             |
| .219 | Other Communication                   | 100.00            |
| .220 | Printing                              | 100.00            |
| .235 | Memberships, Registration Fees        | 300.00            |
| .251 | Medical (Pre-Employment Physical)     | 250.00            |
| .259 | Other Professional Services           | 1,000.00          |
| .261 | Repair and Maintenance Vehicles       | 1,000.00          |
| .262 | Repair and Maintenance Mach. & Equip. | 15,000.00         |
| .295 | Landfill Services                     | <u>600,000.00</u> |
| .200 | Total - Contractual Services          | 617,770.00        |

.300 SUPPLIES

|      |                               |                 |
|------|-------------------------------|-----------------|
| .320 | Operating Supplies            | 4,000.00        |
| .326 | Clothing and Uniforms         | 1,500.00        |
| .331 | Gas, Oil, Diesel Fuel, Grease | 10,000.00       |
| .332 | Motor Vehicle Parts           | 20,000.00       |
| .334 | Tires, Tubes and Etc.         | 8,000.00        |
| .339 | Sundry Repair and Maintenance | <u>1,000.00</u> |
| .300 | Total - Supplies              | 44,500.00       |

**SANITATION COLLECTION**  
**RESIDENTIAL AND COMMERCIAL**

123.43230

F/Y 1999-2000

Code Description

Cont'd.

.500 FIXED CHARGES

|      |                                     |                 |
|------|-------------------------------------|-----------------|
| .512 | Insurance on Vehicles and Equipment | 5,000.00        |
| .513 | Liability                           | <u>2,000.00</u> |

|      |                       |          |
|------|-----------------------|----------|
| .500 | Total - Fixed Charges | 7,000.00 |
|------|-----------------------|----------|

.900 CAPITAL OUTLAY

|      |                |                 |
|------|----------------|-----------------|
| .935 | Recycling Bins | <u>5,000.00</u> |
|------|----------------|-----------------|

|      |                        |          |
|------|------------------------|----------|
| .900 | Total - Capital Outlay | 5,000.00 |
|------|------------------------|----------|

|  |                                     |            |
|--|-------------------------------------|------------|
|  | GRAND TOTAL - SANITATION COLLECTION | 908,195.00 |
|--|-------------------------------------|------------|



SANITATION - TRANSFER STATION

124.43240

F/Y 1999-2000

| <u>Code</u> | <u>Description</u>                    |                   |
|-------------|---------------------------------------|-------------------|
| <u>.100</u> | <u>PERSONAL SERVICES</u>              |                   |
| .121        | Wages-Permanent Employees             | 50,500.00         |
| .122        | Wages-Permanent Employees-Overtime    | 1,000.00          |
| .141        | OASI (Employer's Share)               | 3,930.00          |
| .142        | Hospital and Health Insurance         | 5,900.00          |
| .143        | Retirement-Current                    | 2,100.00          |
| .146        | Workmen's Compensation                | <u>1,530.00</u>   |
| .100        | Total - Personal Services             | 64,960.00         |
| <u>.200</u> | <u>CONTRACTUAL SERVICES</u>           |                   |
| .211        | Postage                               | 50.00             |
| .220        | Printing                              | 800.00            |
| .230        | Publicity, Subscriptions              | 150.00            |
| .235        | Memberships, Registration Fees        | 5,500.00          |
| .241        | Electric                              | 6,000.00          |
| .242        | Water                                 | 1,000.00          |
| .245        | Telephone                             | 2,000.00          |
| .252        | Legal Services                        | 5,000.00          |
| .255        | Landfill Expenses and Maintenance     | 10,000.00         |
| .259        | Other Professional Services           | 210,000.00        |
| .261        | Repair and Maintenance Vehicles       | 10,100.00         |
| .262        | Repair and Maintenance Mach. & Equip. | 800.00            |
| .263        | Repair and Maintenance Office Equip.  | 100.00            |
| .266        | Repair and Maintenance Buildings      | 1,500.00          |
| .280        | Travel                                | 2,000.00          |
| .294        | Machinery and Equipment Rental        | 800.00            |
| .295        | Landfill Services                     | <u>255,000.00</u> |
| .200        | Total - Contractual Services          | 510,800.00        |

SANITATION - TRANSFER STATION

124.43240

F/Y 1999-2000

Code Description

Cont'd.

.300 SUPPLIES

|      |                                  |               |
|------|----------------------------------|---------------|
| .310 | Office Supplies                  | 300.00        |
| .320 | Operating Supplies               | 8,000.00      |
| .322 | Chemical and Laboratory Supplies | 1,000.00      |
| .326 | Clothing and Uniforms            | 650.00        |
| .330 | Repair and Maintenance Supplies  | 500.00        |
| .331 | Gas, Oil, Diesel Fuel, Grease    | 2,000.00      |
| .332 | Motor Vehicle Parts              | 2,000.00      |
| .333 | Machinery and Equipment Parts    | 2,000.00      |
| .334 | Tires, Tubes and Etc.            | 10,000.00     |
| .344 | Safety Supplies                  | <u>200.00</u> |

|      |                  |           |
|------|------------------|-----------|
| .300 | Total - Supplies | 26,650.00 |
|------|------------------|-----------|

.400 BUILDING MATERIALS

|      |                  |               |
|------|------------------|---------------|
| .452 | Gravel and Stone | 1,000.00      |
| .490 | Other Materials  | <u>500.00</u> |

|      |                            |          |
|------|----------------------------|----------|
| .400 | Total - Building Materials | 1,500.00 |
|------|----------------------------|----------|

.500 FIXED CHARGES

|      |                                  |                 |
|------|----------------------------------|-----------------|
| .511 | Insurance on Buildings           | 1,300.00        |
| .512 | Insurance on Vehicles and Equip. | 1,700.00        |
| .513 | Liability                        | <u>3,000.00</u> |

|      |                       |          |
|------|-----------------------|----------|
| .500 | Total - Fixed Charges | 6,000.00 |
|------|-----------------------|----------|

.600 DEBT. SERVICE

|      |                          |                   |
|------|--------------------------|-------------------|
| .611 | Retirement of Bonds      | 182,000.00        |
| .631 | Interest on Bonded Debt. | <u>113,055.00</u> |

|      |                       |            |
|------|-----------------------|------------|
| .600 | Total - Debt. Service | 295,055.00 |
|------|-----------------------|------------|

SANITATION - TRANSFER STATION

124.43240

F/Y 1999-2000

Code Description

Cont'd.

.900 CAPITAL OUTLAY

.939 Other Improvements 100,000.00

.900 Total - Capital Outlay 100,000.00

TOTAL - SANITATION - TRANSFER STATION 1,004,965.00

**APPENDIX B**

Proposed Budgets

*Central Tennessee Solid Waste Region - 5 Year Update*

TABLE NO.

**ESTIMATED 10 YEAR BUDGET**

|  | Fiscal Year        |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|  | 1999/00            | 2000/01            | 2001/02            | 2002/03            | 2003/04            | 2004/05            | 2005/06            | 2006/07            | 2007/08            | 2008/09            | 2009/10            |
| <b>Rutherford County</b>                                 |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| 1. Waste Reduction<br>Continued Operation of Class III/I | \$660,564          | \$683,684          | \$707,613          | \$732,379          | \$758,012          | \$784,543          | \$812,002          | \$840,422          | \$869,837          | \$900,281          | \$931,791          |
| 2. Waste Collection and Transportation                   | \$769,306          | \$796,232          | \$824,100          | \$852,943          | \$882,796          | \$913,694          | \$945,674          | \$978,772          | \$1,013,029        | \$1,048,485        | \$1,085,182        |
| 3. Recycling Estimated                                   | \$839,970          | \$869,369          | \$983,797          | \$1,018,230        | \$1,053,868        | \$1,090,753        | \$1,128,930        | \$1,168,442        | \$1,209,338        | \$1,251,664        | \$1,295,473        |
| 4. Composting  | \$0                | \$0                | \$1,964,000        | \$2,032,740        | \$2,103,886        | \$2,177,522        | \$2,253,735        | \$2,332,616        | \$2,414,257        | \$2,498,756        | \$2,586,213        |
| 5. Waste Capacity<br>Post Closure Class I                | \$69,125           | \$71,545           | \$74,049           | \$76,640           | \$79,323           | \$82,099           | \$84,973           | \$87,947           | \$91,025           | \$94,211           | \$97,508           |
| 6. Sanitation Education                                  | \$42,987           | \$44,491           | \$20,000           | \$20,700           | \$21,425           | \$22,174           | \$22,950           | \$23,754           | \$24,585           | \$25,446           | \$26,336           |
| Benefits & Miscellaneous                                 | \$74,100           | \$76,694           | \$79,378           | \$82,156           | \$85,031           | \$88,008           | \$91,088           | \$94,276           | \$97,576           | \$100,991          | \$104,525          |
| <b>TOTAL SW BUDGET</b>                                   | <b>\$2,456,052</b> | <b>\$2,542,014</b> | <b>\$4,652,936</b> | <b>\$4,815,789</b> | <b>\$4,984,341</b> | <b>\$5,158,793</b> | <b>\$5,339,351</b> | <b>\$5,526,228</b> | <b>\$5,719,646</b> | <b>\$5,919,834</b> | <b>\$6,127,028</b> |



*Central Tennessee Solid Waste Region - 5 Year Update*

**TABLE NO.**

|                            |                    | <b>ESTIMATED 10 YEAR BUDGET</b> |                  |                    |                    |                    |                    |                    |                    |                    |                    |  |
|----------------------------|--------------------|---------------------------------|------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--|
| <b>Coffee County</b>       | <b>Fiscal Year</b> |                                 |                  |                    |                    |                    |                    |                    |                    |                    |                    |  |
|                            | 1999/00            | 2000/01                         | 2001/02          | 2002/03            | 2003/04            | 2004/05            | 2005/06            | 2006/07            | 2007/08            | 2008/09            | 2009/10            |  |
| 1. Sanitation Management   | \$76,468           | \$79,144                        | \$81,914         | \$84,781           | \$87,748           | \$90,820           | \$93,998           | \$97,288           | \$100,693          | \$104,218          | \$107,865          |  |
| 2. Waste Collection and Tr | \$389,642          | \$403,279                       | \$417,394        | \$432,003          | \$447,123          | \$462,772          | \$478,969          | \$495,733          | \$513,084          | \$531,041          | \$549,628          |  |
| 3. Class IV Waste          |                    |                                 |                  | \$147,000          | \$152,145          | \$157,470          | \$162,982          | \$168,686          | \$174,590          | \$180,701          | \$187,025          |  |
| 3. Recycling Estimated     | \$175,366          | \$181,503                       | \$253,856        | \$196,741          | \$203,627          | \$210,754          | \$218,130          | \$225,765          | \$233,667          | \$241,845          | \$250,309          |  |
| 4. Composting              |                    |                                 |                  |                    | \$244,600          | \$253,161          | \$262,022          | \$271,192          | \$280,684          | \$290,508          | \$300,676          |  |
| 5. Waste Capacity          |                    |                                 |                  |                    |                    |                    |                    |                    |                    |                    |                    |  |
| 6. Convenience Centers     | \$127,307          | \$131,762                       | \$136,374        | \$141,147          | \$146,087          | \$151,200          | \$156,492          | \$161,970          | \$167,639          | \$173,506          | \$179,579          |  |
| 7. SW Education            | \$0                | \$0                             | \$9,000          | \$9,315            | \$9,641            | \$9,978            | \$10,328           | \$10,689           | \$11,063           | \$11,451           | \$11,851           |  |
| Benefits & Miscellaneous   | \$68,556           | \$70,956                        | \$73,439         | \$76,010           | \$78,670           | \$81,424           | \$84,273           | \$87,223           | \$90,276           | \$93,435           | \$96,706           |  |
| <b>TOTAL SW BUDGET</b>     | <b>\$837,338</b>   | <b>\$866,645</b>                | <b>\$971,977</b> | <b>\$1,086,997</b> | <b>\$1,369,641</b> | <b>\$1,417,579</b> | <b>\$1,467,194</b> | <b>\$1,518,546</b> | <b>\$1,571,695</b> | <b>\$1,626,704</b> | <b>\$1,683,639</b> |  |

*Central Tennessee Solid Waste Region - 5 Year Update*

TABLE NO.

|                            |  | <b>ESTIMATED 10 YEAR BUDGET</b> |           |             |             |             |             |             |             |             |             |             |
|----------------------------|--|---------------------------------|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                            |  | <b>Fiscal Year</b>              |           |             |             |             |             |             |             |             |             |             |
| <b>Warren County</b>       |  | 1999/00                         | 2000/01   | 2001/02     | 2002/03     | 2003/04     | 2004/05     | 2005/06     | 2006/07     | 2007/08     | 2008/09     | 2009/10     |
| 1. Sanitation Management   |  | \$392,019                       | \$405,740 | \$419,941   | \$434,639   | \$449,851   | \$465,596   | \$481,892   | \$498,758   | \$516,214   | \$534,282   | \$552,982   |
| 2. Waste Collection and Tr |  | \$0                             | \$0       | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| 3. Recycling Estimated     |  | \$22,800                        | \$23,598  | \$115,424   | \$28,464    | \$29,460    | \$30,491    | \$31,558    | \$32,663    | \$33,806    | \$34,989    | \$36,214    |
| 4. Composting              |  |                                 |           |             |             | \$228,566   | \$236,566   | \$244,846   | \$253,415   | \$262,285   | \$271,465   | \$280,966   |
| 5. Waste Capacity          |  |                                 |           |             |             |             |             |             |             |             |             |             |
| 6. Convenience Centers     |  | \$506,617                       | \$524,349 | \$542,701   | \$561,695   | \$581,355   | \$601,702   | \$622,762   | \$644,558   | \$667,118   | \$690,467   | \$714,633   |
| 7. Other Waste Disposal    |  | \$34,165                        | \$35,361  | \$36,598    | \$37,879    | \$39,205    | \$40,577    | \$41,997    | \$43,467    | \$44,989    | \$46,563    | \$48,193    |
| 8. SW Education            |  |                                 |           | \$9,000     | \$9,315     | \$9,641     | \$9,978     | \$10,328    | \$10,689    | \$11,063    | \$11,451    | \$11,851    |
| <b>TOTAL SW BUDGET</b>     |  | \$955,601                       | \$989,047 | \$1,123,664 | \$1,071,992 | \$1,338,078 | \$1,384,910 | \$1,433,382 | \$1,483,551 | \$1,535,475 | \$1,589,216 | \$1,644,839 |



*Central Tennessee Solid Waste Region - 5 Year Update*

TABLE NO.

| Cannon County              | ESTIMATED 10 YEAR BUDGET |           |           |           |           |           |           |           |           |           |           |
|----------------------------|--------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                            | Fiscal Year              |           |           |           |           |           |           |           |           |           |           |
|                            | 1999/00                  | 2000/01   | 2001/02   | 2002/03   | 2003/04   | 2004/05   | 2005/06   | 2006/07   | 2007/08   | 2008/09   | 2009/10   |
| 1. Sanitation Management   | \$204,800                | \$211,968 | \$219,387 | \$227,065 | \$235,013 | \$243,238 | \$251,751 | \$260,563 | \$269,682 | \$279,121 | \$288,891 |
| 2. Waste Collection and Tr | \$0                      | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       |
| 3. Recycling Estimated     | \$22,800                 | \$23,598  | \$24,424  | \$25,279  | \$26,164  | \$27,079  | \$28,027  | \$29,008  | \$30,023  | \$31,074  | \$32,162  |
| 4. Composting              |                          |           |           |           | \$258,750 | \$267,806 | \$277,179 | \$286,881 | \$296,922 | \$307,314 | \$318,070 |
| 5. Waste Capacity          |                          |           |           |           |           |           |           |           |           |           |           |
| 6. Convenience Centers     | \$0                      | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       |
| 7. Other Waste Disposal    | \$0                      | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       |
| <b>TOTAL SW BUDGET</b>     | \$227,600                | \$235,566 | \$243,811 | \$252,344 | \$519,926 | \$538,124 | \$556,958 | \$576,452 | \$596,627 | \$617,509 | \$639,122 |

*Central Tennessee Solid Waste Region - 5 Year Update*

TABLE NO.

|                             |  | <b>ESTIMATED 10 YEAR BUDGET</b> |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
|-----------------------------|--|---------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|                             |  | <b>Fiscal Year</b>              |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| <b>City of Murfreesboro</b> |  | 1999/00                         | 2000/01            | 2001/02            | 2002/03            | 2003/04            | 2004/05            | 2005/06            | 2006/07            | 2007/08            | 2008/09            | 2009/10            |
| 1. Salary                   |  | \$869,827                       | \$900,271          | \$931,781          | \$964,393          | \$998,147          | \$1,033,082        | \$1,069,240        | \$1,106,663        | \$1,145,396        | \$1,185,485        | \$1,226,977        |
| 2. O&M                      |  | \$106,054                       | \$109,766          | \$113,608          | \$117,585          | \$121,700          | \$125,959          | \$130,368          | \$134,931          | \$139,654          | \$144,541          | \$149,600          |
| 3. Recycling Estimated      |  | \$636,632                       | \$658,914          | \$681,976          | \$705,845          | \$730,550          | \$756,119          | \$782,583          | \$809,974          | \$838,323          | \$867,664          | \$898,032          |
| 4. Composting               |  |                                 |                    |                    |                    | \$508,185          | \$525,971          | \$544,380          | \$563,434          | \$583,154          | \$603,564          | \$624,689          |
| 5. Waste Capacity           |  |                                 |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| 6. Misc                     |  | \$749,346                       | \$775,573          | \$802,718          | \$830,814          | \$859,892          | \$889,988          | \$921,138          | \$953,378          | \$986,746          | \$1,021,282        | \$1,057,027        |
| 7. SW Education             |  | \$0                             | \$0                | \$20,000           | \$20,700           | \$21,425           | \$22,174           | \$22,950           | \$23,754           | \$24,585           | \$25,446           | \$26,336           |
| <b>TOTAL SW BUDGET</b>      |  | <b>\$2,361,860</b>              | <b>\$2,444,525</b> | <b>\$2,550,083</b> | <b>\$2,639,336</b> | <b>\$3,239,898</b> | <b>\$3,353,295</b> | <b>\$3,470,660</b> | <b>\$3,592,133</b> | <b>\$3,717,858</b> | <b>\$3,847,983</b> | <b>\$3,982,662</b> |

*Central Tennessee Solid Waste Region - 5 Year Update*

**TABLE NO.**

| <b>ESTIMATED 10 YEAR BUDGET</b> |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
|---------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| <b>City of Manchester</b>       | <b>Fiscal Year</b> |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
|                                 | <b>1999/00</b>     | <b>2000/01</b>     | <b>2001/02</b>     | <b>2002/03</b>     | <b>2003/04</b>     | <b>2004/05</b>     | <b>2005/06</b>     | <b>2006/07</b>     | <b>2007/08</b>     | <b>2008/09</b>     | <b>2009/10</b>     |
| 1. Salary Waste Disposal        | \$66,589           | \$68,920           | \$71,332           | \$73,828           | \$76,412           | \$79,087           | \$81,855           | \$84,720           | \$87,685           | \$90,754           | \$93,930           |
| 2. Waste Collection Service     | \$1,022,200        | \$1,057,977        | \$1,095,006        | \$1,133,331        | \$1,172,998        | \$1,214,053        | \$1,256,545        | \$1,300,524        | \$1,346,042        | \$1,393,154        | \$1,441,914        |
| 3. Salary/Recycling Estimate    | \$72,494           | \$75,031           | \$92,657           | \$89,900           | \$93,047           | \$96,304           | \$99,674           | \$103,163          | \$106,773          | \$110,511          | \$114,378          |
| 4. Composting                   |                    |                    |                    |                    | \$103,500          | \$107,123          | \$110,872          | \$114,752          | \$118,769          | \$122,926          | \$127,228          |
| 5. Waste Capacity               |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| 6. Misc                         | \$7,000            | \$7,245            | \$7,499            | \$7,761            | \$8,033            | \$8,314            | \$8,605            | \$8,906            | \$9,218            | \$9,540            | \$9,874            |
| 7. Other Waste Disposal         | \$40,000           | \$41,400           | \$42,849           | \$44,349           | \$45,901           | \$47,507           | \$49,170           | \$50,891           | \$52,672           | \$54,516           | \$56,424           |
| <b>TOTAL SW BUDGET</b>          | <b>\$1,208,283</b> | <b>\$1,250,573</b> | <b>\$1,309,343</b> | <b>\$1,349,170</b> | <b>\$1,499,891</b> | <b>\$1,552,387</b> | <b>\$1,606,721</b> | <b>\$1,662,956</b> | <b>\$1,721,159</b> | <b>\$1,781,400</b> | <b>\$1,843,749</b> |

*Central Tennessee Solid Waste Region - 5 Year Update*

**TABLE NO.**

|                             |  | <b>ESTIMATED 10 YEAR BUDGET</b> |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|-----------------------------|--|---------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|                             |  | <b>Fiscal Year</b>              |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| <b>City of Woodbury</b>     |  | <b>1999/00</b>                  | <b>2000/01</b>   | <b>2001/02</b>   | <b>2002/03</b>   | <b>2003/04</b>   | <b>2004/05</b>   | <b>2005/06</b>   | <b>2006/07</b>   | <b>2007/08</b>   | <b>2008/09</b>   | <b>2009/10</b>   |
| 1. Waste Collection Service |  | \$109,637                       | \$113,474        | \$117,446        | \$121,557        | \$125,811        | \$130,214        | \$134,772        | \$139,489        | \$144,371        | \$149,424        | \$154,654        |
| 2. Disposal Fees            |  | \$75,000                        | \$77,625         | \$80,342         | \$83,154         | \$86,064         | \$89,076         | \$92,194         | \$95,421         | \$98,761         | \$102,217        | \$105,795        |
| 3. Recycling Estimated      |  | \$0                             | \$0              | \$0              | \$0              | \$0              | \$0              | \$0              | \$0              | \$0              | \$0              | \$0              |
| 4. Composting               |  |                                 |                  |                  |                  | \$0              | \$0              | \$0              | \$0              | \$0              | \$0              | \$0              |
| 5. Waste Capacity           |  |                                 |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| 6. Misc                     |  | \$16,427                        | \$17,002         | \$17,597         | \$18,213         | \$18,851         | \$19,510         | \$20,193         | \$20,900         | \$21,632         | \$22,389         | \$23,172         |
| 7. Other Waste Disposal     |  | \$0                             | \$0              | \$0              | \$0              | \$0              | \$0              | \$0              | \$0              | \$0              | \$0              | \$0              |
| <b>TOTAL SW BUDGET</b>      |  | <b>\$201,064</b>                | <b>\$208,101</b> | <b>\$215,385</b> | <b>\$222,923</b> | <b>\$230,726</b> | <b>\$238,801</b> | <b>\$247,159</b> | <b>\$255,810</b> | <b>\$264,763</b> | <b>\$274,030</b> | <b>\$283,621</b> |

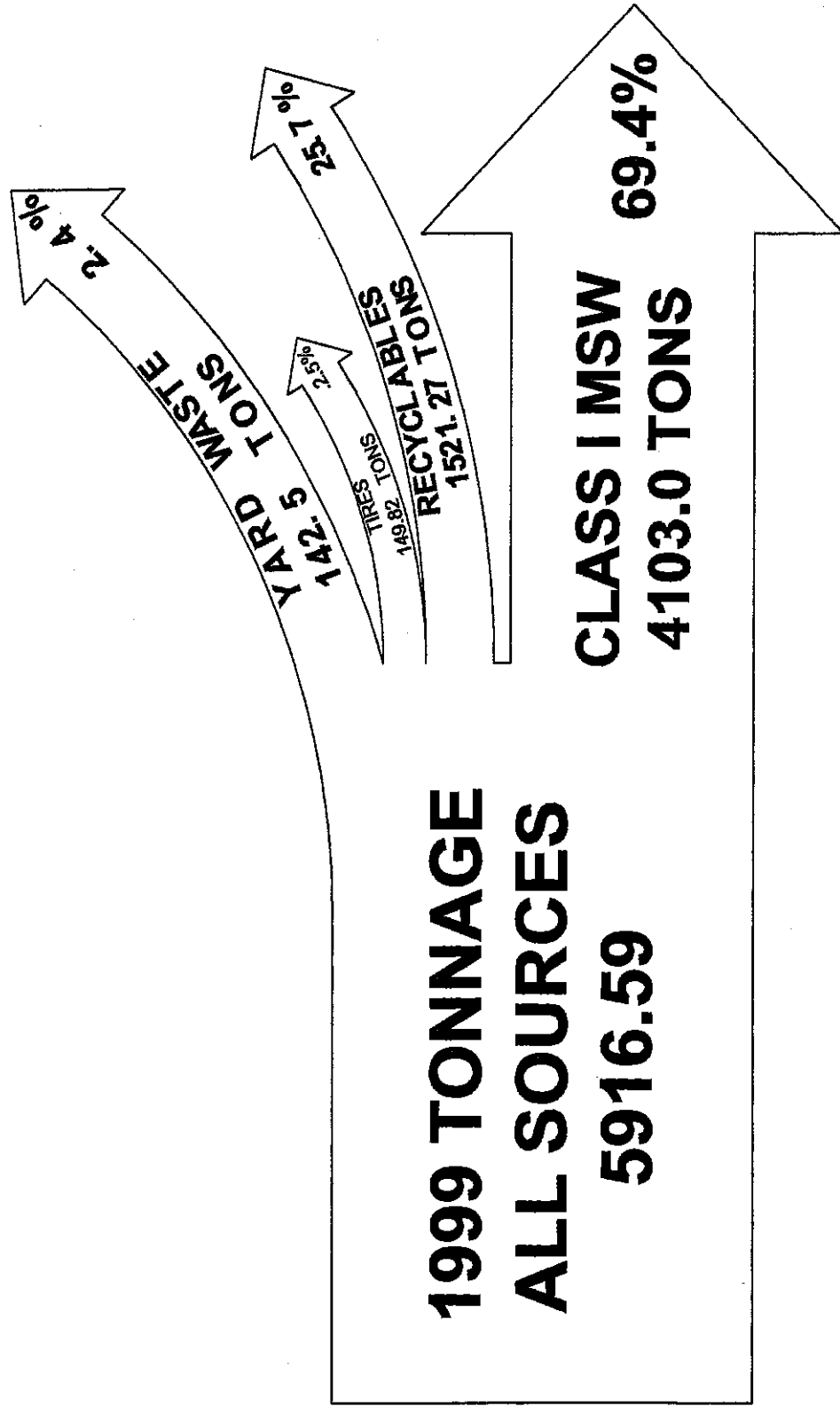
*Central Tennessee Solid Waste Region - 5 Year Update*

**TABLE NO.**

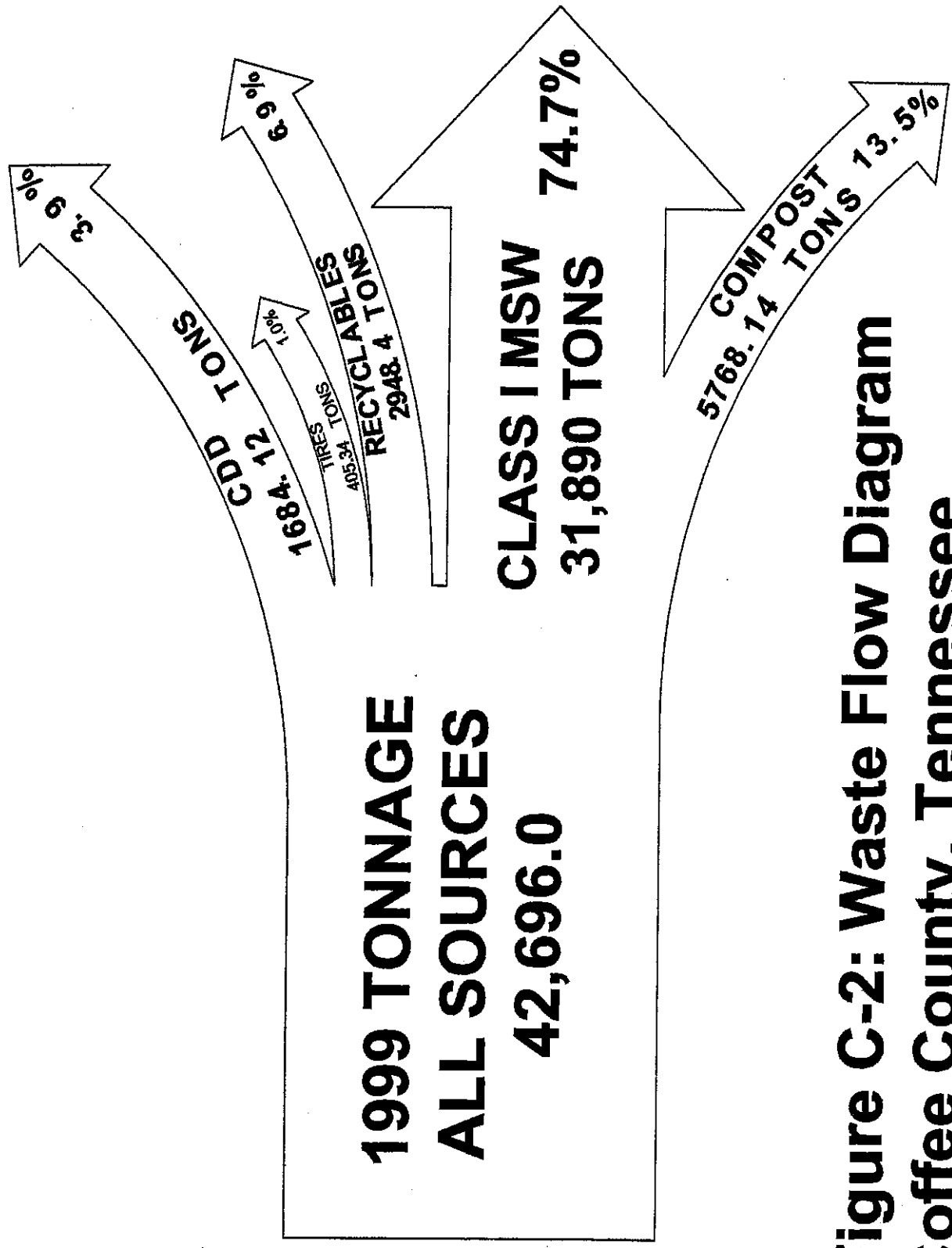
|                             |  | <b>ESTIMATED 10 YEAR BUDGET</b> |           |           |             |             |             |             |             |             |             |             |
|-----------------------------|--|---------------------------------|-----------|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                             |  | <b>Fiscal Year</b>              |           |           |             |             |             |             |             |             |             |             |
| <b>City of McMinnville</b>  |  | 1999/00                         | 2000/01   | 2001/02   | 2002/03     | 2003/04     | 2004/05     | 2005/06     | 2006/07     | 2007/08     | 2008/09     | 2009/10     |
| 1. Salary and Benefits      |  | \$131,611                       | \$136,217 | \$140,985 | \$145,919   | \$151,027   | \$156,313   | \$161,784   | \$167,446   | \$173,307   | \$179,372   | \$185,650   |
| 2. Disposal & Contract Fees |  | \$617,770                       | \$639,392 | \$661,771 | \$684,933   | \$708,905   | \$733,717   | \$759,397   | \$785,976   | \$813,485   | \$841,957   | \$871,426   |
| 3. Recycling Estimated      |  | \$107,314                       | \$111,070 | \$127,957 | \$119,436   | \$123,616   | \$127,943   | \$132,421   | \$137,055   | \$141,852   | \$146,817   | \$151,956   |
| 4. Composting               |  |                                 |           |           |             | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| 5. Waste Capacity           |  |                                 |           |           |             |             |             |             |             |             |             |             |
| 6. Misc                     |  | \$51,500                        | \$53,303  | \$55,168  | \$57,099    | \$59,097    | \$61,166    | \$63,307    | \$65,522    | \$67,816    | \$70,189    | \$72,646    |
| 7. Other Waste Disposal     |  | \$0                             | \$0       | \$0       | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| <b>TOTAL SW BUDGET</b>      |  | \$908,195                       | \$939,982 | \$985,881 | \$1,007,387 | \$1,042,646 | \$1,079,138 | \$1,116,908 | \$1,156,000 | \$1,196,460 | \$1,238,336 | \$1,281,678 |

## **APPENDIX C**

### **Waste Flow Diagrams**

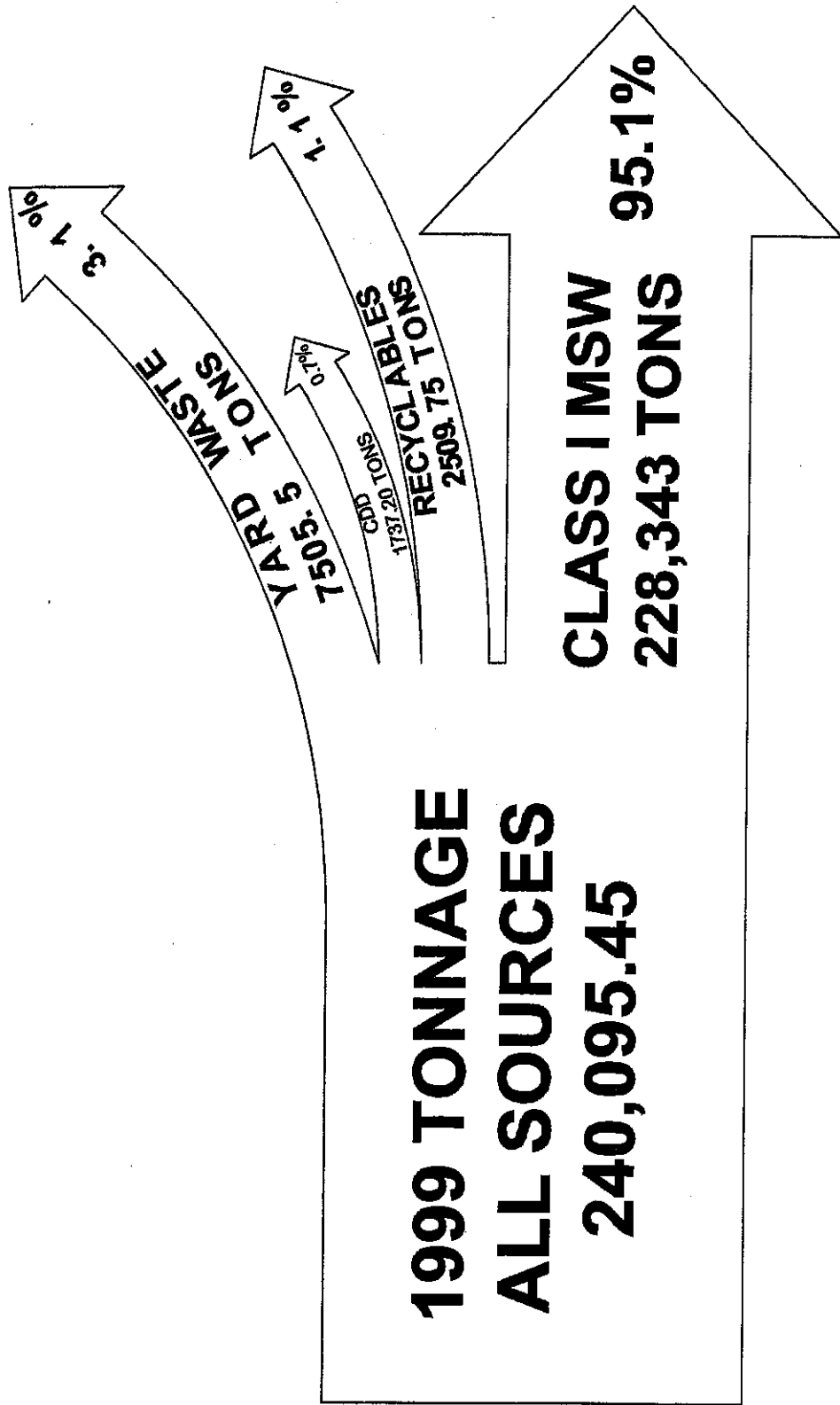


**Figure C-1: Waste Flow Diagram  
Cannon County, Tennessee**

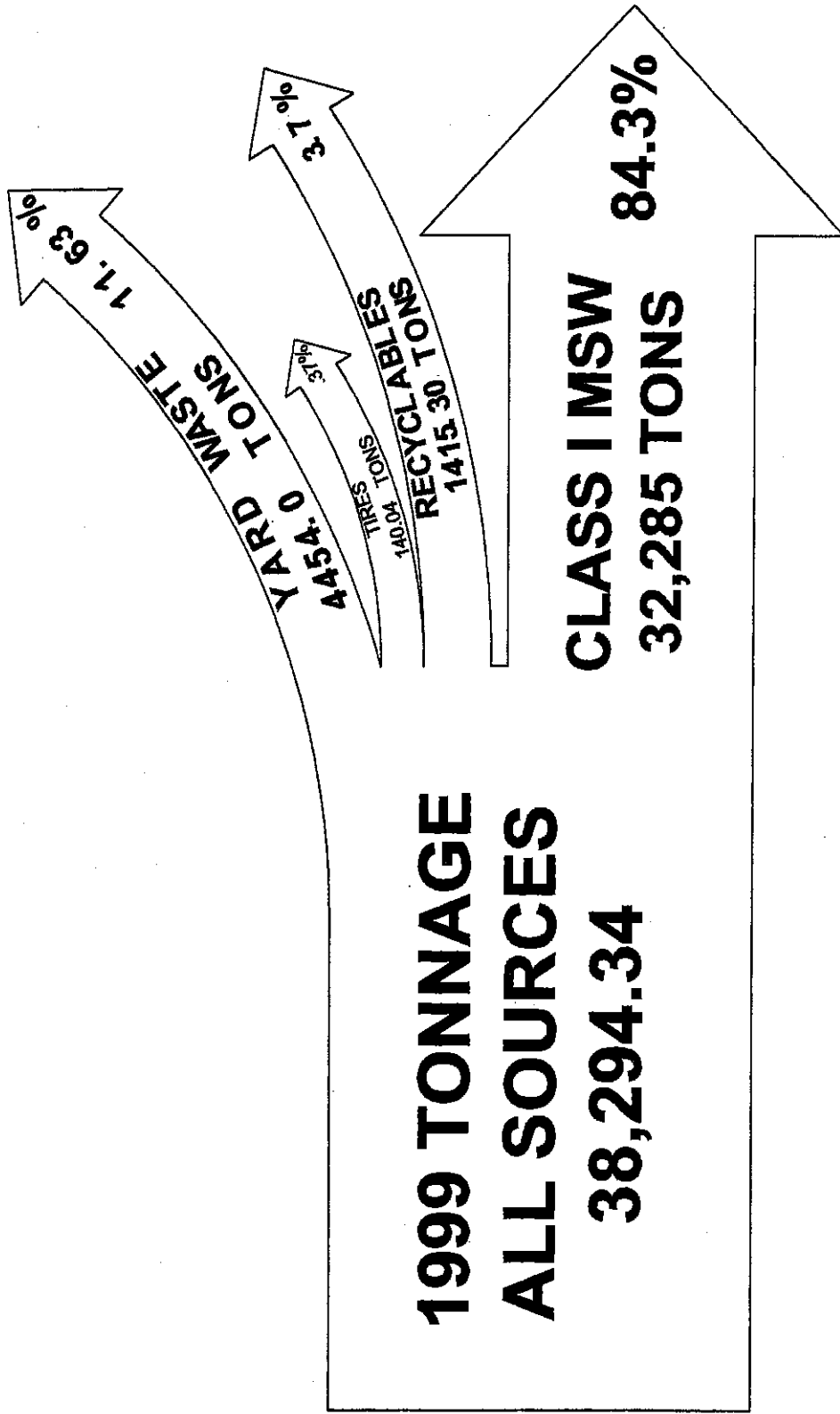


**Figure C-2: Waste Flow Diagram  
Coffee County, Tennessee**





**Figure C-3: Waste Flow Diagram  
Rutherford County, Tennessee**



**Figure 3-4: Waste Flow Diagram  
Warren County, Tennessee**

**APPENDIX D**

Proposed Schedules

**APPENDIX E**

**MSW Compost Information**



## COMPANY INFORMATION

### Information Available:

- [Company Overview](#)
- [What people are saying about Bedminster](#)
- [Contact Information](#)
- [Letter to Licensees](#)

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### Company overview

Bedminster Bioconversion Corp. provides communities with a cost-effective patented technology that transforms the organic fraction of the world's waste stream from an environmental liability into an asset of significant value. This valuable organic material will rebuild the world's soils by introducing rich sources of the most fundamental building blocks of fertility, thereby fulfilling the true promise of recycling.

### Bedminster's History

Over the past 60 years the problems involved with the handling of municipal solid waste and municipal sewage sludge have increased dramatically. Landfills are overflowing, ground water is being contaminated, and new solutions are mandatory.

The work of Dr. Eric Eweson offers a proven solution to this problem. Eric Eweson (pronounced "ai-vuh-sun"), who was born in Sweden in 1897, devoted his life to the acquisition and application of knowledge that would improve and enrich our depleted soils. He believed that the wastes produced by our society every day could be utilized to enrich the topsoil on which our food production depends. His vision evolved with its roots in the past, but with clear impact for the future of the Earth's environment. His knowledge of biological composting of solid waste and sludge, combined with an inventive mind, led to the development of the famous Eweson Digester, which is now the widespread, preeminent solution to industrial and municipal solid and liquid waste problems.

In the 1940's Eweson developed a process in Sweden which employed fermentation to convert black liquor sludge (from wood waste) into baker's yeast. He built successful facilities in Europe, Canada and North America and eventually sold the technology to an organization which eventually became the Fleischman Yeast Company. He then turned his attention to other waste products which he could recycle organics back to depleted soils. He studied under Sir Albert Howard, who was knighted for his work in composting in England.

Eweson's desire was to use organic recycling to enhance agricultural fertility and make a difference in the fight against world hunger. He also believed that it was mankind's duty to come into harmony with the environment, and that in so doing it would be possible to create and preserve pure water, clean air, and a healthy environment. This effort did not come without continued capital investments from a small group of investors. Entering this market came across fierce opposition from the large waste management companies, and only thanks to the continued support of Mrs. Dillon was the

company able to survive.

In the late sixties, Eweson married Dorothy Dillon, the sister of Douglas Dillon and daughter of Clarence Dillon, founder of Dillon and Reed. He then began a journey that included years of experimenting in an effort to come up with a practical method to convert the organic fraction of municipal waste into a valued soil amendment. The first prototype Eweson Digester was built in Egg City California. While he had great vision, he was obviously 30 years ahead of his time. Another 18 years would pass before the first Commercial Eweson Digester was installed for Ambassador College in East Texas. The college ran the facility processing the solid and liquid waste from the campus and used the end product (compost) to convert non-productive soils into rich gardens, and more importantly proved the technology was sound.

As in the past the technology was still ahead of its time as there were no impending garbage crisis in the US. Eweson continued to develop the process up until the time of his death in 1986.

Subsequently his widow inherited the patent rights to the technology, and she along with her grandson David Peipers (a Harvard Law School Graduate) formed Bedminster Bioconversion to take advantage of the years of research conducted by her late husband.

They put together a small group of sophisticated investors to put up seed capital to take the technology to the marketplace. This small group consisted of members of the Dillon and Pitcairn families along with a second-generation member of the famed Nobel Peace Prize family.

During the first few years the company invested an enormous amount of capital on R & D, sales & marketing, and more importantly in conducting pragmatic research with prestigious universities such as The University of Florida, Louisiana State University, The University of Clemson, North Carolina State, The University of Texas, University of Tennessee, and Texas A & M, to name a few. The majority of the funding came from Mrs. Dillon as she was committed to seeing her late husband's dreams come to fruition. Although the company received accolades from environmentalists, regulators (including the US EPA and USDA) and municipal officials, profitability continued to be an elusive goal.

1996 saw a change in gatekeepers, as Donald Kistner, another member of the Pitcairn family, took over the reins of the company. He joined Bedminster after a long and successful career as Chief Executive Officer of Pitcairn Properties, a Philadelphia-based real estate development firm.

Kistner formed a new management team charged with finally restructuring the company so as to achieve sustainable profitability. In addition to reducing costs through a comprehensive corporate reorganization, they refocused the company's efforts around the core technology.

### **Bedminster's Present and Future**

As a result of these efforts, the company is experiencing its strongest growth in its 30-year history. Plants with a combined annual capacity of over 250,000 tons of waste are under construction in the U.S., Canada, and Sweden. The completion of these projects will bring the total waste processed through Bedminster facilities to over 800,000 tons per year worldwide. In addition, the company's licensees continue to bring in new projects from around the globe.

The market for this technology continues to expand dramatically due to changing waste management practices in the U.S. and around the world. As the cost of land increases and governments become increasingly reluctant to incur the "trailing liability" of new landfills, these decision makers must choose between leaving behind a legacy of costly landfill monitoring or utilizing Bedminster's proven technology that virtually eliminates this liability and converts it into an asset.

In addition to the problems posed by the alarming depletion of topsoil, waters normally drawn into the soils are running off into lakes, streams and rivers, carrying toxic chemicals with them into our water sources. This "non-point-source pollution" problem is receiving attention from environmentalists and regulators alike. Compost is the single most cost-effective way to replenish these soils and restore their ability to retain moisture, thereby filtering the toxic chemicals now running off into streams and rivers. By creating awareness of the use of compost to solve this problem, the company will significantly broaden the market for its technology. Bioremediation of polluted soils in EPA "brownfields" represents yet another potentially profitable compost application.

As local representation and market understanding are critical to successful project development, Bedminster leverages its core strength in the technology by licensing its patented process to both municipal governments and private companies around the globe. To further increase our marketing strength, Bedminster formed a partnership in 1998 with Rondeco Scandinavia. This joint venture adds Rondeco's waste preprocessing and compost pelletization technologies to the Bedminster portfolio, and has enabled Bedminster to further extend their market reach into Europe, Africa and Asia. For a complete listing of our licensed territories, including licensee contact information, [click here](#). To contact Bedminster and/or Rondeco about new licensing opportunities, [click here](#).

The company has achieved its growth objectives by recommitting itself to the vision of its founder, Eric Eweson: to restore the organic fraction of the waste stream to the soil. The company offers communities a technology that will help them "get right with nature" by transforming their wastes into a material that will make their trees, lawns and gardens more productive and beautiful, increase agricultural yields and replenish the millions of tons of topsoil lost to erosion each year.

More and more, the world is recognizing that Bedminster is **THE RIGHT THING TO DO**.

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## What people are saying about Bedminster

- American City & County - ["Communities Combine to Solve Waste Problems"](#)
- American City & County - ["Waste Not, Want Not"](#)
- Asheville Citizen Times - ["Scientist believes composting garbage would save landfills and benefit gro](#)
- The Atlanta Constitution - ["High-tech plant to launch new age of garbage"](#)
- The Atlanta Journal - ["Cobb Composting Facility Turns Garbage Into Gold"](#)
- Bedminster - ["COMPOST UTILIZATION - SUPPRESSING DISEASE IN FIELD CROPS"](#)
- Bedminster - ["King Karl XVI Gustaf of Sweden paid a visit..."](#)
- Environmental Consultant & Specifier - ["Arizona Municipality Composts 15 Tons of Trash and Sludge](#)
- Forbes Magazine - ["Commercializing Emerging Environmental Technologies"](#)
- The Mountain Press - ["Sevier Solid Waste nearing 75 percent recycling mark"](#)
- The Mountain Press - ["Composting and recycling cuffing into landfill waste"](#)
- The Mountain Press - ["Landfill use cut by 71 percent"](#)
- The Mountain Press - ["4th Digester Ready to Roll"](#)
- Port Stephens Council - ["Nation's First Moves Closer"](#)
- Public Works - ["Co-Composting Serves Tennessee Counts"](#)
- Vital Earth News - ["Vital Earth soils are top performers in replicated tests"](#)
- Correspondence with William W. Howard, National Wildlife Federation - [May 17, 1996](#)
- Correspondence with Gina Hawkins, Recycling Coordinator for the city of Gainesville - [April 26, 1996](#)
- Correspondence with Dowling R. Watford, Jr., City Councilman of City of Okeechobee - [November 1](#)
- Correspondence with Environmental Engineer, United States environmental Protection Agency - [Nove](#)
- Correspondence with J. B. Whaley, Tobacco Farmer - [February 28, 1994](#)
- Correspondence with L. F. Raby, Oliver Springs, Tennessee - [February 10, 1994](#)

Correspondence with Jeff T. Sims - February 4, 1994  
Correspondence with Chandler Hancock, President of Hancock Horticultural Services - January 27, 1994  
Correspondence with Bob Parker, Director of Department of Parks and Recreation - January 27, 1994  
Correspondence with Keith J. Baldwin, President of ArKay Enterprises - May 28, 1993  
Correspondence with J. T. Garrett, Associate Professor at College of Agricultural Sciences - May 10, 1993  
Correspondence with Phil Hayes, Plant Superintendent at Pinetop - Lakeside Sanitary District - April 2, 1993  
Correspondence with Jack Lotz, President at Plantation Key Government Center - April 25, 1993  
Correspondence with Keith J. Baldwin, President of ArKay Enterprises - April 11, 1993  
Correspondence with A.R. Rubin, Extension Specialist at North Carolina Cooperative Extension Service  
Correspondence with John D. Snyder, District Manager of Lakeside Sanitary District - September 17, 1993  
Correspondence with Dr. Bill Cochran, Louisiana Cooperative Extension Service

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## Contacting Bedminster Bioconversion

For contact information specific to a Bedminster Facility, please see the [Facility Information](#) page.

### Contact

Roder Russo  
3220 Tillman Drive, Suite 107  
Bensalem, PA 19020  
Phone 1: +1 215-639-6644  
Phone 2: +1 770-426-0441  
Fax: +1 215-639-7673  
email: [roderrusso@bedminster.com](mailto:roderrusso@bedminster.com)

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## **REFERENCE FACILITY INFORMATION**

**This page contains information on specific facilities built by or licensed from Bedminster Bioconversion.**

### **Facilities employing Bedminster's (Eweson) patented digesters are:**

- Marlboro, MA
- Port Stephens, Australia
- Cobb County, GA
- Sevierville, TN
- Pinetop Lakeside, AZ
- Big Sandy, TX
- Edmonton, Canada
- Nantucket, MA
- Stora Vika, Sweden

### **Marlboro, MA (Bedminster Marlborough, LLC)**



Started: October, 1999


Input Capacity: 100 tons/day municipal solid waste,  
50 tons/day municipal solid sludge

Production Capacity: 40 tons/day of OrganagrO<sup>®</sup> compost

Contact: Bob Spencer, Plant Manager +1 508 480  
9922

This facility began operations in August, and municipal and state environmental officials alike are promoting the Bedminster process as a model for other communities to consider in addressing their waste-disposal challenges. Although a series of construction delays enabled Port Stephens to open first, Bedminster-Marlborough was one of the first privately-owned facilities in the Bedminster family, financed with a combination of private equity and bank debt. This approach has also been successful in other projects, notably, Stora Vika, Sweden, and its sister New England facility on the

Island of Nantucket. The environmentally-conscious citizens of Marlborough are also extremely pleased with the facility. When combined with a newly-developed curbside collection program, the facility will increase Marlborough's waste diversion rate from a decidedly sub-par 14% to a whopping 75% or more--one of the highest rates in the country.

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### Port Stephens, Australia (Bedminster Bioconversion Australia)




Started: July, 1999

Input Capacity: 120 tons/day municipal solid waste,  
60 tons/day municipal solid sludge

Production Capacity: 48 tons/day of OrganagrO<sup>®</sup> compost

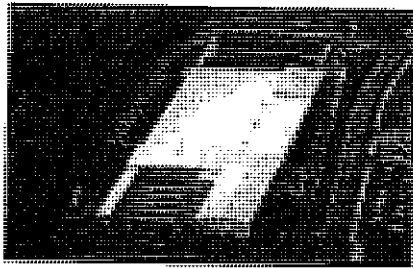
Contact: Paul Oakes 61-29-631-1200

Another successful facility opening took place in Port Stephens, Australia, as the first composting facility in Australia began operation in July. The compost produced by this 100 tpd composting facility will be used for land reclamation projects. Licensee Bedminster Australasia is to be commended on a job well done. They held their grand opening in September, and according to BBA officials the facility has generated a tremendous amount of interest from other Australian communities. They anticipate developing several more facilities in the year 2000.

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### Cobb County, GA (Cobb County Solid Waste Authority)



Started: June 15, 1998

Input Capacity: 300 tons/day municipal solid waste,  
150 tons/day municipal solid sludge

Production Capacity: 120 tons/day of OrganagrO<sup>®</sup> compst

Contact: Joe Accortt, Division Manager +1 770 424  
4225

In the aftermath of the two fires, and nearly two years of reconstruction, the facility has now been operating for over a year. After a very careful start-up (neither Bedminster nor the county could afford another odor problem), we are pleased to report that the facility is now operating as originally intended.

In a recent article in the Cobb Times, Bill Byrne, the Chairman of the Cobb County Board of Commissioners, made the following statement,

"A successful composting facility allows Cobb County to produce an environmentally friendly soil additive from garbage and reduce the dependency on landfills as the means to deal with solid waste..." Byrne went on to say that the land can now be better used and the environment protected. Cobb's success will be a model for other to follow.

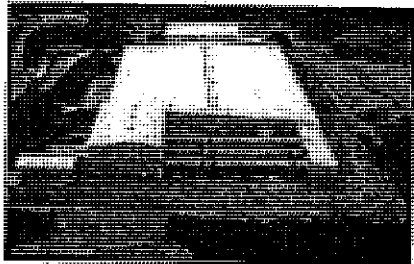
The County has secured a contract to sell a large portion of their compost and have recently began a

program to distribute a value added soil amendment to its citizens. This facility is an outstanding showplace and continues to elicit positive comments from all that tour the plant.

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### Sevierville, TN (Sevier Solid Waste, Inc.)



Started: September, 1992

Input Capacity: 225 tons/day municipal solid waste,  
112 tons/day municipal solid sludge

Production Capacity: 90 tons/day of OrganagrO<sup>®</sup> compst

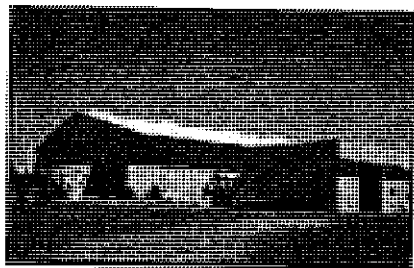
Contact: Ben Hill, +1 423 429 5557

Now in its eighth year of operations, and third year under the expert management of Professional Services Group, the facility continues to handle nearly 100% of the waste produced by this fast-growing tourist community. Plant manager Ben Hill, whose résumé includes experience in both operations and compost marketing, says that the facility is doing great. In the past year SSWI, the municipal authority which owns the facility, has completed a number of long-awaited upgrades, including changing out the old roof and replacing some of the original handling equipment. The compost is being beneficially used in agriculture, wholesale and retail nurseries and for strip mine reclamation.

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### Pinetop Lakeside, AZ (Pinetop-Lakeside Sanitary District)



Started: August, 1991

Input Capacity: 12 tons/day municipal solid waste,  
6 tons/day municipal solid sludge

Production Capacity: 5 tons/day of OrganagrO<sup>®</sup> compst

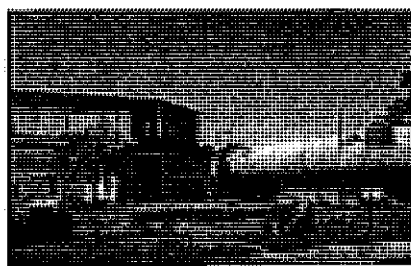
Contact: Phil Hayes, +1 520 368 5370

This facility which began operations in 1991 is one of oldest continuously operating composting facilities in North America, and it continues to provide this tourist and retirement community with an environmentally and economically sound method of processing their solid waste and sewage sludge. Operations Manager Phil Hayes says the facility has been at capacity for some time, and they are in the process of adding additional sludge handling equipment to deal with their excess capacity on that front. Pinetop continues to sell 100% of its product to a local soils company, which uses it in creating various premium blends for the local garden market. Phil is to be commended on a job well done, as he has been at the heart of this project since inception, and while he won't tell you this himself, he and the facility have received numerous awards over the years. If you ever get a chance, you should make the time to visit this outstanding facility.

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### Big Sandy, TX



Started: 1970

Input Capacity: 25 tons/day sawdust, 12 tons/day animal manure

Production Capacity: 10 tons/day of OrganagrO<sup>®</sup> compost

Contact: Scott Hammer, +1 903 845 2261

This digester was the first use of the Eweson recycling technology. Vital Earth Resources operates the plant today and markets the production to Dallas-area landscape companies, nursery growers and topsoil dealers. Located in a rural part of east Texas, this facility makes use of the most readily available by-products in its soils manufacturing process.

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### Edmonton, Canada (TransAlta)



Started: March 1, 2000

Input Capacity: 700 tons/day municipal solid waste,  
300 tons/day municipal solid sludge

Production Capacity: 240 tons/day of OrganagrO<sup>®</sup> compost

Owner/Operator: TransAlta

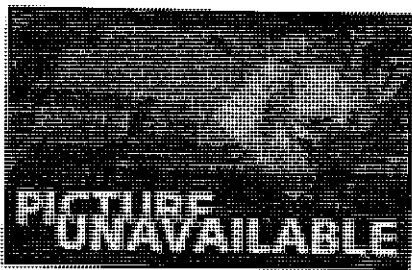
Contact: Fred Smith, Project Engineer, +1 780 461 9993

This facility, owned by TransAlta and designed by GKO, is designed to process 300,000 tonnes of msw and sludge annually and is the largest co-composting facility in North America if not the world. Their literature states that it is the largest stainless steel building in North America. The facility has a simple but well thought out tip floor, similar to the Sevierville, Tennessee facility, where msw is pushed into ram pits and then loaded into the Eweson digesters (manufactured and installed by AC Services). As it is at the facilities in Cobb County, Georgia and Marlborough, Massachusetts, sludge is pumped into the digesters, and after one to two days the rough compost goes through a primary trommel. Next the compost is sent via conveyors to one of three curing bays where it is turned by automated turning machines which automatically control air and moisture. These machines are provided by STC Sorain Cecchini Tecno S.r.l, in Rome Italy. At the end of the curing time of 28 days the compost is transferred to a series of screens and destoners for final screening. All the air in the facility will be treated by wet scrubbers and a typical biofilter.

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### Nantucket, MA (Waste Options, Inc.)



Started: December 1, 2000

Input Capacity: 50 tons/day municipal solid waste,  
25 tons/day municipal solid sludge

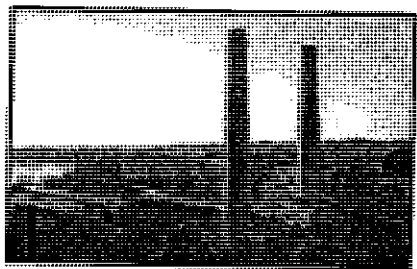
Production Capacity: 20 tons/day of OrganagrO<sup>®</sup> compost

Contact: Nelson Widell, +1 401 738 8168

Charlie Gifford and Nelson Widell have successfully opened the Nantucket facility, and it's receiving accolades from visitors from around the world. This project consists of an up front clean mrf, with an extensive picking line before the msw is sent to the digester. They project a 90% landfill diversion rate, and early results demonstrate that they are meeting those projections.

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### Stora Vika, Sweden (Bedminster AB)



Startup: Phase I startup scheduled for 2nd Quarter 2000

Input Capacity: 1000 tons/day municipal solid waste,  
500 tons/day municipal solid sludge

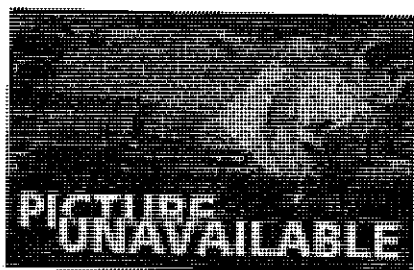
Production Capacity: 400 tons/day of OrganagrO<sup>®</sup> compost

Contact: Sture Bäckman 011-46-8-520-359-00

Phase I of the full scale facility in Stora Vika is now complete with waste contracts in place for the 70 ton per day capacity of Phase I. They continue to pursue additional waste contracts, and the current plan calls for them to commence construction of Phase II next summer, which will bring their total capacity up to 300 tons per day. This facility will utilize the Bedminster pelletization process to convert the finished compost into fertilizer pellets; initial research has proven their substantial value to the forestry industry.

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### Miami, FL



Input Capacity: 500 tons/day municipal solid waste,  
250 tons/day municipal solid sludge

Production Capacity: 200 tons/day of OrganagrO<sup>®</sup> compost

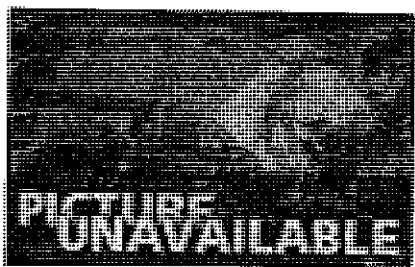
Contact: Roger Tuttle, +1 201 541 9393

This project is now in the final permitting stages. Designed, built and operated by Bedminster licensee Compost America, this facility is expected to start construction in 1998.

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## Newark, NJ



Input Capacity: 900 tons/day municipal solid waste,  
450 tons/day municipal solid sludge

Production Capacity: 360 tons/day of OrganagrO<sup>®</sup> compost

Contact: Roger Tuttle, +1 201 541 9393

This project has recently obtained \$90 million in financing. Bedminster licensee Compost America is now in final negotiations with the city, and construction is expected to begin in 1998.

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## THE BEDMINSTER PROCESS

The Bedminster Bioconversion process offers the following distinctive features: Natural process converting two regulated waste streams (MSW and biosolids) into unregulated compost in the same facility at one capital and one operating cost.

Elimination of grinding or shredding of input waste materials .... allowing later stage separation of recyclable and inert material ensuring highest quality compost. Proven, large scale comprehensive and effective odor control system.

Modular plant configuration provides for:

- Independent unit operations
- Incremental expansion capability
- Operating flexibility
- Adaptability to customer capacity needs

Compatible with recycling programs or as a substitute for recycling programs.

Inert and sanitized residual disposal eliminates hazardous landfill leachate, methane gas and vector problems.

High quality agricultural and horticultural compost - exceeds EPA 503 standards for "Exceptional Quality" designation.

Cost-effective alternative to other disposal options.

Based on "typical" waste stream capable of recycling 70% by weight solid waste of otherwise landfill material

Processes either mixed or segregated MSW

Other waste materials including yard waste, food waste, animal carcasses among numerous others.

The Bedminster biological process relies on the natural microbes within the processed waste, rather than on complex and expensive processing equipment and the manual sorting of waste. The core of the Bedminster Process, a compartmented rotating vessel (the "Digester"), is a bio-fermenter which optimizes natural conditions and allows microbes to thrive and reproduce. These microbes feed on the organic matter found in solid waste, e.g. paper, cardboard, food waste, yard waste, etc., and convert such wastes into high quality compost. The digester operates under aerobic conditions and is used to "jump start" the natural breakdown process by providing optimum climate, temperature, aeration and agitation. This accelerated activity allows the Bedminster Process to accomplish in three days a level and quality of composting, that competing composting processes require several weeks or more to achieve.

The Digester also offers compost processing flexibility. A single Digester can be designed to process 5 to 100 TPD of MSW along with 2.5 to 50 wet TPD of biosolids. A system can be built with one

Digester or 10 Digesters providing for flexible and efficient processing of waste streams of varying sizes. The system can provide additional flexibility by handling a wide variety of wastes including municipal solid waste, biosolids source separated organic waste, food processing waste, grocery store waste, animal manures, other farm wastes, brewery sludge, seafood wastes and any other organic wastes.

The processing of MSW in a Bedminster co-composting facility begins with the receipt of the waste on the tip floor from commercial or residential garbage trucks. Incoming waste is inspected on the floor and/or at conveyor inspection stations prior to loading the Digester. Under contract terms, hazardous or otherwise unacceptable waste is identified and the municipality is responsible for removal and disposal of the waste. In addition, pursuant to its municipal contracts, the Company is indemnified by the municipality for all costs incurred in the handling and disposal of the hazardous waste, including but not limited to, any fines or penalties associated with such waste. Oversized and unacceptable items such as pallets, carpet, wire, garden hose, appliances, large metal containers, drums and car batteries are also removed and segregated for recycling or disposal at a landfill. The balance of the waste is then introduced into the Digesters by hydraulic ram feed mechanisms.

Biosolids, manure, grease trap waste, septage and similar types of wastes are received separately and stored in either a holding tank or a separate enclosed storage area. Biosolids can be processed by the Company's composting system in either liquid or de-watered form. Utilizing typical biosolid sludge, which contains approximately 15 to 20% solids, the Company's system can process approximately one ton of biosolids to each two tons of solid waste.

The patented Digester is a compartmented rotary vessel that serves as a bio-mechanical, preprocessing and composting device. The Digester accomplishes size reduction, homogenization, microbial acclimation and colonization, bio-mechanical separation, and provides for independent control over each batch processed in the Digester. The Digester has three separate compartments, each providing a different composting environment. Each day chamber three is unloaded, material is transferred from chamber two to chamber three and from chamber one to chamber two and chamber one is loaded with the daily delivery of new waste. This transfer of material within the Digester is achieved with a patented transfer apparatus that is able to transfer substantially all of the material between compartments.

The batch processing of waste within the digester allow temperatures, oxygen and moisture to be monitored and controlled in each compartment of the Digester for optimal conditions.

After one day in each of the three chambers, or a total of three days in the Digester, the material is unloaded and screened through a 1 1/4" rotary trommel screen that allows rough compost to fall through the screen. The oversized, inorganic materials are separated for recycling or landfilling. Ferrous metals are removed magnetically, aluminum can be separated utilizing an eddy current separator. Plastics and other materials can be recovered through a screening process. The remaining inorganic materials, which are inert and sanitized by the high temperatures achieved in the Digester, are then shipped to an appropriate landfill. Material to be landfilled generally ranges from 20% to 30% by weight less by volume, of incoming waste depending on the level of recyclable removed from the rejected non-biodegradables. A key advantage of the co-composting process, which has been highlighted in recent years as a result of more stringent Subtitle "D" requirements, is that the residuals to be landfilled are free of organic material eliminating methane gas, contaminated leachate and vermin problems in landfills.

The rough compost taken from the Digester, once screened to recover the recyclables is then deposited on an aeration floor for aerobic curing. At this stage of the process, temperatures are still high, ranging between 130 degrees F - 150 degrees F reflecting continued microbial activity. On the aeration floor, air is blown up through the compost for supply of oxygen and temperature control. The compost remains on the aeration floor for approximately four to six weeks, where it is periodically turned and agitated. The compost is screened a second time using a smaller mesh screen



and is then passed through a de-stoning machine to remove remaining pieces of inorganic material that may have passed through the screens. The final product can either be stored for a period of time to mature further or used immediately for beneficial agricultural or horticultural purposes.

As noted above, the Company's co-composting facilities are completely enclosed so that effective odor control can be implemented. Odors are minimized through tight process control and through the use of proprietary odor control technology.

The enclosed co-composting process is continually monitored by computer to ensure consistency in the Company's end product. Many competitive systems operate in an uncontrolled open-air environment which leaves the end product vulnerable to inconsistency. There is no grinding or shredding of the incoming waste in the Bedminster process, which is common in competing systems and a key element in plant failures. While the Digester will process a mixed waste stream, only the organic fraction is converted to compost. Accordingly, the non-biodegradable fraction of the waste stream, which remains intact, is screened off after Digester processing and the end product is generally free of inorganics and other contaminants.

The Company's compost complies with state and federal standards for general public use, minimizing the need for permitting and monitoring of product application and concerns for future remediation liability related to the Company's compost. In addition, the Company's compost meets the Section 503 Regulation's "Exceptional Quality" (EQ) requirement. An EQ sludge product is a compost which complies with the land application requirements under the Section 503 Regulations. An "exceptional quality" product may be utilized for agricultural use or general land application without regulation by the EPA or further liability to generators. Such compost must also comply with state and local regulations on compost usage which generally are similar to the Federal requirements.

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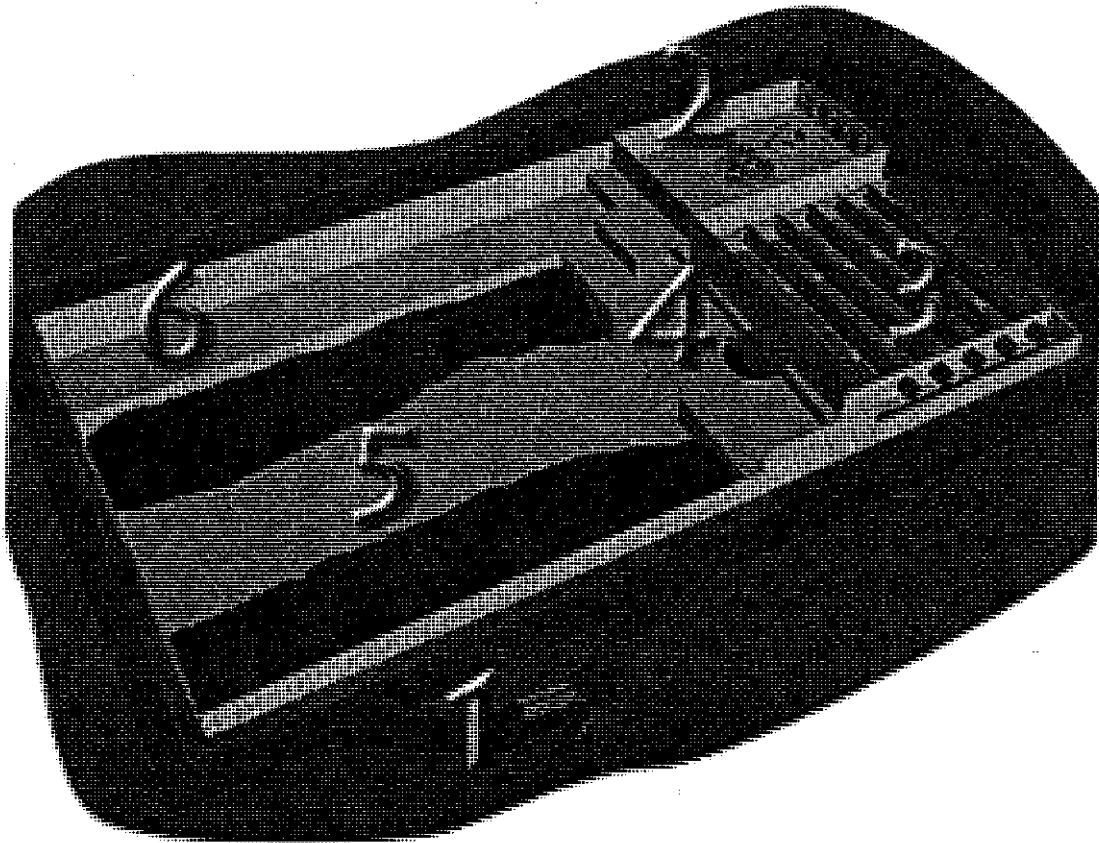
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## PROCESS INFORMATION

Click on an area of the facility below to get an overview of what happens there, or scroll down and read the summaries yourself.

[To see an animated version of the facility using Shockwave, [click here.](#)  
(The shockwave on that page is 132k)



### **The Six Steps of the Bedminster Process**

#### **1 Step 1 - Weigh In**

As garbage- and sludge-bearing trucks approach the Bedminster facility, they must stop at a weigh station and have their total weight measured. After depositing their material, the trucks are then weighed again, giving an accurate measure of the amount of material loaded into each digester in the facility.

See more information on this step of the process, or return to the pictorial overview at the top of this page.

#### **2 Step 2 - Waste Preparation & Digester Loading**

After the trucks deposit their material on the tipping floor of the plant, the solid waste is examined, and unacceptable items are removed from the waste stream. The screened waste is then mixed with the sludge and loaded into the first compartments of the digesters.

[See more information](#) on this step of the process, or return to the pictorial overview at [the top of this page](#).

### **3 Step 3 - Processing of Garbage**

The mixed waste and sludge spends one day in each of three compartments in the digesters. Air is continuously pumped counter-current to the mix. Within the digesters, an accelerated, natural process of pathogen reduction and waste breakdown is accomplished.

[See more information](#) on this step of the process, or return to the pictorial overview at [the top of this page](#).

### **4 Step 4 - Digester Unloading & Product Separation**

The processed materials are unloaded from the digesters at the end of three days and are taken to a rough trommel screen which separates rough compost from the non-compostable materials. The non-compostable materials are removed from the compost process and are separated into the different recyclable and non-recyclable components.

[See more information](#) on this step of the process, or return to the pictorial overview at [the top of this page](#).

### **5 Step 5 - Compost Curing**

The compost is taken from the trommel screen to the curing floor where large piles of the compost are cured for 30 or more days. During this period the piles are aerated and turned to ensure maximum composting effectiveness.

[See more information](#) on this step of the process, or return to the pictorial overview at [the top of this page](#).

### **6 Step 6 - Final Screening**

The cured compost is taken from the curing floor and undergoes a final screening process which removes glass and other fine debris from the desired compost. After this final screening, the compost is taken to a waiting floor and is ready for the public as an EPA certified unrestricted commodity!

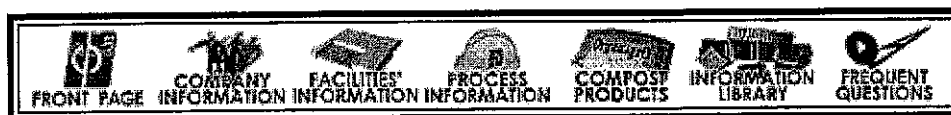
[See more information](#) on this step of the process, or return to the pictorial overview at [the top of this page](#).

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## **COMPOST PRODUCTS**

# **OrganagrO®**

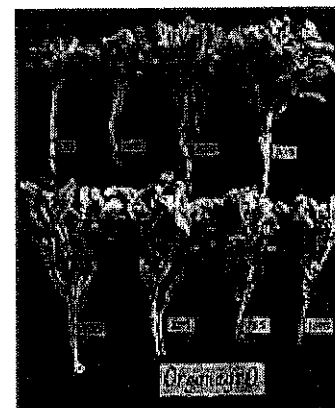
## **Compost Information**

### **What Is OrganagrO® Compost?**

- OrganagrO® compost is a composted humus manufactured from sludge and organic materials obtained from lawns, gardens, kitchens, restaurants, and other residential and commercial wastes. Aerobic thermophilic digestion is used to compost at high temperatures to destroy pathogens and meet rigid standards set nationally by the E.P.A. and locally by State governments. OrganagrO® compost is routinely analyzed through a series of laboratory tests, and is produced free of viable weed seeds and pathogens.

### **Typical Agricultural/Horticultural Uses For OrganagrO® Compost**

- Lawn Renovations & Maintenance
- Tree & Shrub Planting
- Athletic Field Renovation & Maintenance
- Nursery Stock Production
- Cultivated Sod Production
- Golf Course Renovation & Maintenance
- Potting Mix Ingredient
- Flower Beds



### **Typical Properties Of OrganagrO® Compost**

- Particle Size: < 3/8 inch
- Moisture: 35 - 45%
- Bulk Density: 30 lbs/ft<sup>3</sup>
- pH: 6.5 - 7.5
- Organic Matter: min. 50%
- Foreign Matter: Less than 1%
- Water Holding Capacity: min. 100%



Here are some analyses of OrganagrO® performed by independent laboratories.

### **OrganagrO® Compost Features**

- Contains organic NPK and needed trace elements needed for plant growth
- Aids in replenishing organic content in the soil
- Improves soil structure and crop yield
- Inhibits runoff and soil erosion

- Reduces water requirements
- Builds soil Humus

### **General Application: Mix 1/3 OrganagrO® Compost With 2/3 Soil**

## **Compost Use Instructions**

### **Topsoil Substitute Preparation**

- A. Using a manure spreader, apply 2 to 3 inches of OrganagrO® to low-grade soil or sand, and incorporate with a rototiller or disc to a depth of 4 to 6 inches. Remove the modified soil mix and use as needed as a substitute to native topsoil.
- B. Using a bucket or front-end loader, make a blend of OrganagrO®, sand, field soil or other to meet specific demands for a topsoil substitute. Up to 50 percent OrganagrO®, on a volume basis, may be used in the mix.

### **Flower Gardens**

1. Apply 4 to 6 cubic yards of OrganagrO® per 1,000 square feet and incorporate to a depth of 6 inches using a rototiller. The lower rate is recommended when establishing flower gardens on relatively fertile soils.
2. Transplant bedding plants or sow seeds in the modified soil. For maintaining annual and perennial flower gardens, OrganagrO® should be applied every other year at only 1/2 the above recommended rate.

### **Mulching**

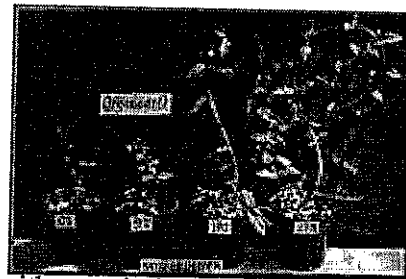
- Apply OrganagrO® as a mulch to a depth of 3 inches around trees, shrubs and flowers. OrganagrO® is also very effective on landscaped slopes where soil erosion is anticipated.

### **Potting And Bedding Plant Mixes**

- Mix equal parts of OrganagrO®, by volume, with peat moss and perlite to create a superior potting or bedding plant soil. If a heavier mix is desired, sand can be substituted for perlite.

### **Tree & Shrub Planting Backfill Mix**

1. For transplanting general nursery stock, backfill with a blend composed of 1/3, by volume, OrganagrO® with 2/3 soil removed from the planting hole.
2. Place 6 to 9 inches of mix in a hole that is at least twice the diameter of balled tree or shrub. Plant specimen so that 10 percent of the root ball will be above ground and then backfill with remainder of mix.
3. Up to 50 percent OrganagrO® can be used to amend compacted, low-organic matter soils. In all cases, OrganagrO® should be thoroughly mixed with the existing soil prior to backfilling.

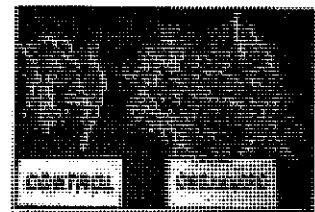


### **Lawn Renovation**

1. Broadcast OrganagrO® to a uniform depth of 2 to 3 inches, using the heavier rate on poorer soils.
2. Broadcast limestone at a rate of 50 pounds per 1000 ft<sup>2</sup>.
3. Mix OrganagrO® with soil to a depth of 4 to 6 inches using a rototiller.
4. Smooth the soil with a hand rake or drag mat in preparation for seeding.
5. Broadcast adapted seed mixture in two directions to ensure uniformity.
6. Seeding dates:
  - o Optimum - August 15 to September 20
  - o Spring Seeding - February 15 to April 15
7. Straw or salt hay mulch may be needed at 30 lbs/1000 ft<sup>2</sup> if seeding is done outside of the optimum seeding period.

## Lawn Maintenance

1. Run-down lawns that have as little as 50% grass cover can be restored to full turf density and made attractive by adopting a few simple, economic steps.
2. Test the soil to determine the need for lime. The University Extension ~~offices offer testing~~ services and most lawn service firms are equipped to perform a simple Ph or lime requirement test. If test is not made, a rule of thumb is to apply 50 lbs. of ground limestone per 1000 square feet once every four years.
3. Heavily aerate the lawn using an aerating machine equipped with 5/8 or 3/4 inch pluggers.
4. Topdress with 1/2 inch of screened compost. A 5,000 square foot lawn will require about 8 cubic yards of OrganagrO®.
5. Rake or backdrag to break up soil cores and backfill aeration holes.
6. Overseed the lawn in at least two directions using a vertiseeder. The lawn seed should be similar to that used in the original seeding. This will avoid a patchy appearance that can develop when coarse species (tall fescues) are used to overseed a Kentucky bluegrass lawn. The new varieties of perennial ryegrass are popular since they are compatible in growth habit and appearance with most grasses.
7. Sweep or blow clean the sidewalks and driveway after the seeding is completed to avoid tracking of topdressing, and unsightly appearance.



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## Solid Waste Technologies

RECYCLING COMPOSTING  
WASTE-TO-ENERGY LANDFILLING  
LANDFILL GAS-TO-ENERGY

Vol. VII/No. 7 INDUSTRY SOURCEBOOK 1994

## Meeting the MSW Composting Challenge

**A co-composting facility in Tennessee is exceeding all expectations for MSW/sludge processing and for the quality of its product. It's also beating the odor problem that has afflicted other composting operations.**

By Ed Hiscock

John deMoll has had to become used to occasional cheering at public meetings concerning MSW disposal in Sevier County, Tennessee. And he's had to interrupt his work as general manager at a Sevierville composting facility to talk with countless visitors from other cities. He's even adjusted to bus loads of schoolchildren touring the plant.

But he's not complaining. After operating for one year beginning in September 1992, the Sevier County facility that composts a mix of municipal solid waste and sewage sludge has many area officials and residents convinced that they've found an environmentally sound and cost-effective solution to their waste disposal problems.

Before 1992, all of the area's waste went to landfill. In the first six months of 1993, deMoll says, almost 71 percent of the county's waste stream (including demolition material) was recycled. Most of it was converted into high-quality compost. When a planned aluminum non-ferrous metals recovery system is added to the facility, the diversion due to recycling activities should hit 75 percent. The rate already far exceeds the state-mandated 25 percent recycling rate that municipalities must meet beginning next year.

This has been accomplished, deMoll and other county officials say, while controlling odors and heavy metal levels and eliminating toxins, pathogens, leachates, and landfill vector problems.

### Looking for Answers

Sevier County, in eastern Tennessee, had faced MSW problems in the 1980s. By the late 1980s, the county, including the cities of Sevierville, Pigeon Forge, and Gatlinburg, was using up its ten-year old landfill at the rate of about four acres a year. By early 1990, the site was a year from exhaustion. However, new federal regulations made the problem's traditional solution--Opening another landfill--particularly unappealing.

Additionally, the area's population grew 20 percent between 1980 and 1990, to 51,000. That kind of growth would be a problem for most counties.

But Sevier County, nestled among the Great Smoky Mountains, also plays host to about 8 million tourists a year. These visitors help lift the county's waste generation to about 62,000 tons per year (or,

about 6.67 pounds per day per permanent resident). Developing a new waste management program that would comply with federal regulations yet grow with the county became a necessity.

### **Selecting a Technology**

In response to this need, elected and appointed officials of the county and the three area communities came together to form Sevier Solid Waste, Inc. (SSWI). The group's purpose was to study the area's waste disposal needs and find an economical and environmentally safe process that would dovetail with future recycling requirements. SSWI also wanted to reduce the size and scope of any new landfill operations to head off future cost increases created by the regulations of the Resource Conservation and Recovery Act.

Only composting solutions met all the financial requirements, deMoll says. The basis of financial explorations was the county's landfill experience. The main question was: Will this cost more or less than another landfill?

An RFP was issued for solid waste composting and four companies responded: Bedminster Bioconversion Corporation, Fairfield Systems, Inc., the Seres Systems French OTVI (Omnium de Traitements et de Valorisation des Dechets) technology, and Trash Reduction Systems, Inc.

Sevier officials were intrigued with the European system offered by Bedminster Bioconversion Corporation of Cherry Hill, New Jersey. Bedminster holds the patent on the Eweson (pronounced "Av-e-son") digester, the core of its system. The tube-shaped digester is an enclosed, three compartment rotary vessel that accelerates microbial action in waste material.

The system proposed for Sevier County was to be equipped with a complete air treatment package to eliminate odors. All plant and process air would be processed through a multi-layer biofilter before being released outside.

The system also featured the ability to co-compost MSW with sewage sludge. The county had always sent sludge to the landfill. After talking to area farmers and landscapers, county officials saw a potential for compost sales to offset some of the plant's cost.

SSWI members contacted officials of Pinetop-Lakeside, Ariz., which has a 15ton per day Bedminster/Eweson system that began operation in 1991. The Pinetop-Lakeside facility was among the first in the U.S. where co-composting was used a primary means of sludge disposal. The system's simplicity was a selling point. "A big consideration," deMoll says, "was the fact that there's not a lot of machinery involved, so, maintenance is substantially lower."

### **Plant Design**

Convinced that the Bedminster/Eweson system offered what the county needed, SSWI and Bedminster negotiated an operating plan that called for a totally-enclosed plant with three digesters processing 150 tons of unsorted MSW a day, along with 75 tons of sewage sludge (15- to 20-percent solids, by weight).

Three days of composting begins with MSW off-loaded on the tipping floor. Two workers on the tipping floor inspect every load to remove hazardous and oversize items before bags are fed into the digesters. Internal friction in the rotating digesters breaks open trash bags and tears up plastic bags and other rubbish.

The digesters require a 45- to 50 percent moisture content for processing. Adding sludge brings moisture content of the material mix up to 50 percent and the carbon:nitrogen ratio to a minimum of 35:1. Microbial action begins in the digesters, which are kept at about 131 degrees F for pathogen



reduction and optimum bacterial activity.

After a day, most of the material moves to a second compartment for further bacterial decomposition. Each compartment is about one-third of the length of the 184-foot digester, which rotates between 40 and 60 revolutions per hour. On the third day, material moves to the last compartment, where it is dried slightly.

The material then passes through a trommel that removes larger objects. The composition of the screened or reject material is approximately 40 percent plastics and 60 percent metals, by weight, with occasional large wooden objects. If these objects can't be recycled they are landfilled.

The resulting compost is formed into trapezoidal piles 6 to 8 feet deep for two to four weeks of curing. The curing compost is aerated through in-floor pipes. Hoods above the curing floor capture air and moisture and recirculate it through the system.

After curing, the finished compost is sized in a trommel, then put through a fluidized-bed stoner. The latter removes glass, stones, and other inert materials such as button batteries.

### **Siting**

To take care of the reject materials-about 25 to 35 percent of the inbound materials (wet weight) SSWI purchased a 160-acre landfill site with 35 permitted acres. At the old landfill's use rate, deMoll says, the new site could be expected to last about ten years. However, with the new expected recycling reduction rate, including the recycling of all paper waste, it could last 40 to 50 years.

As an added benefit, a smoothly working, properly tested composting system held the promise that the county's new Class I sanitary landfill could be reclassified to a demolition fill.

Most of the opposition to the plan came in regard to the new landfill's location, deMoll says. It wound up less than a half mile from the old site. Some concern was voiced about possible odor problems at the composting facility, but opposition was unfocussed, and obtaining a state site permit was simple, says deMoll. "We filled out a state document and paid \$2,000-the same as we'd pay for a tub grinder."

### **Beating Odor Problems**

Larry Finn, the plant's designer, says they planned for "comprehensive air management" in order to control odors. The plant was designed to operate aerobically, and use a suction fan and collection hoods to capture process air. The plant also uses biofilters, the most important element of the air management system. They are three-feet-deep layers of stone, gravel, compost, and bark. The process air is passed up through the layers of the filter, where aerobic bacteria kills residual odor-causing aerosols.

There were several odor complaints after startup, says Finn, but things were under control by winter. The county needed to have the plant open as quickly as possible, and operations started before all of the odor-control measures were in place. Any lingering complaints were addressed this summer by the addition of another biofilter used with the collection hoods. "We stressed odor control from the beginning," says deMoll. "That's why we enclosed the whole facility."

### **Financing and Economics**

The 225-TPD facility cost the county about \$6.5 million and was financed by a \$9 million, 20-year Public Building Authority bond issue, with each government pledging securities to the issue. The \$9 million included land acquisition for the compost facility, the new landfill, and equipment, according

to Sevierville City Manager Russell Treadway, who is currently SSWI president. To help keep capital costs down, some of the equipment acquired for the composting plant was used. Two of the digesters, for instance, are remanufactured cement kilns and one is a remanufactured lime kiln. In addition, Bedminster invested heavily in the Sevierville plant, since it represented a demonstration facility, testing their system on its largest scale to date. So, while the cost to the community was \$6.5 million, the actual cost was more.

Operating costs to the county and city governments are in direct proportion to the waste they contribute, Treadway says. "If Sevierville contributes 21 percent of the waste, it pays 21 percent of the bill."

That bill comes to about \$30 a ton, according to deMoll. This amount includes operating both the composting plant and the landfill, retirement of the bond issue, and payment for the landfill site. The plant's cardboard recycling program runs close to breaking even. Compost sales, which are in the development phase, could drop per ton costs by a couple of dollars per ton, de Moll speculates.

"The hardest part [of the project] was getting the county and the three cities to come and work together." State law makes it relatively easy to form inter-government agreements such as SSWI's non-profit public corporation, Treadway says, and the county was the logical government entity to oversee the project. The experience with the project has led to greater cooperation between the governments on other matters, Treadway says.

### **Assessing the First Year**

Assessments of the plant's first year are universally positive. With the exception of a snowstorm-caused power outage, plant operations have been uninterrupted.

"It's worked every bit as billed," says Treadway. "We're tickled with the reduction aspects of it, and we got a higher percentage of reduction than expected. The stuff in the landfill is as clean as we can possibly get the material."

With heavy summer tourism, officials also are tickled that the facility has more than met its contractual requirement to process 150 tons per day. The facility has regularly received 200 to 250 tons per day, six days a week, and processed seven days a week. "It's a tax on men and equipment to operate seven days a week at 133 percent of design capacity," says Larry Finn, but the plant has been handling it. Officials already have begun talking about expansion.

Although the compost marketing program is in the early stages, there has been interest. The county used compost from the new plant for closing the old landfill. Offers of free compost to farmers, landscapers, and city governments have brought an encouraging response. Tests show the product has a 2:1:1 nitrogen-phosphorus-potassium ratio, sufficient to earn it classification as a mild fertilizer. Also, Table 1 shows Sevierville's compost is a "high quality" sludge product with no use restrictions under the EPA's new 503 rules for sludge.

The facility's first compost was available in January 1993. Some of the product was given away at first to generate interest. Some is now being used by a soil blender in Knoxville, Tennessee, and some is sold for \$10 per ton to bulk buyers.

County residents have responded well to the plant, deMoll says, particularly after they understood the "low impact" nature of the recycling program. "There have been cheers at public meetings when it's explained that they don't have to separate trash," he notes. And students from all the fifth grade classes in the county have toured the plant, deMoll says, partly so they can go home and spread the word that a major consumer oriented recycling program is unnecessary. The plant has hosted more than 3,500 visitors from other cities since it opened.



## **Q FREQUENT QUESTIONS**

- If processing with an Eweson Digester solves the municipal waste problem, why isn't it already in general use?
- Why does most municipal trash- and garbage-composting fail to produce a desirable product for agricultural use?
- How does vessel co-composting eliminate pathogens?
- What happens to the product if it can't be sold?
- How does vessel co-composting eliminate odor?
- How does vessel co-composting eliminate toxins?
- How does vessel co-composting eliminate disease vectors?
- How does vessel co-composting control the heavy metals?
- Can I buy stock in Bedminster Bioconversion?




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### **If processing with an Eweson Digester solves the municipal waste problem, why isn't it already in general use?**

Prior to 1988, economic factors inhibited the use of this procedure. In 1988, the EPA published a draft document providing new rules. Operating under such rules would result in greatly increased landfill costs. In October, 1991 these regulations became law. This eliminated the economic barrier blocking the use of this process.

Because of pricing, compost marketing was limited largely to selling in the horticultural arena. The horticultural market is not large enough to consume the volume of humus produced from a whole waste stream. To sell the volume of humus that would be produced from an entire waste stream, pricing would have to be such that the humus could be sold in the general agricultural market.

With the increased cost for landfilling, increased fees for composting can be achieved, while still being less costly than landfilling. The increased revenues from composting fees allows the lowering of the price of the product. With this pricing, the product can be sold in the general agricultural market. Not until these economic conditions existed was it practical for use by waste management.




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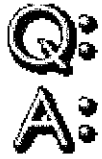
### **Why does most municipal trash- and garbage-composting fail to produce a desirable product for agricultural use?**

Most composting methods grind the material prior to composting. Grinding increases the inorganic content in the finished product making it less desirable for agriculture. This limits the product's marketability.

Vessel co-composting degrades organic material 3 to 5 times faster than other methods. This eliminates the need to speed up the process by grinding.

Without grinding, the inorganic fraction remains much as it was when it entered the process. The degraded organic material is reduced to earth-like particles. As a result, after process, the organic material is easily separated from the inorganic fraction by sifting.

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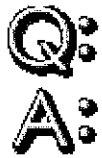
**How does vessel co-composting eliminating pathogens?**

Criteria for pathogen reduction are met or exceeded by the time-temperature conditions in the vessel, and by the curing period.

A thermometer on the exterior of the vessel provides the means for constant monitoring. Because the material in a rotating vessel is continually tumbling, the temperature becomes uniform throughout the vessel.

Finally, because the vessel system is a batch system, should anything actually go wrong the batch can be removed without interfering with the other material being processed.

---

**What happens to the product if it can't be sold?**

In general, compost products from municipal waste - if not used in a beneficial manner - must be placed in a monitored landfill. Because the product from an Eweson Digester is of an agricultural quality, it can be used for alleviating topsoil depletion, and thus does not go to waste.

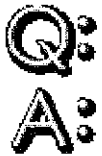
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**How does vessel co-composting eliminate odor?**

By containing the material within a vessel, the ideal environment for microbial activity is maintained. Odor is eliminated by the containment and by the rapid degradation.

The three basic ingredients for creating the ideal environment for microbial degradation are nitrogen, oxygen and moisture. It requires a container, or vessel, to create and control the ideal environment with these components. Without control of the chemistry, odor occurs. Although composting rules call for odor control in the facility, this is no assurance that it will solve the problem. Many "properly equipped" plants can still have problems. By contrast, the containment in an Eweson Digester and rapid degradation due to a controlled environment eliminate odor problems.

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**How does vessel co-composting eliminate toxins?**

Microbial activity produces heat and acids. These combine to generate chemical changes that neutralize the toxins. Should the unusual occur and the toxic level is too high, the toxins would kill the bacteria, and the temperature would drop.

The process is monitored with a thermometer on the outside of each compartment. This method is a batch process. Any batch that doesn't meet criteria is removed and can then be reprocessed.

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**How does vessel co-composting eliminate disease vectors?**

When the material exits the vessel, it has been degraded to the point where there is nothing upon which insects or rodents can feed. Therefore, there is nothing to attract insects or animals.

---

**How does vessel co-composting control the heavy metals?**

**A:**

First, the metal content of the sludge is determined. It is then diluted with water to achieve the desired level of metals. A measured amount of diluted sludge, with a known content of metal, is added to the solid waste. The metals are diluted further by being distributed throughout the large tumbling mass of solid waste in the rotating vessel. Through controlled entry, the content of the finished product is pre-determined.

Tests on the product from all three plants now in operation show that the product meets all reasonable criteria for unrestricted use.

---

**Q:**

**Can I buy stock in Bedminster Bioconversion?**

**A:**

Currently, Bedminster Bioconversion Corporation is a privately owned company, so the public cannot yet purchase its stock.

However, as soon as there is news of an upcoming Initial Public Offering, there will be an announcement made on the [What's New](#) page of this site.

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This page last modified, 28-MAY-1997.

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## APPENDIX F

### Restaurant Survey Information

| RESTAURANT         | No. Bins | Size Bins (cy) | Times Emptied /Week | % Food | Notes  |
|--------------------|----------|----------------|---------------------|--------|--|
| Burger King        | 1        | 6              | 4                   | 25     | Food mixed with OCC, paper, etc.<br>3 BK's in town, all typ. same waste    |
| Cracker Barrel     | 1        | 6              | 3                   | 25     | Food mixed with paper, recycle OCC,<br>2 CB's in town, all typ. same waste |
| Logan's Road House | 1        | 6              | 5                   | 50     | Food mixed with paper, recycle OCC   |
| Long John Silver's | 1        | 6              | 1                   | 33     | Food mixed with paper, recycle OCC<br>2 LJS's in town, all typ. same waste |
| Luby's             | 1        | 6              | 3                   | 75     | Food mixed with paper, recycle OCC   |
| McDonalds          | 1        | 6              | 1                   | 33     | Food mixed with paper, recycle OCC<br>4 MD's in town, all typ. same waste  |
| O'Charleys         | 1        | 6              | 5                   | 50     | Food mixed with paper, recycle OCC   |
| Papa John's        | 1        | 6              | 3                   | 25     | Food mixed with paper & OCC  |
| Pizza Hut          | 1        | 6              | 3                   | 25     | Food mixed with paper, recycle OCC   |
| Shoney's           | 1        | 6              | 3                   | 25     | Food mixed with paper, recycle OCC   |
| Sonic              | 1        | 6              | 3                   | 33     | Food mixed with paper, recycle OCC<br>2 Sonic's in town, typ. same waste   |
| Taco Bell          | 1        | 6              | 3                   | 25     | Food mixed with paper, recycle OCC<br>2 TB's in town, typ. same waste      |
| Wendy's            | 1        | 6              | 3                   | 25     | Food mixed with paper, recycle OCC<br>3 Wendy's in town, typ. same waste   |

#### Survey Summary

|                                |                   |
|--------------------------------|-------------------|
| No. Restaurants Called         | 23                |
| No. Responding                 | 13                |
| Restaurants in Murfreesboro    | 157 (Approximate) |
| Response Rate                  | 56.5%             |
| Average No. Bins               | 1                 |
| Average Size of Bin            | 6 c.y.            |
| Average No. Times Emptied/Week | 3.1               |
| Average % Food Waste in Bin    | 35%               |

### Estimated Waste per Restaurant

|   |            |
|---|------------|
| Volume per Week                               | 18.6 c.y.  |
| Tons per Week (@ 109 lbs./c.y. <sup>1</sup> ) | 1.01 tons  |
| Tons Food Waste/Week                          | 0.35 tons  |
| Tons per Year                                 | 52.71 tons |
| Tons Food Waste/Year                          | 18.20 tons |

### Estimated Waste for all Restaurants Based Upon Survey Data

|                                 |               |
|---------------------------------|---------------|
| Total No. Restaurants           | 157           |
| Tons per Week (@ 300 lbs./c.y.) | 158.57 tons   |
| Tons Food Waste/Week            | 54.95 tons    |
| Tons per Year                   | 8,245.64 tons |
| Tons Food Waste/Year            | 2,857.40 tons |

### Recycle Opportunities

|                                     |            |
|-------------------------------------|------------|
| Restaurants NOT recycling cardboard | 2 or 15.4% |
|-------------------------------------|------------|

### Notes:

1. The waste density of 109 lbs/cubic yard was taken from the "Waste Disposal Rates for Business Types" from the California Integrated Waste Management Board (CIWMB) web site. This data is based the results from the 1999 Statewide Waste Characterization Study dated December 1999 and prepared for the CIWMB.
2. The California waste study also estimates that each employee in the restaurant trade disposes of 3.1 tons of waste per year.
3. The report estimates that 56% of the restaurant waste stream is food waste.

### Food Waste Estimate Using California Disposal Estimates

|                                   |                      |
|-----------------------------------|----------------------|
| No. Employed by Restaurant – 1998 | 5,086.0 people       |
| Disposal Rate (tons/person/year)  | 3.1 tons/person/year |
| Total Restaurant Waste            | 15,766.6 tons        |
| Total Food Waste (56%)            | 8,829.3 tons         |

## **APPENDIX G**

### **Vermipost Information**



## GENERAL

As a result of the increasing concern of garbage disposal and the decreasing availability of sites, recycling of biodegradable organics has increased in popularity both from an environmental and economic perspective. Using redworms to digest biodegradable organics is one such method of recycling. The digested biodegradable organics are referred to as castings. These castings can be mixed with existing soils or used undiluted to provide plants with an ideal environmentally friendly growing medium.

The use of redworms to assimilate organic wastes and create the resulting natural fertilizer is not new; these creatures have served nature and man in this capacity for millions of years. What is relatively new is the utilization of earthworms as the heart of a system for management of selected organic waste streams. Redworm systems could readily complement our existing waste technologies and offer many benefits as part of our waste management plans.

Utilizing redworms for the consumption of organic waste is simply using these creatures to accomplish the job that nature intended them to do. Accordingly, the approach has positive ecological impact and excellent environmental appeal. Furthermore, we re-use organic materials as a feed for the redworm and recycle them through the redworm's metabolic process to create castings. The consumption of organic wastes by redworms is an ecological safe, highly beneficial method to naturally convert and recycle many of the organic wastes into an extremely environmental beneficial product (redworm castings).

Redworm systems are ideally suited to the conversion of organic wastes of virtually any type, however it is prudent to focus on waste streams that can have the organic components separated at a source. This approach can take advantage of reduced costs by composting on-site, eliminating waste haulage fees for certain organics. Composting of food waste is becoming a recognized disposal method. However, it has not been possible to produce an economic scaledown of large composters to a size suitable for use by facilities such as schools, office buildings, hotels etc. Using its expertise in vermiculture, Original Vermitech Systems has designed new products capable of handling 50 lbs./day and upwards of 3000 lbs./day of selected organics. Our units are priced to be an attractive alternative to various existing collection and off-site disposal methods.

\* Please request further information for specific sizes, amounts, or prices.

## SYSTEM DESCRIPTION AND OPERATION

The vermi-organic digester fed by a mulching mixing processor comprises a mass of red worms feeding on a layer of biodegradable organics within a ventilated enclosure. Organics are fed into a chamber and spread over the bed of worms. As the worms digest the organics they leave behind their castings. The castings are later removed, manually or mechanically. A thermostatic controlled ventilation system maintains an optimal operating temperature. In concert with the vermi-organic digester a processing apparatus is required for chopping and mixing the organics. Organics are fed

**Original Vermicomposter and Original Vermitech Systems Ltd.**

2328 Queen Street East, Toronto, Ontario, Canada M4E 1G9

Phone (416) 693-1027 • Fax (416) 693-9744

Website [www.globalserve.net/~vermitech](http://www.globalserve.net/~vermitech)

e-mail [vermitech@globalserve.net](mailto:vermitech@globalserve.net)

into the shredder/mixer where they are chopped and mixed. The resulting organic mixture is then expelled automatically into the vermi-organic digester.

## **ORGANIC RECOVERABLES**

Any biodegradables may be composted in the Vermitech System.

### **EXAMPLES:**

Office paper, cardboard, waxboard, grass, leaves, fruit, pasta, vegetables, organic sludges, grains, animal manure,

\* NOTE - Meats, Fish, Oils etc. require additional additives, bulking and a larger area. Oils impede aeration. Meats and fish from table scrapings may be used.

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e-mail [vermitech@globalserve.net](mailto:vermitech@globalserve.net)

**GENERAL**

Our company, Vermitech Systems Limited, is engaged in institutional and commercial waste reduction. We design, construct and install composting systems which use redworms to digest organic wastes resulting in worm castings, a safe, odourless, fertilizer-like material resembling topsoil.

The worms need a properly prepared food supply in order to maximize their digestive capability. The organics should be finely chopped and thoroughly combined. So, in order to meet these requirements, Vermitech Systems has developed its own line of competitively priced, high quality electric shredder/mixers.

Our CSA approved units are constructed with the highest regard for safety, durability, reliability and ease of operation.

Food scraps and other organic wastes such as used paper towels from washrooms are fed into the unit's chamber where they are shredded and mixed to the proper consistency by rotating blades. The finished mixture can then be expelled directly through a discharge door or, as with some of our units, through an integrated conveyor system.

**PRODUCT LINE**

A description of our current line of shredder / mixers follows. Each unit is specifically designed for various capacities of organic wastes. Various options are available on each unit. Please ask.

**MODEL S-5**

Our smallest and lowest priced shredder/mixer, the S-5, is a low to moderate capacity unit, which can process approximately 50 to 75 pounds of organics per hour. It was designed for use with our model V-50 vermi-organic digester.

This model employs a single-phase 208 - 230 volt or three- phase, five horsepower motor and a chamber discharge door without a conveyor system. The unit would be suitable for use in a school, small business or small office.

**MODEL S-7.5**

This is our standard commercial model shredder / mixer, capable of processing 100 to 200 pounds of organics per hour. It was designed for use with our vermi-organic digester models V-100 through V-250.

The single-phase 208 - 230 volt or three-phase shredder motor is 7.5 horsepower and the unit has an integrated conveyor system. The model S-7.5 unit could be used to process the organics from larger facilities such as office towers.

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e-mail [vermitech@globalserve.net](mailto:vermitech@globalserve.net)

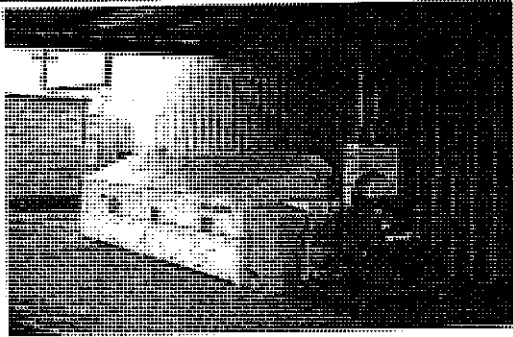
### **MODEL S-10**

Our heavy-duty commercial unit is the S-10. It has a 10 horsepower motor, and is capable of processing up to 500 pounds of organics per hour. The S-10 was designed for use with our model V-300 (and up) vermi-organic digesters. This unit has an integrated conveyor system and would be suitable for use in facilities generating very large quantities of organic wastes. These could include hotels, military bases, office blocks etc.

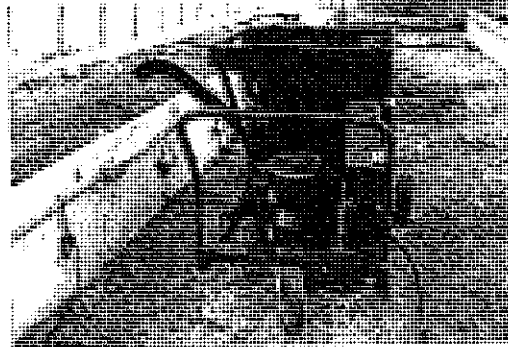
### **MODEL S-15**

Our most powerful shredder to date is the S-15. This unit features a robust 15 horsepower motor and an electric conveyor system for discharge. The S-15 was designed to handle a heavier, wetter mixture of organic material.

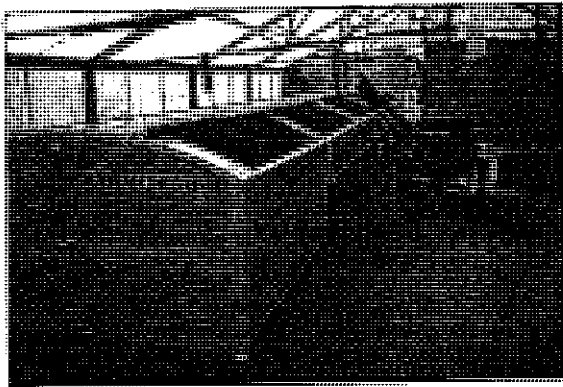
## Various Vermitech Systems Installations



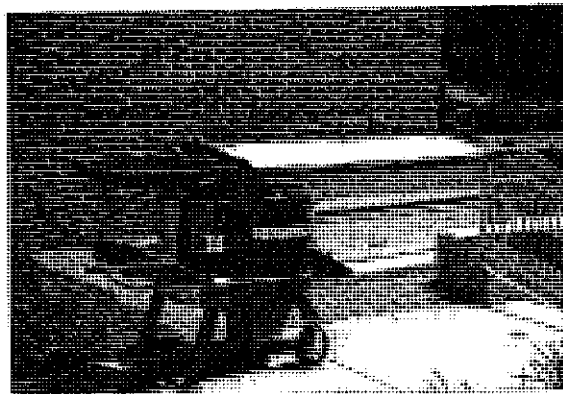
V-150 Digester at Arnold Air Force Base,  
Tennessee



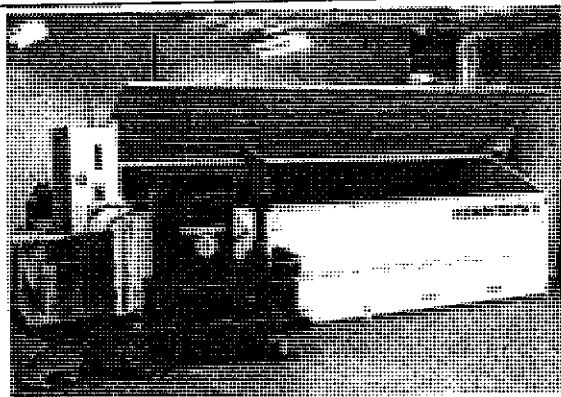
S-10 Shredder at Brockville Hospital, Ontario



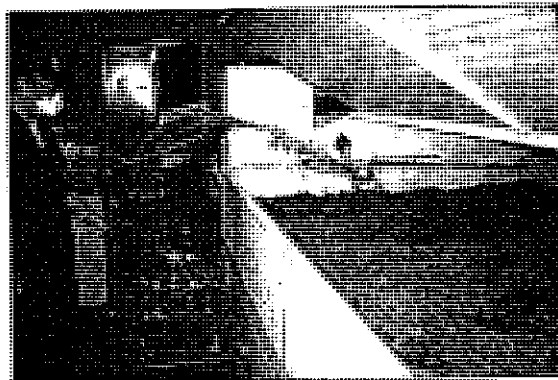
V-300 Digester at CFB Greenwood, Nova Scotia



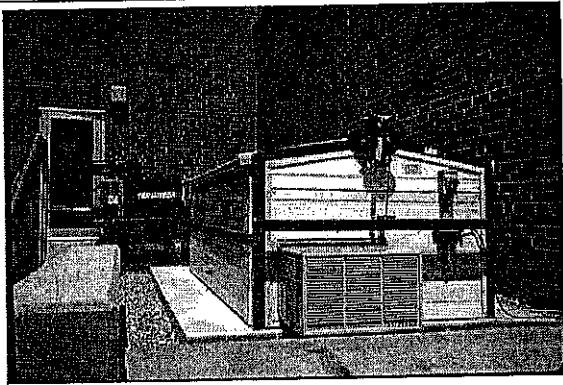
V-50 Digester at Downingtown, Pennsylvania



V-150 Digester at Metro Hall, Toronto, Ontario



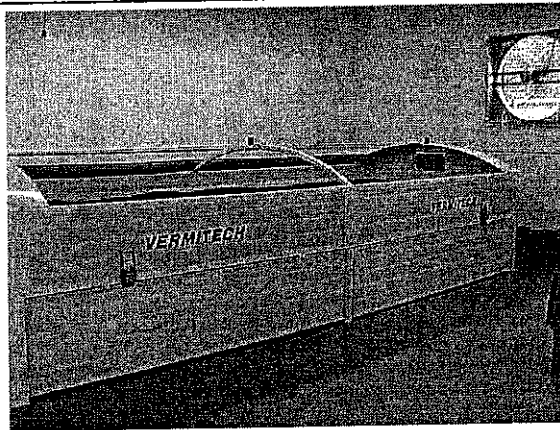
S-7.5 Shredder at Metro Hall, Toronto, Ontario



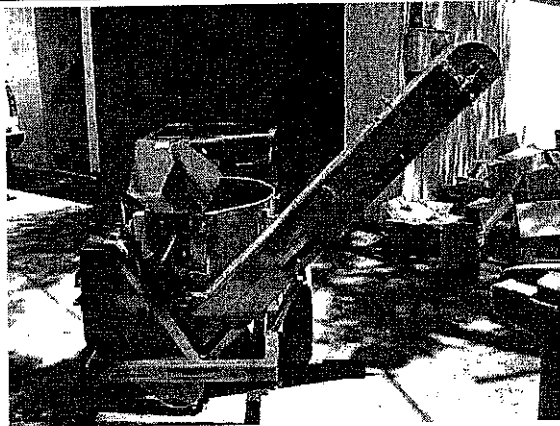
V-50 Digester at Downingtown, Pennsylvania



S-5 Shredder at Downingtown, Pennsylvania



V-150 Digester at Medical University of South Carolina



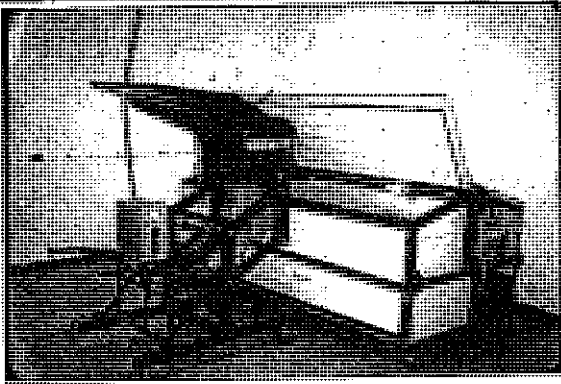
S-7.5 Shredder at Medical University of South Carolina



S-7.5 Shredder at Medical University of South Carolina



Shredder and Digester at Medical University of South Carolina



V.50 Digester with S-5 Shredder at  
Traverse County, Michigan

**Photo coming**

S-15 Shredder at Perth, Australia

## INSTALLATION CONTACTS

|   |   |
|---|---|
| <p><b>Arnold Air Force Base</b><br/>Tellahoma, Tennessee, U.S.A.</p>                      | <p><b>Contact: Randy Jones</b><br/>Phone: (931) 454-4602<br/>Fax: (931) 454-7135<br/>Email: jonesre@hap.arnold.af.mil</p>               |
| <p><b>Traverse County</b><br/>Traverse City, Michigan, U.S.A.</p>                         | <p><b>Contact: Randy Smith</b><br/>Phone: (616) 922-4576<br/>Fax: (616) 922-4427</p>  |
| <p><b>Downingtown Elementary School</b><br/>Downingtown, Pennsylvania, U.S.A.</p>         | <p><b>Contact: Eleanore Burdett</b><br/>Phone: (610) 269-8282<br/>Email: eburdett@dasd.org</p>  |
| <p><b>CFB Greenwood</b><br/>Greenwood, Nova Scotia, Canada</p>                            | <p><b>Contact: Sigfried Heinz-Milne</b><br/>Phone: (902) 765-1494 Ext. 5032<br/>Fax: (902) 765-1793<br/>Email: nstn3052@fox.nstn.ca</p> |
| <p><b>Perth</b><br/>Australia</p>   | <p><b>Contact: Nick Ludkins</b><br/>Phone: 011-61-8-9250-6611<br/>Fax: 011-61-8-9250-6669<br/>Email: abet@iinet.net.au</p>              |
| <p><b>Medical University of South Carolina</b><br/>Charleston, South Carolina, U.S.A.</p> | <p><b>Contact: Christine Von Kolnitz</b><br/>Phone: (843) 792-4066<br/>Fax: (843) 792-0251<br/>Email: vonkolhc@musc.edu</p>             |
| <p><b>Metro Hall</b><br/>Toronto, Ontario, Canada</p>                                     | <p><b>Contact: Jamie McFayden</b><br/>Phone: (416) 397-5153</p>   |

**USA RETAIL PRICE LIST**  
**VERMI -ORGANIC DIGESTER**  
**(US DOLLARS - July '99)**

|  |  |
|--|--|
| <b>V-50.4 SERIES - SCHOOL SYSTEM 30-50 lbs./day</b><br>Vermi-Organic Digester (32sq.ft) - Hard Top<br>Vermi-Organic Digester (32sq.ft) - Tarp Top<br>Shredder S-5 with wheels/no conveyor/bottom discharge<br>Vermi-Organic Digester (Hard Top) with Shredder<br>Vermi-Organic Digester (Tarp Top) with Shredder<br>Worms: Recommended 75 lbs. Not included in price | \$ 12,400.00<br>\$ 10,000.00<br>\$ 7,000.00<br>\$ 18,042.00<br>\$ 15,810.00  |
| <b>V-100.8 SERIES 50-150 lbs./day</b><br>Vermi-Organic Digester (56sq.ft)<br>Shredder S-7.5<br>Shredder S-10<br>Digester with Shredder/Mixer/Conveyor S-7.5<br>Digester with Shredder/Mixer/Conveyor S-10<br>Worms: Recommended 150 lbs. Not included in price   | \$ 20,482.00<br>\$ 12,800.00<br>\$ 13,200.00<br>\$ 30,952.00<br>\$ 31,324.00 |
| <b>V-150.16 SERIES 100-200 lbs./day</b><br>Vermi-Organic Digester (112sq.ft)<br>Shredder S-7.5<br>Shredder S-10<br>Digester with Shredder/Mixer/Conveyor S-7.5<br>Digester with Shredder/Mixer/Conveyor S-10<br>Worms: Recommended 250 lbs. Not included in price  | \$ 25,489.00<br>\$ 12,800.00<br>\$ 13,200.00<br>\$ 35,609.00<br>\$ 35,981.00 |
| <b>V-200.24 SERIES 150-250 lbs./day</b><br>Vermi-Organic Digester (168sq.ft)<br>Shredder S-7.5<br>Shredder S-10<br>Digester with Shredder/Mixer/Conveyor S-7.5<br>Digester with shredder/Mixer/Conveyor S-10<br>Worms: Recommended 400 lbs. Not included in price  | \$ 32,352.00<br>\$ 12,800.00<br>\$ 13,200.00<br>\$ 41,991.00<br>\$ 42,363.00 |
| <b>V-250.32 SERIES 200-300 lbs./day</b><br>Vermi-Organic Digester (224sq.ft)<br>Shredder S-7.5<br>Shredder S-10<br>Digester with Shredder/Mixer/Conveyor S-7.5<br>Digester with Shredder/Mixer/Conveyor S-10<br>Worms: Recommended 550 lbs. Not included in price  | \$ 39,217.00<br>\$ 12,800.00<br>\$ 13,200.00<br>\$ 48,376.00<br>\$ 48,748.00 |



|   |  |
|---|--|
| <b>V-300.40 SERIES 250-350 lbs./day</b><br>Vermi-Organic Digester (280sq.ft)<br>Shredder S-7.5<br>Shredder S-10<br>Digester with Shredder/Mixer/Conveyor S-7.5<br>Digester with Shredder/Mixer/Conveyor S-10<br>Worms: Recommended 700 lbs. Not included in price   | \$ 48,040.00<br>\$ 12,800.00<br>\$ 13,200.00<br>\$ 56,581.00<br>\$ 56,953.00 |
| <b>V-350.48 SERIES 300-400 lbs./day</b><br>Vermi-Organic Digester (336sq.ft)<br>Shredder S-7.5<br>Shredder S-10<br>Digester with Shredder/Mixer/Conveyor S-7.5<br>Digester with Shredder/Mixer/Conveyor S-10<br>Worms: Recommended 800 lbs. Not included in price   | \$ 55,882.00<br>\$ 12,800.00<br>\$ 13,200.00<br>\$ 63,874.00<br>\$ 64,246.00 |
| <b>V-400.56 SERIES 350-450 lbs./day</b><br>Vermi-Organic Digester (392sq.ft)<br>Shredder S-7.5<br>Shredder S-10<br>Digester with Shredder/Mixer/Conveyor S-7.5<br>Digester with Shredder/Mixer/Conveyor S-10<br>Worms: Recommended 1,000 lbs. Not included in price | \$ 61,765.00<br>\$ 12,800.00<br>\$ 13,200.00<br>\$ 69,345.00<br>\$ 69,717.00 |
| <b>V-450.64 SERIES 400-500 lbs./day</b><br>Vermi-Organic Digester (448sq.ft)<br>Shredder S-7.5<br>Shredder S-10<br>Digester with Shredder/Mixer/Conveyor S-7.5<br>Digester with Shredder/Mixer/Conveyor S-10<br>Worms: Recommended 1,150 lbs. Not included in price | \$ 70,314.00<br>\$ 12,800.00<br>\$ 13,200.00<br>\$ 77,296.00<br>\$ 77,668.00 |
| <b>V-500.72 SERIES 450-550 lbs./day</b><br>Vermi-Organic Digester (504sq.ft)<br>Shredder S-7.5<br>Shredder S-10<br>Digester with Shredder/Mixer/Conveyor S-7.5<br>Digester with Shredder/Mixer/Conveyor S-10<br>Worms: Recommended 1,260 lbs. Not included in price | \$ 78,431.00<br>\$ 12,800.00<br>\$ 13,200.00<br>\$ 84,845.00<br>\$ 85,217.00 |
| <b>V-550.80 SERIES 500-600 lbs./day</b><br>Vermi-Organic Digester (560sq.ft)<br>Shredder S-10<br>Shredder S-15<br>Digester with Shredder/Mixer/Conveyor S-10<br>Digester with Shredder/Mixer/Conveyor S-15<br>Worms: Recommended 1,400 lbs. Not included in price   | \$ 86,400.00<br>\$ 13,200.00<br>\$ 13,700.00<br>\$ 92,628.00<br>\$ 93,093.00 |

|  |   |
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| <b>V-600.88 SERIES 550-650 lbs./day</b><br>Vermi-Organic Digester (616sq.ft)<br>Shredder S-10<br>Shredder S-15<br>Digester with Shredder/Mixer/Conveyor S-10<br>Digester with Shredder/Mixer/Conveyor S-15<br>Worms: Recommended 1,540 lbs. Not included in price  | \$ 94,000.00<br>\$ 13,200.00<br>\$ 13,700.00<br>\$ 99,696.00<br>\$ 100,161.00   |
| <b>V-650.96 SERIES 600-700 lbs./day</b><br>Vermi-Organic Digester (672sq.ft)<br>Shredder S-10<br>Shredder S-15<br>Digester with Shredder/Mixer/Conveyor S-10<br>Digester with Shredder/Mixer/Conveyor S-15<br>Worms: Recommended 1,680 lbs. Not included in price  | \$ 101,800.00<br>\$ 13,200.00<br>\$ 13,700.00<br>\$ 106,950.00<br>\$ 107,415.00 |
| <b>V-700.104 SERIES 650-750 lbs./day</b><br>Vermi-Organic Digester (728sq.ft)<br>Shredder S-10<br>Shredder S-15<br>Digester with Shredder/Mixer/Conveyor S-10<br>Digester with Shredder/Mixer/Conveyor S-15<br>Worms: Recommended 1,820 lbs. Not included in price | \$ 109,000.00<br>\$ 13,200.00<br>\$ 13,700.00<br>\$ 113,646.00<br>\$ 114,111.00 |
| <b>V-750.122 SERIES 700-800 lbs./day</b><br>Vermi-Organic Digester (854sq.ft)<br>Shredder S-10<br>Shredder S-15<br>Digester with Shredder/Mixer/Conveyor S-10<br>Digester with Shredder/Mixer/Conveyor S-15<br>Worms: Recommended 1,960 lbs. Not included in price | \$ 117,500.00<br>\$ 13,200.00<br>\$ 13,700.00<br>\$ 121,551.00<br>\$ 122,016.00 |
| <b>V-800.112 SERIES 750-850 lbs./day</b><br>Vermi-Organic Digester (784sq.ft)<br>Shredder S-10<br>Shredder S-15<br>Digester with Shredder/Mixer/Conveyor S-10<br>Digester with Shredder/Mixer/Conveyor S-15<br>Worms: Recommended 2,100 lbs. Not included in price | \$ 125,400.00<br>\$ 13,200.00<br>\$ 13,700.00<br>\$ 128,898.00<br>\$ 129,363.00 |
| <b>V-850.128 SERIES 800-900 lbs./day</b><br>Vermi-Organic Digester (896sq.ft)<br>Shredder S-10<br>Shredder S-15<br>Digester with Shredder/Mixer/Conveyor S-10<br>Digester with Shredder/Mixer/Conveyor S-15<br>Worms: Recommended 2,240 lbs. Not included in price | \$ 133,100.00<br>\$ 13,200.00<br>\$ 13,700.00<br>\$ 136,059.00<br>\$ 136,524.00 |

|   |   |
|---|---|
| <b>V-900.136 SERIES 850-950 lbs./day</b><br>Vermi-Organic Digester (952sq.ft)<br>Shredder S-10<br>Shredder S-15<br>Digester with Shredder/Mixer/Conveyor S-10<br>Digester with Shredder/Mixer/Conveyor S-15<br>Worms: Recommended 2,380 lbs. Not included in price    | \$ 144,000.00<br>\$ 13,200.00<br>\$ 13,700.00<br>\$ 146,196.00<br>\$ 146,661.00 |
| <b>V-950.144 SERIES 900-1000 lbs./day</b><br>Vermi-Organic Digester (1008sq.ft)<br>Shredder S-10<br>Shredder S-15<br>Digester with Shredder/Mixer/Conveyor S-10<br>Digester with Shredder/Mixer/Conveyor S-15<br>Worms: Recommended 2,520 lbs. Not included in price  | \$ 150,000.00<br>\$ 13,200.00<br>\$ 13,700.00<br>\$ 151,776.00<br>\$ 152,241.00 |
| <b>V-1000.152 SERIES 950-1050 lbs./day</b><br>Vermi-Organic Digester (1064sq.ft)<br>Shredder S-10<br>Shredder S-15<br>Digester with Shredder/Mixer/Conveyor S-10<br>Digester with Shredder/Mixer/Conveyor S-15<br>Worms: Recommended 2,660 lbs. Not included in price | \$ 158,000.00<br>\$ 13,200.00<br>\$ 13,700.00<br>\$ 159,216.00<br>\$ 159,681.00 |

**OPTIONS**

1. Misting System
2. Outdoor heating system
3. Worms

**INDUSTRIAL VERMI-ORGANIC DIGESTERS -1050 lbs./day and up.**

By special quote only.

**SHREDDER / MIXERS**

|   |              |
|---|--------------|
| S-5 with wheels, no conveyor - School model | \$ 7,000.00  |
| S-7.5 with wheels and conveyor              | \$ 12,800.00 |
| S-10 with wheels and conveyor               | \$ 13,200.00 |
| S-15 with wheels and conveyor               | \$ 13,700.00 |

**HARVESTERS**

|  |             |
|--|-------------|
| Rotating Screened cylinder (starts at) | \$ 3,382.00 |
|--|-------------|

**\*NOTE: All prices are FOB Original Vermitech Systems.**

**Prices do NOT include: Applicable taxes, brokerage fees, export duties, building permits, etc.**

**EXCLUSIONS**

1. Installation, start up services, travel expenses etc.
2. Delivery of equipment to site.
3. Supply and installation of the required electrical, water, or any other miscellaneous hook ups, or other services to the Original Vermitech equipment not included in this quote.
4. Harvesting or on-going services. Prices for these services on request.
5. All additional modifications.

**TERMS OF PAYMENT**

1. Fifty (50) percent of contract price on receipt of purchase order.
2. Twenty-five (25) percent of contract price on shipment or notification of ability to ship.
3. Fifteen (15) percent on arrival.
4. Ten (10) percent 30 days after installation.

**APPENDIX H**

Putnam County, Tennessee  
Ordinance

MOTION RE: APPROVAL TO BAN CARDBOARD BEING )

DISPOSED AT COUNTY LANDFILL BEGINNING 1/1/96 )

A motion was made by Commissioner Debbie Steidl, seconded by Commissioner Anna Ruth Burroughs approving the ban on disposing cardboard at the county landfill beginning 1/1/96 and any cardboard that is not able to be recycled (plastic coated) be excluded. This will not effect residential only business and commercial. The motion carried by voice vote.

November 21, 1995

Jim Shipley  
City of Cookeville  
P.O. Box 998  
Cookeville, TN 38503

Mr. Shipley:

The County Commission of Putnam County has passed an ordinance that all\* industrial and commercial cardboard will be banned from the landfill effective January 1, 1996. If you have any questions contact Greg Scott, Putnam County Solid Waste Director, at 528-3884.

\*The wax coated cardboard will be exempted from this law.

Sincerely,

Putnam County Solid Waste Department

GS/jb

**APPENDIX I**

Construction Debris Restriction  
Coweta County, Georgia

Attn: Peggy

AN ORDINANCE BY  
THE BOARD OF COMMISSIONERS  
OF COWETA COUNTY, GEORGIA  
AMENDING COUNTY CODE SECTIONS  
REGULATING THE DISPOSAL OF CONSTRUCTION AND DEBRIS  
AND FOR OTHER PURPOSES

WHEREAS, the Board of Commissioner enacted an ordinance which allowed disposal of construction debris to be disposed of on private under certain conditions and in accordance to O.C.G.A. § 12-8-20 et seq.; and

WHEREAS, the Board has constructed a construction and demolition landfill to provide for the disposal of construction debris:

WHEREAS, the Board has determined that is it is in the best interests of the health, safety and welfare of the public to prohibit the burial of construction debris on site to take effect on April 20, 1999;

NOW THEREFORE, be it ordained by the Board of Commissioners of Coweta County, Georgia, and it is hereby ordained by the authority of the same that:

1.

Section 62-40 of the Code of Ordinances of Coweta County is amended by deleting all provisions of the section in its entirety and replacing it with the following:

**“ Sec. 62-40. Disposal of construction debris and waste.**

No individual, partnership, corporation or other entity shall dispose of construction clearing debris, yard trimmings, and/or solid waste as those terms are defined in the Georgia Comprehensive Solid Waste Management Act, O.C.G.A. § 12-8-20 et seq., on private property.

Penalties for violation: Any individual, person, corporation or other entity who violates this section shall, upon conviction, be punished as provided in section 1-15.”

2.

Article 7, Section 77 of the Coweta County Subdivision Regulations is hereby deleted in its entirety and replaced with the following:

**“Sec. 77. Removal of debris.**

In order to protect and preserve potential building sites, areas suitable for the installation of wells, septic tanks, and drain fields, and for other purposes, all stumps and other tree parts, brush, weeds, excess or scrap building materials or other debris shall be removed from the subdivision site and disposed



of in accordance to law. No tree stumps, or other portions of tree trunks or limbs shall be buried on any area of the subdivision site or on any other private property. No tree stumps or limbs shall be burned anywhere in the development except in accordance with Coweta County regulations. All dead or dying trees, standing or fallen shall be removed from the site.

The Planning Department may approve exceptions to this prohibition on the burning of debris provided that a specific plan and procedure for the burning of debris is presented by the developer, approved by the Planning Department, and strictly adhered to by the developer."

SO ORDAINED in lawfully assembled open session this 4 day of May 1999.

Lawrence R. Nelson  
Chairman

James Hunter

Charles F. Jones Jr.

James S. Hill

Arthur

Attest: Royce D. Clark  
Clerk

**APPENDIX J**

Chicago, Illinois  
Recycling Ordinance

Chapter 11-5

REDUCTION AND RECYCLING PROGRAM

Sections:

- 11-5-010 Title and purpose.
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11-5-010 Title and purpose.

This chapter shall be known and may be cited as the "Chicago High Density Residential and Commercial Source Reduction and Recycling Ordinance." It is hereby declared to be the policy of the city of Chicago to promote programs that (1) reduce the amount of waste generated at the source; and (2) recover materials, for the purpose of recycling, that would otherwise be discarded and return them to the economy. Source-separation recycling is hereby recognized as the preferred method of recycling in the city.

It is the purpose of this ordinance to achieve, at a minimum, the following recycling goals: 37.5 percent, by weight, for the entire city by 1996; 30 percent by weight, for commercial and office establishments by 1996; and 12 percent, by weight, for high density, condominium, and cooperative residential buildings by 1996, as specified in the city of Chicago's solid waste management plan. It is also the purpose of this ordinance to promote a 25 percent recycling goal for haulers and recycling service providers. Building owners, waste haulers, recycling service providers and building managers covered by this ordinance are required to implement recycling programs and are encouraged, wherever feasible, to implement programs which will exceed the above goals in order to further reduce the quantity of waste disposed, conserve natural resources and decrease operating costs. (Added, Coun. J. 11-5-93, p. 40151)

11-5-020 Definitions.

For the purposes of this chapter, unless the context requires otherwise, the following terms shall have the definitions set forth below:

- (a) "Buy-back center" means any licensed recycling facility which purchases recyclable materials from members of the public at large.
- (b) "City" means the city of Chicago, a municipal corporation incorporated under the laws of the state of Illinois.
- (c) "Commercial establishment" means any establishment, including a retail establishment, the primary function of which is the handling of goods, wares, food, beverages or merchandise, or the provision of support services.
- (d) "Commissioner" means the commissioner of the department of environment of the city of Chicago or his or her designee.
- (e) "Condominium residential building" means a form of property established pursuant to the Illinois Condominium Property Act.
- (f) "Cooperative residential building" means a form of property established under terms of the General Not-For-Profit Corporation Act.
- (g) "Refuse collection customer" means the business entity, person, building owner or management company which contracts for the provision of waste hauling services for any commercial, office or retail establishment, or high density, condominium or cooperative residential building in the city of Chicago.
- (h) "Department" means the department of environment of the city of Chicago.
- (i) "Drop-off center" means any licensed recycling facility that accepts recyclable materials without payment or charge.
- (j) "Effective recycling program" means a program for municipal waste that satisfies the criteria established in Sections 11-5-021, 11-5-022 and 11-5-023.
- (k) "High density residential building" means a building containing more than four residential units and which receives waste collection service from a private waste hauler.
- (l) "High grade paper" means computer printout, white ledger (i.e., copy machine paper, letterhead, tablet papers, index cards and laser printed bond paper), colored bond paper and any other paper determined to meet market standards for high value recyclable material.
- (m) "Mixed office paper" means various grades of recyclable paper not limited by fiber content, including glossy papers, cards, colored paper, envelopes, sticky notes and carbonless forms.
- (n) "Mixed residential paper" includes paperboard (i.e., shoe and cereal boxes, paper towel rolls, etc.), ledger paper, junk mail, paper bags (white and brown), and other clean, uncoated paper.

(o) "Municipal waste" means garbage, general household and commercial waste, industrial lunchroom or office waste, landscape waste, and construction or demolition debris.

(p) "Office establishment" means any establishment, the function of which is the transaction of administrative, business, civic or professional services where the handling of goods, wares or merchandise, in limited quantities, is incidental to the primary occupancy or use.

(q) "Owner" means one or more persons, jointly or severally, in whom is vested all or part of the legal title to property, or all or part of the beneficial ownership and a right to present use and enjoyment of the premises, including a mortgagor in possession.

(r) "Post-collection separation" means any process that separates municipal waste after the point of collection and recovers recyclable material that can be returned to the economic mainstream as raw material for new, reused or reconstituted products which meet the quality standards of the market place.

(s) "Recycle or recycling" means any process by which materials that otherwise would become municipal waste are collected, separated, or processed and returned to the economic mainstream as raw material for new, reused or reconstituted products but does not include the recovery of materials for fuel in combustion or energy production processes.

(t) "Recyclable material" means any one of the materials listed in Section 11-5-021(d), 11-5-022(d) or 11-5-023(d) of this ordinance or as defined in Section 11-4-020 of the Municipal Code.

(u) "Recycling service provider" means any person engaged in either the collection or processing of recyclable materials who has obtained a license either under Chapter 4-260 or Chapter 4-252 of the Chicago Municipal Code.

(v) "Retail establishment" means each separate store location, whether or not affiliated with any other store location in which tangible personal property or food is offered for sale to the consuming public.

(w) "Source reduction" means any activity that reduces the amount or toxicity of municipal waste generated. It includes the reuse of a product in its original form or use of repairable, refillable or durable products that results in a longer useful life.

(x) "Source-separated recycling" means any process that separates solid waste before the point of collection and keeps recyclable material separated from other solid waste until it can be returned to the economic mainstream as raw material for new, reused or reconstituted products which meet the quality standards of the market place.

(y) "Waste reduction" means any combination of methods that includes recycling and source reduction activities, as defined in this section. (Added. Coun. J. 11-5-93, p. 40151)

## 11-5-021

**Establishment of an effective recycling program in high density, condominium and cooperative residential buildings.**

(a) On or before January 1, 1995, the owner of each high density residential building shall provide to the residents of each building an effective recycling program.

(b) On or before January 1, 1995, the governing association or board of each condominium and cooperative residential building shall provide to the residents an effective recycling program. Beginning January 1, 1995, the issuance of a condominium refuse rebate pursuant to Section 7-28-250 of the Chicago Municipal Code shall be contingent upon the governing association or board of the condominium or cooperative residential building meeting the obligations set forth in Section 11-5-021 of this chapter.

(c) The recycling program in subsections (a) and (b) of this section shall meet the requirements of an effective recycling program. An effective recycling program for high density, condominium or cooperative residential buildings shall be defined as meeting the following minimum criteria:

(1) The program will provide for collection of, at a minimum, two items from the list of recyclable materials designated in subsection (d) of this section; and

(2) On or before January 1, 1996, the program will provide for collection of an additional item from the list of recyclable materials designated in subsection (d) or will include the addition of at least two source reduction measures from the list of source reduction measures promulgated by rule by the commissioner pursuant to this chapter. This list shall include, but not be limited to the following: composting of yard waste; use of a mulching lawn mower; installing long lasting, energy efficient light bulbs or fixtures; installing reusable furnace and air conditioning filters; providing residents with reusable cloth or string bags; and providing residents with educational materials on non-toxic or less wasteful products, such as rechargeable batteries or citrus cleaning products.

(3) In the event that an owner, governing board or association receives written notice under Section 11-5-024(d), the owner shall, within 30 days of receipt of the notice, provide for collection of another item from the list of recyclable materials designated in subsection (d) of this section.

(d) The list of acceptable recyclable materials includes:  
 Corrugated cardboard;  
 Mixed residential paper;  
 Magazines and catalogs;  
 Newspaper;  
 Metal containers, such as aluminum, steel and bi-metal;  
 Glass containers;

**Plastic containers.**

(e) Source separated recycling is the method of recycling preferred by the city for high density, condominium or cooperative residential buildings addressed in this section. Nothing in this section, however, shall preclude a building from including post-collection separation in its effective recycling program. A building may use post-collection separation as the sole method of recycling if the building can demonstrate an undue economic, safety or space hardship. The form and content of such demonstration shall be determined by rule by the commissioner pursuant to this chapter. At a minimum it shall require a source separation feasibility analysis which includes the following:

- (1) Identification of the types and relative amounts of municipal waste produced;
- (2) A description of building layout and operations;
- (3) Assessment of existing space and equipment which can be used for storage and collection of municipal waste;
- (4) Consideration of impact of source separated recycling on disposal costs.

The source separation analysis and other documentation used to demonstrate undue hardship shall be kept on the premises as part of the building's recycling plan, required in subsection (f) of this section.

(f) A written plan describing the effective recycling program shall be kept on the premises for inspection by the residents and the commissioner, during normal business hours. This plan shall, at a minimum, identify: the recyclable materials included in the building's recycling program; the type of collection method(s) utilized; a post-collection feasibility analysis, if applicable; the written quality reports, received under Section 11-5-024(a)(2) of this chapter; the source reduction methods utilized, if applicable; and, a summary of the building's education program.

(g) Building owners and the governing association or board of each condominium and cooperative shall develop an ongoing resident education program, that includes, but is not limited to the following:

- (1) Flyers provided to new residents and additional information provided to the residents, at least annually, summarizing the building's recycling plan and outlining why it's important to recycle; and
- (2) Notices displayed in a common area of the building or provided to the residents, identifying source separation collection points and materials to be recycled, if applicable.

(h) Building owners and the governing association or board of each condominium and cooperative are encouraged to assist in the formation of an advisory committee, made up of residents, to promote joint development and maintenance of an effective recycling and source reduction program. (Added, Coun. J. 11-5-93, p. 40151)

**11-5-022 Establishment of an effective recycling program in office establishments.**

(a) On or before January 1, 1995, each refuse collection customer for each office establishment located in the city of Chicago shall provide to each such establishment an effective recycling program utilizing source separated collection, post-collection separation, or both.

(b) Each licensee or license applicant for a city of Chicago business license who is a refuse collection customer shall be required to certify in the license application that an effective recycling program will be conducted on the licensed premises during the license period. Each licensee or license applicant shall also provide, on the license application, the name of its private hauler and recycling service provider; and whether a post collection, source separation or combination of these two methods is utilized.

(c) The recycling programs required by subsection (a) shall meet the requirements of an effective recycling program. An effective recycling program for office establishments shall be defined as meeting the following minimum criteria:

(1) The collection of, at a minimum, two recyclable materials designated in subsection (d); and

(2) On or before January 1, 1996, the program will provide for collection of an additional item from the list of recyclable materials designated in subsection (d) of this section or will include the addition of at least two source reduction measures from the list of source reduction measures promulgated by rule by the commissioner pursuant to this chapter. This list shall include, but not be limited to the following: use of double-sided copying; use of long lasting, energy efficient light bulbs or fixtures; use of reusable laser printer and copier toner cartridges; circulating and routing memos; cutting scrap paper for use as message and memo pads; purging mailing lists of duplicate and outdated names; use of inter-office and intra-company envelopes; and reducing fax transmissions to a half-page or eliminating by using stick-on notes.

(3) In the event that a refuse collection customer receives written notice under Section 11-5-024(d), the refuse collection customer shall, within 30 days of receipt of the notice, provide for collection of another item from the list of recyclable materials designated in subsection (d).

(d) The list of acceptable recyclable materials includes:  
 Corrugated cardboard;  
 High grade paper;  
 Mixed office paper;  
 Magazines and catalogues;  
 Newspaper;  
 Metal containers, such as aluminum, steel and bi-metal;  
 Glass containers;

Plastic containers:

Wooden pallets.

(e) Source separated recycling is the method of recycling preferred by the city for office establishments. Nothing in this section, however, shall preclude a refuse collection customer from including post-collection separation in its effective recycling program. A refuse collection customer may use post-collection separation as the sole method of recycling if:

(1) The refuse collection customer makes a reasonable effort to insure that the materials included within the paper categories are not contaminated by other wastes. Such reasonable efforts may include, but are not limited to: educating office establishments on separating wet waste materials and other non-recyclable from recyclable paper; urging office establishments to provide separate containers for wet waste; providing a color coded bagging system to distinguish waste materials; or the provision of a separate waste receptacle; and

(2) The refuse collection customer contracts with a waste hauler or recycling service provider who makes a reasonable effort to prevent contamination of paper by other elements of the waste stream and demonstrates compliance with Section 11-5-024(a)(1). Loads contaminated by the refuse collection customer will be collected as part of the regular garbage route.

(f) A written plan describing the effective recycling program and any documentation and communication for the department and any contract waste hauler or recycling service provider over the preceding 24 months shall be kept by the refuse collection customer on the premises for inspection by the commissioner at the office establishments, during normal business hours. A summary of the plan shall be distributed to all office establishments and made available to all prospective office establishments. This plan shall identify, at a minimum, the recyclable materials included in the refuse collection customer's effective recycling programs; the type of collection method(s) utilized; targeted recycling rates; the source reduction methods utilized; the written quality reports received under Section 11-5-024(a)(2) of this chapter; and a summary of the refuse collection customer's education program. The plan shall be reviewed regularly and amended to reflect any changes made in the effective recycling program provided by the refuse collection customer.

(g) The refuse collection customer shall prepare or have prepared an ongoing program for affected office establishments that informs about the source reduction and recycling provisions in its plan and the importance of the establishment's cooperation and involvement. This education program may include, but is not limited to the following:

(1) Flyers provided to office establishments detailing the recycling plan and outlining why it is important to recycle;

(2) Posters displayed in offices and common areas of the building marking the location or collection points and the list of materials to be recycled;

(3) In-house training sessions and meetings;

(4) Orientation meetings; or

(5) Recognition or awards to those office establishments which are particularly effective in helping to implement the waste reduction program.

(h) Office establishments shall, on an ongoing basis, make available to their employees any items provided under Section 11-5-022(g) and encourage them to provide comments regarding the recycling program. (Added. Coun. J. 11-5-93, p. 40151)

**11-5-023 Establishment of an effective recycling program in commercial establishments.**

(a) On or before January 1, 1995, the refuse collection customer for each commercial establishment located in the city of Chicago shall provide an effective recycling program for each such commercial establishment.

(b) Each licensee or license applicant for a city of Chicago business license, which is a refuse collection customer, shall be required to certify in the license application that an effective recycling program will be conducted on the licensed premises during the license period. Each licensee or license applicant shall also provide on the license application the name of their current private hauler and current recycling service provider and whether post-collection, source separation or a combination is utilized at the time of license application. Businesses which are not required to obtain a business license shall provide additional certification.

(c) The recycling programs required by subsection (a) of this section shall meet the requirements of an effective recycling program. An effective recycling program for commercial establishments shall be defined as meeting the following minimum criteria:

(1) The recycling program shall provided for collection of, at a minimum, two recyclable materials designated in subsection (d) of this section; and

(2) On or before January 1, 1996 the program shall include, at a minimum, one of the following options:

(i) An additional item from the list of recyclable materials designated in subsection (d); or

(ii) Two source reduction measures from a list promulgated by the commissioner with the advice of an appointed advisory board as defined in Section 11-5-026(c). This list shall include, but not be limited to, the following: replacing disposable with renewable, refillable or returnable containers; reducing consumer packaging; using

boxes, bags or other packaging alternatives made of post consumer recycled materials; switching to wipeable or reusable signage; double-sided copying; using long lasting, energy efficient light bulbs and fixtures; using reusable laser printer and copier toner cartridges; replacing disposable items with reusable items (i.e. dinnerware, towels, placemats and tablecloths); donating surplus food to foodbanks or soup kitchens; providing educational materials (i.e. flyers, brochures, banners, product displays and labels) to customers on ways they can reduce waste; providing on site collection at buy-back centers, drop-off centers, or other on site collection and recycling of post consumer materials.

(d) The list of acceptable recyclable materials includes:  
Corrugated cardboard;

Glass containers;

Metal containers including aluminum, steel and bi-metal;

Aluminum foil and pans;

Plastic containers;

Mixed paper;

High grade office paper;

Magazines and catalogs;

Newspapers;

Wooden pallets;

Plastic film.

(e) Source separated recycling is the method of recycling preferred by the city for commercial establishments. Nothing in this section, however, shall preclude a refuse collection customer from including post-collection separation in its effective recycling program. A refuse collection customer for a commercial establishment may use post-collection separation as the sole method of recycling if it can demonstrate an undue economic, safety or space hardship. The form and content of such a demonstration shall be determined by rule by the commissioner. At a minimum it shall require a source separation feasibility analysis which includes the following:

(1) Identification of the types and relative amounts of waste produced;

(2) A description of the establishment's layout and operations;

(3) Assessment of existing space and equipment which can be used for storage and collection of municipal waste and recyclables;

(4) Consideration of impact of source separated recycling on disposal costs.

The source separation analysis and other documents used to demonstrate undue hardship shall be kept on the premises as part of the plan for the commercial establishment, required in subsection (g) of this section.

(f) A written plan describing the effective recycling program shall be kept on the premises for inspection by the commissioner. This plan shall, at a minimum, identify:

the recyclable materials included in the establishment's recycling program; the type(s) of collection method(s) utilized; a post-collection feasibility analysis, if applicable; the written quality reports when received under Section 11-5-024(a)(2) of this chapter; the source reduction methods utilized, if applicable; and the post-consumer recyclable material(s) collected on site, if applicable.

(g) An effective recycling program for commercial establishments may provide for collection and recycling of less than the number of materials required in subsection (c) of this section if the refuse collection customer can demonstrate through means of a waste audit that the establishment's waste stream contains fewer than the required materials or that an individual recyclable component constitutes more than 51 percent by weight of the establishment's waste stream. The waste audit shall be kept on the premises as part of the refuse collection customer's recycling plan as required in subsection (e) and shall be made available for inspection by the commissioner. The commissioner may determine by rule promulgated pursuant to this chapter the criteria for an adequate waste audit for purposes of this section.

(h) Until the commissioner determines that wet waste recycling is commercially and readily available, organic waste shall be excluded from the definition of solid waste for food service establishments, grocery stores and other similar commercial establishments. These establishments shall meet the recycling goals established for that solid waste which remains after the organic waste component has been removed.

(i) A commercial establishment with more than one location in the city of Chicago may utilize a consolidated recycling program including any or all of the locations affected herein. (Added. Coun. J. 11-5-93, p. 40151)

#### **11-5-024 Hauler certification and reporting requirements.**

(a) Beginning January 1, 1995, as a condition of receiving, renewing and maintaining a license as a scavenger, refuse hauler or recycling facility, each such licensee or applicant for such a license shall meet the following criteria:

(1) The licensee must certify upon request of the commissioner that all materials separated for recycling through an effective recycling program are delivered to a processor which will handle the materials in accordance with the definition of recycling in this ordinance. In the event a licensee offers a post-collection paper separation service to customers covered under Section 11-5-022 of this chapter, such licensee shall demonstrate to the respective refuse collection customer that utilizing a facility which maintains a minimum recovery rate of 60 percent of the uncontaminated paper collected pursuant to Section 11-5-022(e)(2). In the event a licensee operates

a post-collection paper separation facility covered under this chapter, such licensee shall demonstrate to the commissioner and the respective waste hauler that it is maintaining a minimum recovery rate of 60 percent of the uncontaminated paper it receives from the waste hauler.

(2) Haulers and recycling service providers shall develop a program to notify customers of contamination problems that occur on a regular or chronic basis, as they occur. Haulers and recycling service providers shall provide a written report, semi-annually, to each customer on the quality of recyclable materials collected.

(3) Beginning in August, 1995, the licensee shall submit semi-annual written reports to the commissioner. Reports shall be submitted on or before August 31st, of each year, summarizing recycling activities between January 1st and June 30th and on or before February 28th, of each year, summarizing recycling activities between July 1st and December 31st. Each report shall set forth the following data and information on materials collected from customers serviced within the city:

(i) The weight of all materials collected in total by the licensee; and

(ii) The weight of all materials recycled by types or categories of materials with a separate listing estimating the weight represented by buy-back or drop-off facilities; and

(iii) The percentage of customers that are high density, condominium or cooperative residential buildings, and the percentage of customers that are commercial, office or retail establishment; and

(iv) The percentage of customers contracting for recycling services provided by or subcontracted by the hauler, and the percentage of customers subscribing to each type of recycling services if the hauler provides more than one collection method; and

(v) The percentage of customers not contracting for recycling services.

The commissioner shall review and approve the adequacy of these reports as a prerequisite to the issuance of any city of Chicago license for the collection and processing of municipal waste or recyclable materials. If the reports are not filed in a timely manner, or if the information provided is incomplete, the commissioner may request that the department of revenue withhold a license until such time that the report is made complete. The timely submission of the above reports shall constitute compliance with the reporting requirements under Sections 4-260-045 and 4-252-035 of the municipal code.

(b) Any and all specific information regarding materials collected or collection methods required to be reported to the commissioner under subsection (a) of this section shall be made available to the public for inspection and copying during normal business hours and in accordance

with the Freedom of Information Act. Nothing in this subsection shall prohibit a licensee, covered under Section 11-5-024, from providing copies of their reports to the public on a voluntary basis.

(c) A hauler providing post-collection separation shall take reasonable steps to prevent contamination of paper by other waste during the collection, transport and recovery of materials.

(d) Each hauler covered under this section is required to notify, in writing within 30 days, any refuse collection customer with whom it has a contract and which customer has identified a recyclable material in their plan that is no longer being recycled.

(e) The provisions of Section 11-5-024 do not apply to offal scavengers as defined in Article III, sewer and catch basin cleaners as defined in Article IV, or night soil scavengers as defined in Article V of Chapter 4-260 of the Municipal Code. (Added, Coun. J. 11-5-93, p. 40151)

#### **11-5-025 Enforcement provisions.**

In order to meet the stated purposes of this chapter, the commissioner shall have the following enforcement powers:

(a) The commissioner may seek the voluntary cooperation of the governing body, officers, or other officials of any condominium, cooperative, high density residential building, office establishment, retail establishment, scavenger, refuse hauler, recycling service provider, or building owners, managers, or agents to effectuate the purposes of this chapter. In order to promote such cooperation, the commissioner may seek to initiate a series of steps designed to assist and encourage the business or building to implement either a new source reduction and recycling program or to improve an existing program. Such steps may include, but are not limited to: a thorough review of the business' or building's recycling plan and implementation procedures; and allowing reasonable time for the building or business to improve existing efforts to comply with this chapter.

(b) If, after the commissioner seeks to put into effect the steps as set forth in Section 11-5-025(a), a condominium, cooperative, high density residential building owner, governing board or association, office or retail establishment owner or manager, scavenger, refuse hauler, or recycling service provider is found to be violating the terms of this chapter, it shall be subject to fines not less than \$25.00 nor more than \$100.00 per day. Each day the violation continues shall constitute a separate and distinct violation.

(c) Upon the failure of any person or entity holding a license issued by the city of Chicago and subject to the requirements of this ordinance to comply with the terms of this chapter, and to come into compliance follow-



ing attempts by the commissioner to bring about compliance pursuant to Section 11-5-025(a), the license or licenses of such person or entity shall be revoked in accordance with Section 4-4-280 of this code upon recommendation of the commissioner. The commissioner or his designee shall be responsible for supplying the license commissioner with all documentation and other information necessary to establish that revocation of a license should occur.

(d) Each licensee or license applicant for a city of Chicago business license, who is a refuse collection customer, shall be required to certify in a form to be determined by rule by the commissioner that an effective recycling program will be conducted on the licensed premises during the license period. Each licensee or license applicant shall also provide the following: the name of its private hauler and, if applicable, recycling service provider, and whether post collection and/or source separation is utilized. The commissioner may require an additional certification of recycling for businesses, owners and governing associations or boards which are not required to obtain a business license, provided, however, such certification shall not, in any manner, restrict a building owner's right to transfer their property.

(e) The commissioner shall institute an audit program for the refuse haulers and recycling service providers covered under this chapter. Facilities will be chosen at random and will be reviewed for compliance with this chapter. Additionally, the refuse hauler or recycling service provider selected for audit may be asked to collect data over a one month period and provide a report to the commissioner including but not limited to the following information:

- (1) The tons of recyclable material collected through source separation and post-collection methods;
- (2) The tons of residual municipal waste recovered from each collection method; and
- (3) The tons of materials recycled from each collection method.

In no ways does this provision supplant, change or otherwise amend the department's regular inspection and enforcement powers to protect the public health and safety and implement the provisions of this code.

(f) In addition to the initiatives described in Section 11-5-025(a), the commissioner shall institute an audit program for the refuse collection customer's effective recycling program covered by this chapter. Facilities will be chosen at random and will be reviewed for compliance with this ordinance. The evaluation will also determine actions to be taken by the refuse collection customer to meet the waste reduction goals established in Section 11-5-010. (Added. Coun. J. 11-5-93, p. 40151)

#### 11-5-026 Department of environment.

In order to meet the stated purpose of this ordinance the commissioner shall have the following responsibilities under this chapter.

(a) Review, at least annually, the lists of recyclable materials and source reduction measures contained in this chapter to determine whether materials should be added or deleted. Any change in such lists shall be made in accordance with Section 11-5-027. Such review will incorporate the comments of individuals, buildings owners and businesses affected by this chapter.

(b) Prepare or have prepared, on or before January 1, 1995, with the advice of the recycling advisory board, a public education and technical assistance program that includes but is not limited to the following:

(1) An instructional manual or guide on how to plan and implement effective source reduction and recycling programs, which will be made available to building owners and managers, governing associations and boards and businesses, affected by this ordinance. Such manual or guide shall include, but not be limited to, instructional information regarding the process of analyzing a building's waste stream, identifying source reduction options and recyclable materials, determining collection, handling and storage requirements, identifying markets for recyclable materials, assessing economic and operational impacts, working with a building's residents or tenants to generate active participation; monitoring and evaluating program results and purchasing recycled content products; and

(2) Education and publicity materials, which will be made available to building owners and managers, governing associations and boards and businesses, affected by this ordinance, for dissemination to residents, tenants and employees to promote source reduction and recycling activities. These education and publicity materials shall include flyers, posters and brochures which may be incorporated into a section of the instructional manual defined in subsection (1) above; and

(3) Development of a program that encourages building owners and managers, governing associations and boards and businesses, who have successfully implemented a source reduction or effective recycling program, to share their expertise and experience with others who are required to comply with the provisions of this chapter. Nothing in this subsection shall prohibit the commissioner from developing and distributing these materials in cooperation with any public or private entity.

(c) Appoint, on or before July 1, 1994, a recycling advisory board, which shall be composed of the commissioner and seven persons drawn from environmental organizations in Chicago, the recycling service provider industry, waste hauling industry, high-density, condominium or cooperative residential building industry and commercial, office or retail establishment industry. The

11-5-026

recycling advisory board will be established for a period of not less than three years, and may at the expiration of this initial period be continued only at the discretion of the commissioner. The activities of the recycling advisory board shall be advisory in nature, so as to assist the commissioner in the implementation of this ordinance. (Added. Coun. J. 11-5-93, p. 40151)

**11-5-027 Rules and regulations.**

The commissioner may promulgate such rules and regulations as necessary to implement the provisions of this chapter pursuant to notice and public hearing as required in Chapter 2-30 of the municipal code. (Added. Coun. J. 11-5-93, p. 40151)

**11-5-028 Severability.**

If any provision, clause, sentence, paragraph, section or part of this chapter or application thereof to any person or circumstance, shall for any reason be adjudged by a court of competent jurisdiction to be unconstitutional or invalid, said judgment shall not affect, impair or invalidate the remainder of this chapter and the application of such provision to other persons or circumstances, but shall be confined in its operation to the provision, clause, sentence, paragraph, section, or part thereof already involved in the controversy in which such judgment have been rendered and to the person and circumstances affected thereby. (Added. Coun. J. 11-5-93, p. 40151)

**APPENDIX K**

**Pay As You Throw  
Ordinance**

# VARIABLE RATE BASED SYSTEMS IN GEORGIA

*Revised March 2000*

## CITIES

### ATHENS-CLARKE COUNTY

Contact: Sharyn Dickerson, Assistant Solid Waste Director  
1005 College Avenue  
Athens, GA 30601  
(706) 613-3503  
FAX: (706) 613-3513  
Email: [recycle@acc-recycle.org](mailto:recycle@acc-recycle.org)

Population: 45,000  
Households: 9,000  
(single family)

*Athens-Clarke County began a volume-based program on September 11, 1995 for residents in single family homes and commercial businesses (large and small) in the Urban Service District (former Athens city limits).*

- *Residents must provide their own garbage cans (up to 32 gallons) with tight fitting lids. Residents choose their level of service and are charged the associated fee on their water bill as follows: one 20 gallon can (\$12.00/month), one 32 gallon can (\$13.00/month), two 32 gallon cans (\$16.00/month), three 32 gallon cans (\$22.00/month), four 32 gallon cans (\$30.00), or five 32 gallon cans (\$42.00/month). Residents are allowed one opportunity each year to change their service for free; after that, it will cost \$10 for every change. Residents can put additional garbage in trash bags with a special sticker that can be purchased for \$2 each. Large items that need to be disposed can be picked up on a cost of service basis. Residents outside of the Urban Service District can contract with a franchised private hauler for garbage collection. All franchised haulers are required to offer some type of volume-based program to their clients.*
- *Large businesses using traditional dumpsters for garbage collection are charged a monthly fee based on volume, just like the residents. The fee is based on the number of times per week or number of times per day garbage is collected, as well as the size of the dumpster.*
- *Smaller businesses are charged a flat monthly fee based on the number of times per week or per day they have garbage collected. In addition, they are required to use special 38 gallon Athens-Clarke County bags at a cost of \$1 per bag for their garbage. The bag can hold approximately 40 pounds of garbage. Businesses are limited to a maximum of ten bags per pickup.*

*Recycling for all three programs is included in the cost of garbage collection. For small businesses recyclables can be placed in clear bags and placed alongside Athens-Clarke County bags for pickup. All recovered materials go to the Athens-Clarke County Materials Recycling Facility for sorting, processing and marketing. The overall program is set up as an enterprise fund so the cost of collection, disposal and recycling are covered by the fees charged to the customers. Education is key to the success of this program. Athens-Clarke County began public education efforts one year prior to implementing the program. They spent approximately \$129,000 (about 6% of their total solid waste budget) on education programs related to the new volume-based program for fiscal year 1994. The education budget remained the same in fiscal year 1995, the year the program was executed. Currently, for fiscal year 1999, Athens-Clarke County has an education budget of \$175,000 (about 7% of their total solid waste budget). The education budget figures do not include any education grants the county has been awarded. To date, the government, residents and businesses are all pleased with the program.*

**AUSTELL (COBB COUNTY)**

Contact: Randy Bowens  
2716 Broad Street  
Austell, GA 30106  
(770) 944-4325  
FAX: (770) 944-4335  
Email: info@austell.org

**Population: 5,000**  
**Households: 1,500**

*The city of Austell implemented a volume-based program in October 1993, using Tifton/Tift County's program as their model. They decided to go with the bag system, whereby only garbage placed in the special Austell bags would be collected for disposal. 20 gallon bags cost \$1.50 each and 32 gallon bags cost \$2.75 each. Previously, garbage collection cost \$13/month. The bags can be purchased at the police station, city hall, and the fire station, or the communication office, which is open 24 hours a day. Garbage is collected once a week curbside. Recycling was contracted out to BFI. Residents are billed \$2.34 on their monthly water bill for this service. The overall program is set up as an enterprise fund so the cost for garbage collection and disposal is covered by the revenue generated by the sale of the bags. There was some resistance to the program at first but now people are happy with the program, especially the elderly who are saving money over the previous system.*

**DECATUR (DEKALB COUNTY)**

Contact: Charles Hammonds, Sanitation Department  
2635 Talley Street  
PO Box 220  
Decatur, GA 30031-0220  
(404) 377-5571  
FAX: (404) 378-4153  
Email: [cah4505@aol.com](mailto:cah4505@aol.com)

**Population: 18,000**  
**Households: 5,870**

- **Residents:** *Currently, the City of Decatur's PAYT program is primarily a volume-based system. Single family residences are charged \$160.00 per year for once per week garbage service with a back door collection. Garbage and loose trash must be in a City approved 33 gallon blue bag, 15 gallon yellow bag, or eight gallon green bag imprinted with the City of Decatur logo. Bags cost residents \$1.00, \$0.50 and \$0.30 respectively, in addition to the yearly service charge.*
- **Small Businesses:** *About 100 small downtown businesses that do not have space for a regular commercial refuse containers are provided 95 gallon carts. This service costs \$485 per year for one 95 gallon cart emptied once per week. Each extra cart or pickup costs an additional \$485 per year.*
- **Large Businesses:** *Regular commercial service for 230 larger sized businesses, institutions and multi-family dwelling units costs \$3.18 per cubic yard.*

*In August 1997, the City of Decatur contracted with a private hauler, Dreamsan, Inc., for residential curbside collection of a large variety of recyclables, including newspaper, cans, glass bottles, junk mail, magazines, telephone books, PET and white milk jugs, and corrugated cardboard. As a result, the city collected 150 tons of recyclables in December 1997. Prior to this, they were collecting an average of 80 tons per month. In addition, the City of Decatur Sanitation Department has been able to maintain a 35% solid waste reduction rate.*

*Extensive public outreach and education programs began 12 months in advance of the PAYT program implementation. Less than 25 residents voiced opposition to the program. The Waste Management Advisory Board led the outreach efforts by holding public hearings and neighborhood meetings. Residents and sanitation workers assisted in designing the type of unit pricing program that would best service their needs. The Waste Management Advisory Board referred to publications, such as the EPA workbook, for guidance and the program was largely fashioned from citizen input.*

**DECATUR (DEKALB COUNTY) CONTINUED**

*The people indicated a strong preference for a bag system rather than a subscription can or tag system. The residents recommended the bag sizes and colors. Throughout the public information and education phase, door hangers were distributed to every single-family residence, and articles were published in the City's newsletter and local newspaper. The City spent about \$12,000 in unbudgeted funds on public education and information.*

**DOUGLASVILLE (DOUGLAS COUNTY)**

**Population: 15,000**

Contact: Keith L. Williams, Public Services Director  
or Buddy Allison, Street and Sanitation Supt.

**Households: 4,200**

PO Box 219

6695 Church Street

Douglasville, GA 30133

(770) 920-3000

FAX: (770) 920-0499

*The City of Douglasville began its Pay As You Throw and citywide curbside recycling program in June of 1995 in an effort to reduce the amount of waste that was going to the landfill.*

*The program began as a bag program utilizing two size bags, 20 gallon and 40 gallon. The cost to the residents for these bags are \$.70 each for a 20 gallon bag and \$1.20 each for a 40 gallon bag.*

*Under this Pay As You Throw program each residence is charged an \$8.00 monthly base fee that basically covers the cost of the recycling and yard waste program. Senior citizens pay no base fee charge.*

*The bags used in this program are available for purchase at seven local retail stores within the city. Each store is required to sign a contract that requires them to stock and adequate supply of bags at all times. The stores sell these bags for the same price. They may not increase or decrease the price of the bags. They do not receive any profit from the sale of these bags.*

*After monitoring the program for the entire fiscal year 1996, 92% of the residents were participating in the recycling program on a weekly basis.*

*In fiscal year 1997 residents were offered a second Pay As You Throw option. This option is the use of a 65 gallon cart without having to use the city bags. Under this option the resident pays a \$16.50 per month fee on their water bill. This is the \$8.00 base fee plus \$8.50 that prepays for 65 gallons of volume. Under this option any waste that will not fit in the 65 gallon cart with the lid closed must be in the city bags. Approximately 10% of the residents switched to this option.*

*The city currently offers both the blue bag and 65 gallon cart to its residents.*

**DULUTH (GWINNETT COUNTY)**

**Population: 19,658**

Contact: Phil McLemore, City Administrator

**Households: 5,200**

3578 W. Lawrenceville Street

Duluth, GA 30136

(770) 476-3434

FAX: (770) 623-2780

*The city of Duluth began a modified form of volume-based garbage/recycling program in 1979 when residents were required to purchase specially marked "City of Duluth" bags for their garbage. The bags cost approximately \$1.00 each and the average usage per month per household is six or \$6.00 per month. The method of fee charge encourages the residents to use the free recycling to avoid paying for use of bags.*

## DULUTH (GWINNETT COUNTY) CONTINUED

Residents purchase boxes of twenty 32 gallon bags at City Hall and some grocery stores at a price of \$21.00 plus tax. Senior citizens (65 years or older with household income of less than \$25,000/year), handicapped and disabled residents with documentation proving their status can purchase a box of bags for \$10; they are limited to four boxes per year.

The City has a franchise agreement citywide for both commercial and residential waste hauling. The city currently has a contract with United Waste to handle residential and commercial garbage pickup. The hauler will only collect specially marked "City of Duluth" bags of residential garbage and residential recycling. Recycling is provided to residents at no extra charge since the city picks up the cost of the program. . Recycling is voluntary with the businesses. The program is not set up as an enterprise fund .

Compost bins are also provided at no cost to residents to encourage backyard composting. The City purchased a mulcher for the purpose of turning tree limbs, that residents bring to the Public Works Facility, into mulch. The mulch is then available free to the public.

The City also provides free dumpsters located at the City maintenance facility on weekends for residents to dispose of any household items.

The City suggests that any community interested in implementing their own PAYT program is that public education is essential for the program to be successful. To educate the residents, the City of Duluth published articles in the City's newsletter and local newspaper. Overall the City is very pleased with the success of their program.

## MARIETTA (COBB COUNTY)

**Population:** 50,000

Contact: Joan Ellars, Marietta Clean City Commission

**Households:** 11,000

PO Box 609

Marietta, GA 30061

(770) 794-5635

FAX: (770) 794-5505

Email: [jellars@city.marietta.ga.us](mailto:jellars@city.marietta.ga.us)

In January 1994, Marietta implemented a pilot variable rate pricing program for residential solid waste collection with assistance from the Environmental Protection Agency (EPA), Region IV. The pilot program ran for one year and during that time, they tested two variable rate methods: bag versus can program. In the end, the city chose the can method and implemented a full-fledged volume-based program in March of 1995 for the 10,500 households in the city. Residents in the city of Marietta are given a 2"x6" orange sticker to place on an existing garbage container, not larger than 32 gallons (60 pound limit). They are charged on a monthly basis depending on the number of cans they have. One can costs \$13 per month, two cans cost \$17, three cans cost \$22, and additional cans are an additional \$5 each. Most residents have on average two cans, but more and more are choosing one can. Occasional additional garbage can be placed in special bags for a fee: \$5 for every three bags of garbage.

Special miscellaneous items are picked up for a fee of \$5 to \$30, depending on the item. The city also offers a discount to senior citizens who tend to generate less solid waste. Seniors are charged \$10 a month for one "mini-can" (a 25 gallon garbage container). Garbage pickup is twice a week. Yard trimmings pickup is once a week. All residents are provided curbside recycling at no extra charge. Recycling has been contracted out to BFI which picks up once a week. BFI reports that they are collecting on average 72 tons of container recyclables (i.e. plastic bottles, aluminum cans, steel and tin cans), 67 tons of paper recyclables, and 212 tons of yard trimmings each month. Currently, the city has reduced the volume of solid waste to the landfill by 30% and has not seen an appreciable increase in illegal dumping. The collection, disposal and recycling costs for this program are not fully covered by the revenue generated. The difference is made up through city property taxes. The city says that public education is key to the success of the program.

**SUGAR HILL (GWINNETT COUNTY)**

Contact: Frank Ginn  
4988 West Broad Street  
Sugar Hill, GA 30518  
(770) 945-6716  
FAX: (770) 945-0281

**Population:** 9,000  
**Households:** N/A

*The City of Sugar Hill PAYT program began July 1997 and is similar to the city of Duluth. Residents are required to buy garbage bags with a special Sugar Hill logo at the grocery store. United Waste, the contract hauler, will only pick up garbage in these special bags. The bags are sold for \$1.19 each. United Waste provided recycling bins at no cost to residents.*

*Recyclables are donated to the Recycling Bank of Gwinnett, which is operated by Gwinnett Clean & Beautiful. Prior to implementing the pay-as-you-throw program, residents were billed a flat \$8 per month fee for garbage pickup.*

**SNELLVILLE (GWINNETT COUNTY)**

Contact: Gaye Johnson  
1000 E. Park Drive  
Snellville, GA 30278  
(770) 985-3527  
FAX: (770) 985-3542

**Population:** 14,500  
**Households:** 5,000

*The city began a volume-based program in 1993 when they contracted with a private hauler, Mid-American, to handle their residential curbside garbage and recycling. Residents are provided a 65 gallon garbage container and an 18 gallon recycling bin. They are charged \$32.00/quarter for once a week pickup. If an additional garbage container is required, an additional \$18.00/quarter is charged to the resident. 38 gallons cans are also available.*

*If a resident has extra bags of garbage, they are asked to notify the city ahead of time and in turn, the city notifies the sanitation department. Otherwise, the sanitation department will only pick up the garbage container. Currently, residents are charged an additional \$2.50 per four bags of additional garbage. On Wednesdays, residents can have yard trimmings collected curbside at a charge of \$3.00 (up to five bags), \$6.00 (up to ten bags), and \$1.00 per bag over ten bags. Otherwise, residents can take the yard trimmings themselves to the city recycling center at no extra charge. At this point, most of the citizens are used to the program and complaints are at a minimum. The city is extremely happy with the program. As of July 2000, garbage service fees will be included in the taxes. Additional carts are*

**THOMASVILLE (THOMAS COUNTY)**

Thomasville/Thomas County Clean & Beautiful  
Contact: Nate Tyler  
PO Box 1540  
Thomasville, GA 31799  
(912) 227-7093  
FAX: (912) 225-4302  
Solwaste@rose.net

**Population:** 18,500  
**Households:** 6,100

*The city of Thomasville implemented their volume-based program in the beginning of 1992. They chose the can program. Residents are given a special sticker for one 32 gallon or less garbage can and are charged \$8 per month for curbside garbage collection. Additional cans may be used with the acquisition of additional stickers for \$5 per month. Yard trimmings can be picked up separately for a cost of \$8 per month if requested.*



**THOMASVILLE (THOMAS COUNTY) CONTINUED**

*Recycling is available at three unstaffed drop-off sites throughout the city. Capital Recycling, out of Tallahassee, Florida, handles the recycling program. The overall solid waste/recycling program is set up like an enterprise fund, so all collection, disposal and recycling costs are covered by the revenue from the program.*

**WEST POINT (TROUP COUNTY)**

Contact: Joel T. Wood, City Administrator  
PO Box 487  
West Point, GA 31833  
(706) 645-3522  
FAX: (706) 643-8150

**Population: 4,249**  
**Households: 1,200**

*The city implemented a volume-based program August 1, 1994, after a one-year publicity/education campaign for the residents. A red tag is placed on a customer's approved garbage container (not larger than 45 gallons), which is provided by the customer, and the customer is charged \$8.00 per month for the first can. Residents add two extra cans for \$4 each can per month. The City collects only the garbage that is inside the can with the lid firmly placed on top. For additional garbage on an occasional basis, a customer may purchase stickers for \$2 each that can be placed on a bag itself and left next to the garbage container for pick up.*

*Yard trimmings (up to five cubic yards) are picked up weekly for no charge to the customer. There is no curbside recycling pickup. The City of West Point maintains an unmanned recycling drop-off center that is available to the citizens 24 hours a day. The City of West Point contracts with the City of LaGrange for proper disposal of all recycled items. The City of LaGrange retains all money derived from the sale of the recycled items. A home composting demonstration site at the recycle center is available as well.*

*The cost charged to the residents does not fully cover the collection and disposal costs that the City incurs. Therefore, the City makes up the difference with general funds.*

*There have been very few complaints from the residents about the program. The City's intentions are to examine the commercial garbage collection fees. Presently the City charges \$10 or \$15 per month for daily pickup of commercial garbage accounts. Most large commercial establishments have contracted with private vendors for their pickup.*

## COUNTIES

### COWETA

Contact: Eva Wagner  
22 East Broad Street  
Newnan, GA 30263  
(770) 254-3785  
FAX: (770) 254-2606

Population: 67,799  
Households: 21,679

*Coweta County implemented its volume-based program in October of 1993. Residents in the county have the option of either curbside garbage collection through franchised private haulers or to take their garbage to one of the 16 convenience centers in the county. If they choose the latter, they must bring their garbage in a special "Coweta County" garbage bag, which can be purchased at local Fire Departments, the Solid Waste Department and many grocery stores. Residents can purchase an eight gallon bag for \$.40, a 16 gallon bag for \$.75, or a 32 gallon bag for \$1.50. The county also offers exemptions for low income or senior residents with proof of their status, thereby allowing them to purchase 16 gallon bags for \$.10 each. Recycling is free to all county residents who bring their items to 12 of the 16 convenience centers (four convenience centers are exclusively compactor sites and staffed by community service workers who do not handle separation of recyclables). At each convenience center is a roll-off container to hold all the recyclables, which when full, is taken directly to their transfer station. The operation and maintenance of the 12 convenience centers has been contracted out to a private company. The cost to staff these sites is approximately \$300,000 per year (two sites are open 60 hours per week and the others are open 80 hours per week, 365 days a year). At this point, the county is almost breaking even on their costs; the difference is made up with appropriations from the general fund. The ultimate goal for the county with this program is for it to become an enterprise fund. The county as a whole is very pleased with the program.*

### GORDON

Contact: Chris Johnson  
Director of Solid Waste Services  
P.O. Box 580  
Calhoun, GA 30703  
(706) 629-5633  
FAX: (706) 629-1966

Population: 42,000  
Households: N/A

*The county began their volume-based program on January 1, 1997. They have five staffed convenience centers for residential garbage and recyclables. They also have a Subtitle D landfill, which accepts commercial and residential garbage and recyclables. At the convenience centers and at the landfill, residents separate recyclables into trailers for aluminum, tin cans, glass, plastic, newspaper and corrugated cardboard. Residents do not pay to leave recyclables at the centers or at the landfill. All recyclables are transported from the convenience sites to the 15,000 square foot material recovery facility located at the landfill where the items are baled and stored.*

*Residents must bring all garbage to the convenience centers in bags, with no limit to the number of bags. The cost is \$0.05 per pound.*

*All waste is accepted at the landfill with the exception of hazardous waste and liquid waste. The costs at the landfill vary, according to weight and type of waste. The charge of \$32.00 per ton with a \$3.00 minimum for up to 120 pounds and thereafter; \$0.016 per pound is charged for the following items: residential, household, commercial, construction, agriculture. Yard trimmings are charged at \$20.00 per ton with a \$2.00 minimum for up to 120 pounds and thereafter, \$0.010 per pound.*

## **GORDON CONTINUED**

*The residents have another option besides the convenience sites and the landfill for their garbage disposal. They may contract with a private hauler to handle their garbage and/or recyclables collection.*

*The County's waste management program is managed as an enterprise fund. Financially, both the PAYT and recycling portions of the program are faring well, no tax dollars are used to support solid waste management. Each convenience center generates \$10,000 to t\$12,000 dollars a month, and are paying for their own cost of operation. The sale of recyclables covers the cost of the recycling operation. The \$0.05 per pound fee and the landfill fees were set based on full cost accounting procedures, so they cover all aspects of the solid waste program from managing the landfill and convenience centers to hauling and overhead costs.*

## **HART**

Contact: Tony Moorhead  
Solid Waste Manager  
PO Box 279  
Hartwell, GA 30643  
(706) 376-7333  
FAX: (706) 376-9477

**Population: 20,430**  
**Households: 5,500**

*The county began their volume-based program July 1, 1995. In establishing the program, they collected all the green boxes in the county and set up eight (8) staffed convenience centers for garbage and recyclables. Residents who wish to dispose of their garbage at the site must do so in one of the specially printed county bags. Available are 32 gallon bags which sell for \$1.00 and 16 gallon bags which sell for \$.50. Recycling is free. Bags are sold at the convenience centers and at special retailers throughout the county. The volume-based program is available to the 5,500 households in the county. The tipping fee in the county is \$40 per ton. The cost of the bag helps to offset the cost of collection and disposal but it does not cover the county's total expense. The difference is made up with a fee on the residents' property tax, which is how it was handled exclusively before.*

## **MONTGOMERY**

Contact: Danny Fountain, Public Works Director  
PO Box 295  
Mt. Vernon, GA 30445  
(912) 583-2363  
FAX: (912) 583-2026

**Population: 7,500**  
**Households: 2,850**

*Previously, residents of Montgomery County took garbage to one of 102 unstaffed green box locations throughout the county. Solid waste maintenance, collection, disposal, and transport cost the county \$225,000. This was paid for through property tax, and equaled about one quarter of the total property tax generated. The county wanted to find a way to lower the cost of solid waste and make the generators responsible for the cost of their own garbage.*

*As of May 1, 1999 the county had completed and opened five (5) Solid Waste Centers and an equipped Recovery Center. The county had plans to charge .06 cents per pound. However, as of January 1, 2000 garbage generation had continued to fall and recyclables tonnage had continued to rise. Since the county program created 12 new jobs and at the same time cut the cost for solid waste to the county by 50%, the commissioners elected not to charge the residents for garbage disposal at this time. The program has exceeded the county's best expectations of waste reduction and recyclables.*

## MONTGOMERY CONTINUED

Facility hours of operation are Monday, Wednesday, and Sunday from 2:00 PM - 7:00 PM, and Friday and Saturday from 7:00 AM - 7:00 PM. All facilities are staffed. Materials accepted free of charge are: newspaper, mixed paper, magazines, cardboard, green glass, brown glass, clear glass, plastic (except Styrofoam, plastic grocery bags and plastic wrap), tin and aluminum cans, passenger tires, batteries, used motor oil, oil filters, white goods and scrap iron, brown goods and agricultural chemical containers. The price per pound will be established to offset the total cost of waste management.

## MURRAY

Contact: Roy Hunt  
PO Box 1129  
Chattsworth, GA 30705  
(706) 695-0062  
FAX: (706) 517-2559

Population: 26,147  
Households: N/A

*Please call for more information.*

## OCONEE

Contact: John McNally, Oconee County Clean & Beautiful Director  
or Jon Walker, Administrative Assistant  
1510 Wildcat Ridge Road  
Watkinsville, GA 30677  
(706) 769-7327  
FAX: same as telephone - please call before sending fax  
Email: [john\\_ocbc@msn.com](mailto:john_ocbc@msn.com)

Population: 25,666  
Households: 7,300

*In May of 1994, Oconee County removed its 119 green boxes from 39 sites and set up four convenience centers (one acre each, fenced, lighted and three are staffed with retirees who are paid about \$5.50 an hour) throughout the county. As of February 1999, Oconee County has six staffed convenience centers. The centers are open Mon-Sat 7AM-7 PM, and Sunday 1-4 PM. The residents are required to purchase special blue bags for their garbage: \$1.50 for a 32 gallon bag and \$1.00 for a 20 gallon bag. Bags can be purchased at various retail establishments (sold to retailers for \$1.40 so they make \$.10 per bag) throughout county. Residents bring garbage in blue bags and recyclables in any container they wish to the convenience center for disposal. Otherwise, residents can contract with one of three commercial private haulers (United Waste, Robertson Sanitary Service, and F4) for curbside garbage collection. Once recyclables are collected at centers, they are transported to the closed/inert landfill where they are baled and sold. Some recyclables are now commingled and taken to the Athens-Clarke County Material Recovery Facility for further processing*

## OGLETHORPE

Contact: Jay Paul  
Environmental Code Enforcement Officer  
P.O. Box 261  
Lexington, GA 30648  
(706) 743-7262  
FAX: (706) 743-7262

Population: 11,100  
Households: N/A

*In the past, Oglethorpe County's system for solid waste management basically consisted of roadside dumpsters that were open to the public 24 hours a day. At these sites, there would often be an excess of debris deposited. When the dumpsters either filled up or overflowed, county personnel cleaned the area and the dumpsters would be emptied. The solid waste would then be transported to the Athens/Clarke County landfill, where Oglethorpe County would pay for the tonnage delivered.*

**OGLETHORPE CONTINUED**

*In September 1998, the County realized its solid waste system was not practical. The system was costly, unsightly, and difficult to maintain. The county realized the need to implement a better system and began plans for a new system that encouraged recycling and was more cost effective. On January 12, 1999, the county implemented a Pay-As-You-Throw system that mandated all residents using the county facility for their trash disposal use a county authorized trash bag - the 30 gallon "Green Bag," imprinted with the Oglethorpe County logo. These green bags cost \$1.50 each.*

*The County recently made modifications to the program. They have switched from the 30 gallon green bag system and now offer two different size bags to the public. A 43.6 gallon bag is available for \$1.50 and an 18.7 gallon bag is available for \$1.00. The bags are available to residents through local retailers.*

*Since approval of the PAYT program, Oglethorpe County has designated five areas within the county for recycling and disposal of household waste. All sites are fenced, secured and staffed by an attendant. The sites operate the following schedules:*

- Road Department 55 hours per week*
- Devils Pond 24 hours per week*
- Simston District 19 hours per week*
- Maxeys 15 hours per week*
- Philomath 8 hours per week*

**PICKENS**

Contact: Calvin Peterson  
3043 Camp Road  
Jasper, GA 30143  
(706) 692-2722  
FAX: (706) 692-3582

**Population: 14,432**  
**Households: N/A**

*In 1991, the county built a convenience center for residential garbage and recycling collection. Residents are charged \$1 per bag of garbage (limit of five bags) when they take it to the center and recycling is free. Residents also have the option of taking their garbage directly to the transfer station. There, they are charged 2 1/2 cents per pound or \$45 per ton for garbage disposal. Their system is set up as an enterprise fund, so all the costs for collection and disposal are covered by the fees charged. There is no publicly provided curbside pickup but there are some private haulers in the county who provides this service.*

**ROCKDALE**

Contact: Recycling Coordinator  
P.O. Box 289  
Conyers, GA 30012  
(770) 785-6883  
FAX:  
Email:

**Population: 66,440**  
**Households: N/A**

*Rockdale County's PAYT program has been in existence for 6 1/2 years. Residents are charged \$1.00 per bag to dispose of a 30 gallon bag, and \$.50 to dispose a 13-15 gallon (tall kitchen bag size) bag. Pick-up truck loads are charged by the size of the load, not by the individual number of bags or by individual bag weight/volume. A "small load" costs \$8.00, "medium load" \$10.00, and "large load" \$12.00.*

**ROCKDALE CONTINUED**

*Television sets and other small electronic items are \$1.00-\$3.00 depending on the size.*

*Computer monitors are \$1.00*

*Sofas are \$5.00*

*Love seats are \$4.00*

*Recliners are \$3.00*

*Mattress and box spring sets are:*

*King size sets \$10.00*

*Queen size sets \$8.00*

*Full size sets \$6.00*

*Twin size sets \$4.00*

*Just a mattress or a box spring (not a set) \$4.00 per piece.*

*Any appliance containing freon is \$10.00. There is no charge for all other white goods.*

**TIFT**

Tifton/Tift Clean Community Commission

Contact: Sherrie Sumner

The Myron Complex

P.O. Box 229

Tifton, GA 31793

(912) 382-6231

FAX: (912) 391-9955

**Population: 19,292**

**Households: 5,500**

*In October of 1992, the Tift County Commissioners converted their residential garbage collection from tax subsidization to a "user-fee" system. The county's 23 dumpster sites were centralized into eight staffed collection centers for garbage and recycling. The county bid the operation of the sites out on a contract basis. Each site has lights, 8x12 office building, fencing and landscaping. The hours of operation vary by site but ranges from 30 to 80 hours per week. County residents are required to purchase a special "Tift County" garbage bag from grocery and discount stores for disposing of their garbage: \$1.50 for a 38 gallon bag, \$.75 for a 16 gallon bag, and \$.45 for an eight gallon bag. Each bag is a different color for easy identification. The fee for the bag includes the tipping fee at the landfill for disposal of this amount of garbage, transportation of garbage to landfill, operation of sites, and cost of bag. For example, for the 38 gallon bag:*

*\$1.50 = \$.16 cost of bag + \$.10 handling cost + \$1.24 for collection, transportation & disposal/tipping fee.*

*Recycling is offered free to residents if brought to one of the collection centers. Solid waste volume decreased significantly since the introduction of this program and they have basically been able to break even with their costs.*

## Modified Variable Rate Based Programs

### FORSYTH

Contact: Diana Dean  
110 East Main Street  
Cumplings, GA 30040  
(770) 205-4573  
FAX: (770) 781-2104  
Email: [djdean@co.forsyth.ga.us](mailto:djdean@co.forsyth.ga.us)

**Population:** 92,000  
**Households:** N/A

*Forsyth County collects garbage at the transfer station at the old landfill site. Single axle trucks and residential pick-up trucks are accepted and pay a minimum fee of \$5.00 or \$30.00 per ton. Forsyth County has over thirty residential haulers who service a curbside collection in the county. Fees range from \$11 - \$15 per month. Haulers then bring waste to the county transfer station or a private landfill. The county has two drop-off centers, which have compactors for waste. The drop-off centers provide recycling for free and charge \$.25 per bag for residential garbage. Bags cannot exceed 32 gallons. The staffed drop-off site has two employees: one full-time and one part-time, both of which are retirees. The money collected from the drop-off sites is taken to a safety box at the Sheriff's Department, as the sites have been subject to several break-ins and robberies.*

### JACKSON

Contact: Tom Page  
Solid Waste Department  
PO Box 434  
Jefferson, GA 30549  
(706) 367-5253  
FAX: (706) 367-2340

**Population:** 33,077  
**Households:** N/A

*The county introduced a volume-based program to their residents in the beginning of 1994. They tried selling special "Jackson County" bags (16 gallon bags for \$.75 each and 38 gallon bags for \$1.50 each) but residents resisted. Prior to that, garbage collection had been free. In response to this resistance, the county changed the way their volume-based program was run. Now, county residents either take their garbage directly to the transfer station or to one of the two compactor sites in the county. Garbage is accepted in 32 gallon or less bags and residents are charged according to the number of bags they bring to the site: one to five bags is \$3, six to ten bags is \$5, and 11-15 bags is \$7. Recycling is free if brought to the compactor site. Recyclables are then taken to the transfer station where they are placed on the tipping floor for additional sorting and processing before marketing to vendors. The two compactor sites are fenced and staffed and open to the public 7AM-7PM, Monday through Saturday. The sites were recently sold to WSI, a private entity.*

### LINCOLN

Contact: Robert Ashmore, Solid Waste Manager  
PO Box 340, Courthouse  
Lincolnton, GA 30817  
(706) 359-7162  
FAX: (706) 359-4729

**Population:** 7,442  
**Households:** N/A

*In February 1995, green boxes throughout the county were removed. At the same time, the county instituted a garbage fee for residents of \$1.25 per bag of garbage (any size bag). The residents were very upset by this change and as a result, the county has seen an increase in illegal dumping and burning. However, the county offers recycling to its residents at the transfer station at no extra cost. The system is not set up as an enterprise fund, as of yet, since the fee does not cover the cost to collect and dispose of the garbage.*

**CHAPTER 5-2. SOLID WASTE\*****Article 1. Statement of Intent; Definitions**

Sec. 5-2-1. Intent.

Sec. 5-2-2. Definitions, service categories, customer classification; special customer.

**Article 2. Athens-Clarke Solid Waste Department**

Sec. 5-2-3. Solid waste department.

Sec. 5-2-4. Director of solid waste department; duties, responsibilities.

Sec. 5-2-5. Residential collection—Urban Service District.

Sec. 5-2-6. Service billing—Residential; penalty discontinuance of service

Sec. 5-2-7. Leaf and limb service—General Service District.

Sec. 5-2-8. Unscheduled collection.

Sec. 5-2-9. Commercial dumpster service fee.

Sec. 5-2-10. Sale of loadable containers.

Sec. 5-2-11. Commercial curbside collection fees.

Sec. 5-2-12. Service billing—Commercial.

Sec. 5-2-13. Collection personnel.

**Article 3. Franchisees Generally**

Sec. 5-2-14. Customer service provisions generally—Commercial and residential customers.

Sec. 5-2-15. Same—Residential customers.

Sec. 5-2-16. Same—Commercial customers generally.

Sec. 5-2-17. Other commercial activities.

Sec. 5-2-18. Disposal of needles.

Sec. 5-2-19. Disposal of garbage generally.

Sec. 5-2-20. Abandonment of personal property within public rights-of-way.

Sec. 5-2-21. Responsibility of franchisees generally.

Sec. 5-2-22. Franchisees; billing and fees.

Sec. 5-2-23. Requirements; conditions of franchisee.

Sec. 5-2-24. Franchisees—Termination of franchise.

Sec. 5-2-25. Revocation of franchise.

Sec. 5-2-26. Vehicle requirements.

Sec. 5-2-27. Identification.

Sec. 5-2-28. Insurance.

Sec. 5-2-29. Opportunity to recycle.

Sec. 5-2-30. Hours of collection.

**Article 4. Landfill Regulations**

Sec. 5-2-31. Franchisees and self-haulers generally.

Sec. 5-2-32. Service collections; landfill; penalty.

**Article 5. Schedule of Fines**

Sec. 5-2-50. Violations; schedule of fines.

Sec. 5-2-51. Recyclable materials.

Sec. 5-2-51.1. Solid Waste Improvement Fund.

Sec. 5-2-52. Landfill fee schedule.

Sec. 5-2-53. Building permits.

Sec. 5-2-54. Violations.

\*Editor's note—An ordinance of April 4, 1995, repealed former Ch. 5-2 in its entirety. Said chapter contained provisions relative to solid waste and was derived from ordinances enacted Dec. 1, 1992; July 6, 1993; and March 7, 1995. In addition, said ordinance of April 4, 1995, substituted new provisions enacted as a new Ch. 5-2.

**ARTICLE 1. STATEMENT OF INTENT;  
DEFINITIONS****Sec. 5-2-1. Intent.**

(a) It is the intent of Athens-Clarke County to reduce the amount of solid waste generated and disposed by undertaking aggressive source reduction and recycling activities. Athens-Clarke County's policy shall promote the development of environmentally sound practices regarding the collection, and processing of solid waste.

(b) In order to attain these goals and to protect public health and the environment, Athens-Clarke County shall regulate collection of solid waste, within the boundaries of the General Service District (GSD) or county. In carrying out this intent, the goals of this ordinance are:

- (1) To reduce the amount of solid waste disposed, as measured on a per capita basis, 25 percent by July 1, 1996, as required under the Comprehensive Solid Waste Management Act of 1990 (O.C.G.A. § 12-9-20 et seq.)
- (2) To ensure the safe and sanitary collection, transportation and recovery of solid waste, recyclable and compostable materials.
- (3) To provide Athens-Clarke County residents and businesses the opportunity to recycle more materials through convenient on-site, curbside and dropoff station collection programs and through the addition of recyclable materials to the collection program as appropriate.
- (4) To establish and enforce solid waste collection standards to ensure uniform, cost effective and high quality service delivery to all residents.
- (5) To create fee system components by which collection rates can be established for waste collection which are fair to the public, encourage waste reduction, and promote safe, efficient collection.
- (6) To promote community awareness in order to achieve the highest participation possible in the solid waste and collection system and all recycling opportunities



*Fees paid service* shall mean the routine service provided for by the solid waste department to customers for a fee determined by the schedule of fees as set forth in article 2 of this chapter.

*Food service establishment* shall include any establishment used for the preparation, packaging and serving of meals, lunches, short orders, sandwiches, frozen desserts, food samples or other edible products.

*Franchise* means a solid waste collection franchise awarded by Athens-Clarke County and contractually agreed to between Athens-Clarke County and the franchisee allowing them to engage in activities of a franchise as defined in and governed by this chapter.

*Franchisee* shall mean any person, persons or entity granted a franchise from Athens-Clarke County who, under agreements for compensation by those receiving services, is engaged in whole or in part in the business of collecting, transporting, delivering, or disposing of solid waste materials, other than industrial waste, within Athens-Clarke County. "Franchisee" includes any employees or other persons authorized to act on behalf of the Franchisee. "Franchisee" has a meaning identical to that of "grantee" as used in the franchise agreement.

*Garbage* shall mean the same as "solid waste" as defined herein.

*Garbage can* shall mean a container of a capacity not less than 20 gallons and not to exceed 96 gallons and where solid waste is placed for collection. Such a can shall have two (2) handles upon the sides of the can, or a bail by which it may be lifted and shall have a tightfitting metal, plastic, or rubber top.

*Hazardous waste* shall mean solid waste that is harmful to human or environmental health. Such waste includes, but is not limited to, solids, semi-solids, liquids, and gases that are or may become toxic, caustic, infectious, contagious, flammable, or explosive and other items described as being hazardous in federal, state, or local government codes and regulations, except radioactive waste materials as provided in the Rules of the Department of Human Resources, Chapter 270-5-20, entitled, "Radioactive Materials."

*Industrial waste* means solid waste generated by manufacturing or industrial processes that is not a hazardous waste regulated under the Hazardous Waste Management Act and regulations promulgated by the Board of Natural Resources, Chapter 391-3-11. Such waste includes, but is not limited to, wastes resulting from the following manufacturing processes: Electric power generation; fertilizer/agricultural chemicals; food and

related products/byproducts; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing/foundries; organic chemicals; plastics and resins manufacturing; pulp and paper industry; rubber and miscellaneous plastic products; stone, glass, clay, and concrete products; textile manufacturing; transportation equipment; and water treatment. This term does not include mining waste or oil and gas waste.

*Inert wastes* shall mean wastes which will not, or are not likely to, cause production of leachate of environmental concern. Such wastes are limited to earth and earth-like products, concrete, cured asphalt, rock, bricks, yard trimmings, stumps, limbs, and leaves. This definition excludes industrial and demolition wastes not specifically listed herein.

*Infectious waste* shall mean a solid waste capable of producing an infectious disease. The types of waste designated as infectious are: microbiological waste, pathological waste, blood products, and sharps.

*Leaf and limb materials* shall mean leaf or limb materials resulting from normal yard maintenance, such as leaves, brush, grass clippings, shrub and tree prunings, discarded Christmas trees, nursery and greenhouse vegetative residuals, and vegetative matter resulting from landscaping development or other garden activities. This term does not include stumps, logs, pallets, agricultural wastes, animal waste, roots, sewage sludge or garbage.

*Litter* shall mean misplaced or improperly discarded "solid waste" as defined herein.

*Person* shall mean any individual, partnership, firm, company, corporation, association, joint stock company, representative, agent, or assignee. Regarding customers of the solid waste department, "person" shall mean:

- (1) The occupant of the structure serviced by the solid waste department;
- (2) The local manager in charge of operations within the structure serviced by the solid waste department; or

- (3) The owner of the structure serviced by the solid waste department.

*Premises* shall mean a parcel of land, including any buildings or structures located thereon, within Athens-Clarke County used for residential, commercial, industrial, agricultural or institutional purposes either separately or in combination to which a separate street address, postal address or box, tax map description, or other similar identification has been assigned or which is in use by a person having control of the area.

*Prohibited waste* shall mean any waste that cannot be included in the solid waste set out for collection from any premises located within Athens-Clarke County.

*Prohibited waste list* shall mean a list of banned waste established by the director of solid waste.

*Receptacle* shall mean any container (dumpster, garbage can, roll cart or bag) approved by the solid waste department for use in the temporary storage, collection and disposal of solid waste.

*Recyclable or recovered material* shall mean material(s) which have known use, reuse, or recycling potential; can be feasibly used, reused or recycled; and have been diverted or removed from the solid waste stream for sale, use, reuse, or recycling, whether or not requiring subsequent separation and processing.

*Recycling* means the series of activities including collection, separation, and processing, by which products or other materials are recovered from or otherwise diverted from the solid waste stream (1) for use in the form of raw materials in the manufacture of new products other than fuel and (2) in the case of source separated wood waste which has no material use, for use as fuel. Recycling includes composting of source separated organics but not composting of mixed waste.

*Refuse* means the same as "solid waste" as defined herein.

*Residence* means any dwelling unit that is a four-plex or smaller that is occupied by either an owner or tenant.

*Resident* means any person living in a "residence."

*Routine service* shall mean the collection, transfer and disposal of refuse from receptacles on a pre-established schedule and route serviced by a franchisee.

*Scavenger* shall mean any person engaged in the uncontrolled picking, separating or reclaiming of discarded solid waste and/or recyclable materials from the receptacle of another.

*Self-haul* means the collection and transportation of nonresidential solid waste, at a level not to exceed five (5) tons per month, or residential solid waste, at a level not to exceed one-quarter tons per month, that is generated by tenants, homeowners, manufacturing operations, or other facilities owned by the hauler by the living unit owner or his or her direct employee, doing so without charge or reimbursement for such services.

*Service* means the collection and transportation of solid waste by persons for compensation.

*Servicing* shall mean the physical or mechanical act of collateral transferring and loading of solid waste from approved receptacles by a franchisee.

*Service provider* shall mean a franchisee.

*Serviceability* shall mean the ability for the franchisee to have access to and service receptacles.

*Solid waste* means any garbage or refuse; sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility; and other discarded material including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities, but does not include recovered materials; solid or dissolved materials in domestic sewage; solid or dissolved materials in irrigation return flows or industrial discharges that are point sources subject to permit under 33 U.S.C. Section 1342; or source, special nuclear, or byproduct material as defined by the federal Atomic Energy Act of 1954, as amended (68 Stat. 923).

*Solid waste handling* shall mean the physical or mechanical act of storing, collecting, transporting, treating, utilizing, processing, or disposing of solid waste or any combination of such activities.

## UTILITIES

*Source-separated materials* shall mean recyclable or leaf and limb materials are substantially separated from other solid waste and kept segregated in some form from solid waste.

*Targeted materials list* shall mean the list established by the director of solid waste of all recyclable materials that are to be collected by the franchisee.

*Tipping fee* shall mean the fee to be charged upon delivery of solid waste, recyclable materials or leaf and limb materials to an Athens-Clarke County facility.

*Transfer station* shall mean a facility used to transfer solid waste from one (1) route collection vehicle to another bulk transfer vehicle or trailer for transportation to a disposal facility or landfill.

*Volume-based fee system* shall mean a fee system, used by the franchisee to charge customers for services, that meet requirements to encourage waste reduction, reuse, recycling and processing through reduced rates for smaller containers or numbers of containers of solid waste. The components of the fee system shall include a fixed monthly base charge plus a disposal charge based on the number and size of the containers.

(b) *Service categories.* Services provided to residential and commercial customers are defined below:

- (1) *Bag service.* Collection of solid waste contained in a sealed disposable bag.
- (2) *Backyard service.* Collection of solid waste from garbage cans, located adjacent to and at the side or rear of the structure being served. Receptacles shall not be located within the public right-of-way nor at any other locations readily visible from such public right-of-way, other than on scheduled collection days.
- (3) *Curbside service.* Collection of solid waste or recycling materials from garbage cans or recycling containers, respectively, located within 15 feet of the curb.
- (4) *Dead animals services.* Collection of a dead household pet or other small animal which is placed in a plastic bag outside

the premises at the property boundary and/or curb, and disposing of same at a landfill.

- (5) *Dumpster service.* Collection of garbage or recycling materials from solid waste department approved dumpsters by a specially designed and compatible top-loading collection vehicle, dumping and returning dumpster to its authorized location.
  - (6) *Leaf and limb service.* Collection of bagged leaves and bundled limbs at preannounced times and places.
  - (7) *Roll cart service.* Collection of refuse and garbage or recycling materials from approved roll carts located adjacent to the structure or temporarily placed at the curb as specified by the franchisee.
  - (8) *Special/unscheduled service.* Nonroutine collection of furniture, moving boxes, auto parts, construction materials or solid waste weighing less than 100 pounds per item by the franchisee at the expense of the owner or occupant of the premises.
- (c) *Customer classification defined.* Customers of the franchisee shall be classified as either residential or commercial.

- (1) *Residential customers.* Single-family detached, duplex, and four-plex dwelling structures occupied by either an owner or tenant. All such residential customers within the Urban Service District (USD), as set forth in [section] 7-301(a) of the Charter shall use the Athens-Clarke County Solid Waste Department as their franchisee for the collection and disposal of their garbage.
- (2) *Commercial customers.* Structures that house more than two (2) families or businesses that are otherwise engaged in profit, nonprofit or public service activities. These structures include, but are not limited to, the following:
  - a. *Multifamily structures.* Multifamily structures include fraternity houses, sorority houses, hotels, motels, trailer parks, townhouses, and apartment

or condominium complexes with more than two (2) attached family dwelling units.

- b. *Business structures.* Facilities housing wholesale and retail businesses that provide goods and services not otherwise defined in this chapter.
- c. *Restaurant structures.* Eating establishments having seating capacity for their customers to consume food on the premises.
- d. *Food concession structures or facilities.* Food concession structures or facilities including structures, stands, and carts from which fast food is purchased by individuals for consumption and which do not provide seating for customers.
- e. *Industrial structures.* Structures which shelter employees, or clientele who are engaged in the manufacturing or processing of goods and materials.

(d) *Special customers defined.* Residential and commercial customers who request unscheduled services or services other than routine services. The franchisee shall have the right to accept or reject the performance of such unscheduled services and levy fees on a cost of service basis. The franchisee shall determine services and fees for special customers.

(Ord. of 4-4-95, § 1; Ord. of 6-3-97, § 1)

## ARTICLE 2. ATHENS-CLARKE SOLID WASTE DEPARTMENT

### Sec. 5-2-3. Solid waste department.

(a) This department shall be under the direction of the solid waste director. It shall collect, transport, transfer and dispose of garbage and refuse, and other solid waste for the portions of Athens-Clarke County as approved by the mayor and chair and commission. It is also responsible for providing and/or coordinating community wide solid waste reduction efforts and for managing the operations of the Athens-Clarke County landfill.

(b) The solid waste department shall be responsible for administration of all franchises for the collection of solid waste and recyclable materials within the boundaries of Athens-Clarke County. (Ord. of 4-4-95, § 1; Ord. of 7-2-96, § 1)

### Sec. 5-2-4. Director of solid waste department; duties, responsibilities.

(a) The director of the solid waste department shall be appointed by the manager.

(b) The solid waste director shall have the authority to assign departmental employees the responsibility to make routine inspections of solid waste receptacles; compacting equipment used in conjunction with any such receptacle; service and/or operational standards; and other solid waste department inspection responsibilities.

(c) The solid waste director shall be responsible for the administration of the provisions of this chapter, other ordinances, and other policies and regulations dealing with health, sanitation, and litter. All regulations, policies and operating procedures of the solid waste department shall be subject to review and approval by the manager.

(d) The director of the solid waste department is hereby authorized and directed to review and approve all plans and specifications for the installation of compactor units. Such compactors shall be approved by the director of solid waste prior to the installation being made. All compactor shredders and compactor receptacles shall be installed on concrete pads of a type and design acceptable to the director of solid waste. All such installations shall comply with the requirements of the building codes, the fire prevention codes, and other safety laws and ordinances of Athens-Clarke County. The director of solid waste is further authorized to adopt additional regulations as may be necessary and reasonable as to his or her judgment that will carry out the requirements and/or intent of this chapter. The director of the solid waste department is authorized to approve a different size of loadable receptacles as specified in this chapter. The director is also authorized to make this determination with reference to receptacles not covered under this chapter.

(Ord. of 4-4-95, § 1)

**Sec. 5-2-5. Residential collection—Urban Service District.**

(a) There is hereby levied and assessed a monthly fee for all residential customers receiving backyard pick up of solid waste and curbside pick up of recycling materials within the confines of the urban service district as defined in section 7-301(a) of the Charter of the Unified Government of Athens-Clarke County. Customers shall pay according to the size and number of solid waste containers as follows:

|                              |         |
|------------------------------|---------|
| 1 20-gallon container .....  | \$12.00 |
| 1 32-gallon container .....  | 13.00   |
| 2 32-gallon containers ..... | 16.00   |
| 3 32-gallon containers ..... | 22.00   |
| 4 32-gallon containers ..... | 30.00   |
| 5 32-gallon containers ..... | 42.00   |

(b) During the first three months of this program, all residents shall be required to subscribe to the basic level of service (two 32-gallon containers). After the three-month period, customers shall be allowed to change their level of service as needed.

(c) Customers with occasional extra bags of garbage shall be required to purchase a special sticker from the solid waste department to place on their bagged garbage. The fee per sticker shall be \$2.00.

(d) Customers may change their level of service without charge one time during each calendar year; thereafter, any customers who desire to change said level of service shall be required to pay a fee of \$10.00 per change.

(e) Customers requiring "dead animal" services defined in section 5-2-2 (b)(4) herein shall be required to purchase a sticker in the amount of \$2.00 to place on the bag to be disposed of.

(f) Customers who have small appliances or empty corrugated cardboard boxes weighing no more than 40 pounds and no larger than three feet tall by three feet wide may request a special pickup by the solid waste department. Customers

shall be required to purchase a sticker in the amount of \$2.00 to place on each item to be disposed of.

(g) New customer accounts established after September 1, 1995, shall be assessed a security deposit equal to one month's service plus a non-refundable service fee of \$10.00 to "turn on" the service. The security deposit shall be applied to the customer's last bill.

(Ord. of 4-4-95, § 1; Ord. of 7-5-95, § 1; Ord. of 6-3-97, § 1)

**Sec. 5-2-6. Service billing—Residential; penalty discontinuance of service.**

(a) Fees paid for routine services provided to residential customers by the solid waste department shall be billed on a monthly basis on a customer's water bill. If it is determined that a proprietor, tenant or owner of a structure does not receive a water bill, then solid waste fees shall be billed separately by the water business office. In the event unscheduled services are requested, charges for those services shall be applied to the next monthly bill or by separate billing. The administration and collection of garbage fees on water bills shall be coordinated between the solid waste department and other appropriate departments.

(b) Any customer who fails to make payment of the charges by the due date as determined by the water business office shall pay, in addition to the amount of the charge, a penalty of ten percent of the amount of said charge. Said penalty shall also be applied to all prior unpaid accounts and on any prior penalties resulting therefrom.

(Ord. of 4-4-95, § 1)

**Sec. 5-2-7. Leaf and limb service—General Service District.**

(a) *Leaf and limb service—Collection of brush, leaves and limbs generally.* The solid waste department shall provide this service throughout Athens-Clarke County. Residential customers are the primary recipients of this service; however, commercial customers may receive this service on a cost-of-service basis.

(b) *Frequency of service—Amount collectible.* The solid waste department shall not collect more than one load at any one location per predetermined cycle unless collected as an unscheduled service. A "load" is defined as one three-quarter-ton pickup truck or six cubic yards. Collection shall be once every 60 days.

(c) *Placement and preparation of items generally.* Brush and limbs shall be placed between curb and sidewalk. Where there is no sidewalk, limbs may be placed on the owner's property near the street. Limbs shall not be over six feet in length or four inches in diameter and shall be completely trimmed. Limbs shall be stacked no closer than 50 feet from an intersection and shall be in a manner not to obstruct the view of traffic. All limbs and leaves shall be separated with limbs placed in one direction, that is, with all cut ends together. Leaves and grass shall be placed in approved bags and placed between curb and sidewalk. Where there is no sidewalk, bags shall be placed on the owner's property near the street. Shrubbery clippings, vines, briars and other running plants must be separated from all other leaf and limbs placed near the street for collection. Dirt, rocks, grass roots and other plant roots containing soil shall not be collected by Athens-Clarke County.

Leaves, limbs, grass or other trimmings shall be placed in an orderly manner so as not to obstruct the free and normal flow of any drainage system or the safe vision or movement of any pedestrian or vehicular traffic. Such debris shall not be placed in the gutter of any roadway at any time.

It shall be unlawful for any person to place or dispose of any leaves, limbs, grass or other trimmings within the public rights-of-way throughout Athens-Clarke County at any time except as provided in this section.

(d) *Placement of items by persons other than property owner.* Limbs cut and placed near the street for collection by any person other than the owner of the property shall not be collected or hauled by Athens-Clarke County. Individuals or companies under contract to collect leaves and limbs shall haul and dispose of all such refuse. This requirement also applies to utility or rail-

road companies which trim vegetation away from their wires, equipment or tracks to maintain their right-of-way over public and private land.

(e) *Items placed on vacant lots.* Leaves or limbs put on vacant lots by property owners or violators shall not be collected.

(f) *Entry on property by Athens-Clarke County vehicles and employees.* Athens-Clarke County owned vehicles shall not enter upon private property to collect limbs or other solid waste, and employees are hereby prohibited from entering upon private property to collect limbs which are placed more than five feet behind the sidewalk or property line, whichever is the farthest from the centerline of the street.

(g) *Length of time materials may remain at the curb.* Such debris as leaves, limbs or other trimmings shall not be placed within a public right-of-way more than ten calendar days prior to the Monday of the week scheduled for the collection and removal of such debris by Athens-Clarke County or a private or commercial collector. (Ord. of 4-4-95, § 1; Ord. of 2-3-98, § 1)

#### **Sec. 5-2-8. Unscheduled collection.**

(a) The minimum charge under section 5-2-6 shall be \$35.00 per three-quarter-ton load for all customers requesting additional solid waste collection services by the solid waste department within the confines of the urban service district as defined by section 7-301(a) of the Charter of the Unified Government of Athens-Clarke County, Georgia.

(b) The director of solid waste shall charge a customer for collection and disposal expenses associated with the removal of waste which does not comply with the solid waste ordinance or approved policies and procedures and shall charge a minimum of \$35.00 per three-quarter-ton load or part thereof for such collection and disposal expenses within the confines of the urban service district as defined by section 7-301(a) of the Charter of the Unified Government of Athens-Clarke County, Georgia.

(Ord. of 4-4-95, § 1; Ord. of 7-1-97, § 1)

**Sec. 5-2-9. Commercial dumpster service fee.**

(a) The monthly base rate schedule for weekly commercial solid waste dumpster service from loadable containers owned by Athens-Clarke County for all customers receiving commercial solid waste collection services, within the confines of the Urban Service District as defined by section 7-301 (a) of the Charter of the Unified Government of Athens-Clarke County, Georgia, shall be as follows:

|            | 2 yds   | 4 yds   | 6 yds   | 8 yds    |
|------------|---------|---------|---------|----------|
| 1 per week | \$64.00 | \$78.00 | \$95.00 | \$112.00 |
| 2 per week | 114.00  | 143.00  | 173.00  | 203.00   |
| 3 per week | 165.00  | 207.00  | 251.00  | 295.00   |
| 4 per week | 215.00  | 271.00  | 329.00  | 386.00   |
| 5 per week | 266.00  | 335.00  | 407.00  | 478.00   |
| 6 per week | 317.00  | 400.00  | 484.00  | 569.00   |

(b) The monthly base rate schedule for weekly commercial solid waste dumpster service from loadable containers owned by the customer for all customers receiving commercial solid waste collection services, within the confines of the Urban Service District as defined by section 7-301 (a) of the Charter of the Unified Government of Athens-Clarke County, Georgia, shall be as follows:

|            | 2 yds   | 4 yds   | 6 yds   | 8 yds   |
|------------|---------|---------|---------|---------|
| 1 per week | \$51.00 | \$64.00 | \$78.00 | \$92.00 |
| 2 per week | 101.00  | 129.00  | 156.00  | 183.00  |
| 3 per week | 152.00  | 193.00  | 234.00  | 275.00  |
| 4 per week | 202.00  | 257.00  | 312.00  | 366.00  |
| 5 per week | 253.00  | 321.00  | 390.00  | 458.00  |
| 6 per week | 304.00  | 386.00  | 467.00  | 549.00  |

(c) Effective September 1, 1995, new commercial solid waste customers shall not be allowed to provide their own loadable containers for collection services, and effective July 1, 1998, existing commercial solid waste customers shall not be allowed to provide their own dumpsters for collection services within the confines of the Urban Service District as defined by section 7-301 (a) of the Charter of the Unified Government of Athens-Clarke County, Georgia.

(d) The monthly base rate schedule for weekly commercial recycling dumpster service from loadable containers owned by Athens-Clarke County for all customers receiving commercial solid waste collection services, within the confines of the Urban Service District as defined by section 7-301

(a) of the Charter of the Unified Government of Athens-Clarke County, Georgia, shall be as follows:

|            | 2 yds   | 4 yds   | 6 yds   | 8 yds   |
|------------|---------|---------|---------|---------|
| 1 per week | \$49.00 | \$50.00 | \$53.00 | \$56.00 |
| 2 per week | 85.00   | 86.00   | 89.00   | 92.00   |
| 3 per week | 121.00  | 122.00  | 125.00  | 128.00  |
| 4 per week | 157.00  | 158.00  | 161.00  | 164.00  |
| 5 per week | 192.00  | 193.00  | 196.00  | 199.00  |
| 6 per week | 228.00  | 229.00  | 232.00  | 235.00  |

(e) There shall be a charge of \$15.00 per dumpster for blocked dumpsters or switching out dumpsters.

(f) Customers requesting an extra pickup shall pay the following fees for each additional dumpster tip requested:

|        |         |
|--------|---------|
| 2 yard | \$11.68 |
| 4 yard | 14.83   |
| 6 yard | 17.98   |
| 8 yard | 21.13   |

(g) Any customer requesting a change in service level or collection schedule over and above the one (1) "free" change allowed to each customer during a calendar year, shall be assessed a fee of \$10.00 per change.

(h) If a customer currently serviced within the confines of the urban service district as defined by section 7-301(a) of the Charter of the Unified Government of Athens-Clarke County, Georgia, has other area offices within the boundaries of Athens-Clarke County, then the solid waste director shall have the authority to provide a bid to deliver the requested services to all of the customer's area offices.

(i) Commercial dumpster customers shall sign either a one-, two- or three-year service contract with Athens-Clarke County for collection services.

(Ord. of 4-4-95, § 1; Ord. of 7-5-95, § 2)

**Sec. 5-2-10. Sale of loadable containers.**

(a) Effective September 1, 1995, Athens-Clarke County shall no longer provide for the sale of loadable containers to customers receiving commercial collection services, within the confines of



the Urban Service District as defined by section 7-301(a) of the Charter of the Unified Government of Athens-Clarke County, Georgia.

(b) There shall be a charge of \$15.00 per location for the relocation of dumpsters not owned or serviced by Athens-Clarke County.

(c) A minimum of \$20.00 shall be charged for steam cleaning and disinfecting dumpsters not owned by Athens-Clarke County. (Ord. of 4-4-95, § 1; Ord. of 7-5-95, § 3)

**Sec. 5-2-11. Commercial curbside collection fees.**

(a) The monthly base fees for commercial curbside collection services for all customers receiving commercial solid waste collection services, within the confines of the Urban Service District as defined by section 7-301(a) of the Charter of the Unified Government of Athens-Clarke County, Georgia, shall be as follows:

|          |         |
|----------|---------|
| Class A  | \$15.00 |
| Class 1A | 46.00   |
| Class 1B | 54.00   |
| Class 2A | 92.00   |
| Class 2B | 100.00  |
| Class 2C | 108.00  |
| Class 3A | 139.00  |
| Class 3B | 146.00  |
| Class 3C | 154.00  |
| Class D  | 25.00   |

In addition, customers shall be required to purchase from the solid waste department, an official garbage bag in which to place their garbage for collection. The fee per bag shall be \$1.00 to cover the cost of purchasing the bag and the cost of disposing of the waste in said bag at the landfill.

The fee system includes a monthly base fee for the collection function and a disposal fee based upon the volume of waste collected. The base fee element of the system shall be based on the following customer classes:

*Class A*—Customers that have a need for solid waste collection service two (2) times/week,

Monday through Saturday. This service classification shall not be made available to restaurants or bars.

*Class 1A*—Customers that have a need for solid waste collection service one (1) time/day, Monday through Saturday.

*Class 1B*—Customers that have a need for solid waste collection services defined in Class 1A plus one (1) collection on Sunday.

*Class 2A*—Customers that have a need for solid waste collection services two (2) times/day, Monday through Saturday.

*Class 2B*—Customers that have a need for solid waste collection services defined in Class 2A plus one (1) collection on Sunday.

*Class 2C*—Customers that have a need for solid waste collection services defined in Class 2A plus two (2) collections on Sunday.

*Class 3A*—Customers that have a need for solid waste collection services at three (3) times/day, Monday through Saturday.

*Class 3B*—Customers that have a need for solid waste collection services defined in Class 3A plus one (1) collection on Sunday.

*Class 3C*—Customers that have a need for solid waste collection services defined in Class 3A plus two (2) collections on Sunday.

*Class 4*—Customers that have collection services provided by dumpster service. Such fees for this type service shall be based on the volume of the dumpster and the frequency of collection as set forth in section 5-2-9.

*Class D*—Residential customers, defined as either owners or tenants occupying a dwelling unit, excluding multifamily residences of 30 or more units, unless approved by the solid waste director, that have a need for solid waste collection service two (2) times/week, Monday through Saturday.

(b) Customers shall be charged \$1.00 per five-gallon container of cooking oil collected.

(c) There shall be a minimum charge of \$35.00 per 3/4-ton pickup truck load of materials collected by request of the customer as an unscheduled or special service, as herein defined.

The director of solid waste shall charge a customer for collection and disposal expenses associated with the removal of waste which does not comply with the solid waste ordinance or approved policies and procedures and shall charge a minimum of \$35.00 per ¼-ton load or part thereof for such collection and disposal expenses.

(d) Recycling services. Recycling services such as heavy volume commingled paper and/or containers shall be exempt from additional charges only if the customer properly registers for the service through the solid waste department. Customers who need unscheduled or special services who are not properly registered with the solid waste department shall be charged as set forth in section 5-2-11(c).

(e) Any customer requesting a change in service level or collection schedule over and above the one (1) "free" change allowed to each customer during a calendar year, shall be assessed a fee of \$10.00 per change.

(f) Class D customers shall not be required to purchase official garbage bags for their solid waste; however, they shall be required to place their solid waste in the official garbage bags which shall be made available to them by the Athens-Clarke County Solid Waste Department in accordance with established policies and procedures.

(Ord. of 4-4-95, § 1; Ord. of 7-5-95, § 4; Ord. of 6-3-97, §§ 1—4; Ord. of 7-1-97, § 1; Ord. of 7-3-97, § 2)

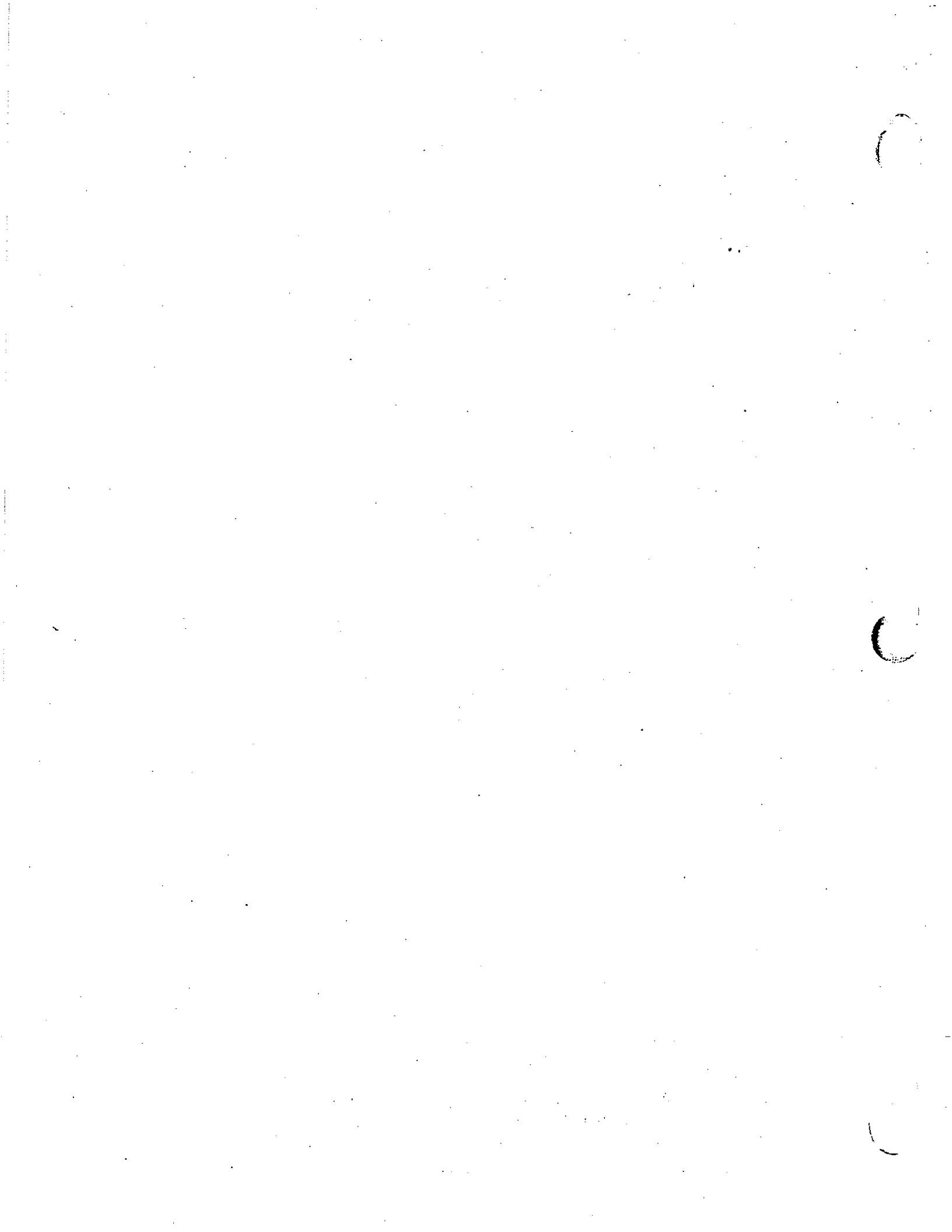
#### **Sec. 5-2-12. Service billing—Commercial.**

Fees paid for routine services provided to commercial customers by the solid waste department shall be billed on a monthly basis on the customer's water bill. If it is determined that a proprietor, tenant or owner of a structure does not receive a water bill, then it shall be billed separately by the water business office. In the event unscheduled services are requested, charges for those services shall be applied to the next monthly bill or by separate billing. The administration and collec-

tion of garbage fees on water bills shall be coordinated between the solid waste department and other appropriate departments.

(a) *Payment for services.* Payment for services shall be as follows:

- (1) Those food service establishments using bags to dispose of solid waste shall be assessed fees as set forth in section 5-2-11.



- (2) Hotels, professional buildings, bank buildings, apartments, condominiums, and other multiple tenant structures in the downtown business district that offer garbage services or janitorial services as part of their lease, rental or association agreement shall be assessed a monthly fee in accordance with section 5-2-11. The fee shall be prepaid by the individual or entity who is responsible for the structure's water bill. Multiple unit structures that are not managed or maintained by a central agency will be individually assessed the minimum monthly fee per unit as set forth in section 5-2-11. A multiple tenant structure which is serviced by an Athens-Clarke County dumpster shall be assessed fees in accordance with section 5-2-9 or 5-2-10, whichever is applicable.
- (3) Other businesses that use approved bags as their primary means of disposing of refuse shall be billed as set forth in section 5-2-11.

(b) *Penalty; discontinuance of service for non-payment; liens.* Any customer who fails to make payment of the charges by the due date as determined by the water business office shall pay, in addition to the amount of the charge, a penalty of 10 percent of the amount of said charge. Said penalty shall also be applied to all prior unpaid accounts and on any prior penalties resulting therefrom.

(Ord. of 4-4-95, § 1)

### Sec. 5-2-13. Collection personnel.

The following provisions apply to garbage and refuse collection personnel employed by the solid waste department:

- (a) Collectors shall not be permitted to enter any residence or commercial establishment in the performance of their duties even at the request of the customer.
- (b) Collectors shall not accept, money or other things of value in exchange for the performance of extra services.

(Ord. of 4-4-95, § 1)

## ARTICLE 3. FRANCHISEES GENERALLY

### Sec. 5-2-14. Customer service provisions generally—Commercial and residential customers.

All persons receiving solid waste collection services and those providing self-service shall comply with the following provisions:

(a) *Location of receptacles.* At the time of scheduled collection, receptacles shall be located no more than 150 feet from the curb or road edge with a hard surface leading to them, unless the franchisee contractually agrees to a different distance. Other than on scheduled collection days, receptacles shall not be located within the public right-of-way nor at any other locations readily visible from such public right-of-way.

All items placed within the public right-of-way by any person must be contained in an approved receptacle unless otherwise authorized by law and/or service standards approved by the solid waste director.

(1) *Access to receptacles.* Receptacles shall be placed in a location where they are accessible to collectors. Receptacles blocked by vehicles or located too close to private property whereby damage could result may not be serviced.

(2) *Below ground receptacles.* Collection from below ground receptacles is prohibited.

(3) *Reasons to deny routine service.* In the event services are denied, the service provider will post a notice on or near refuse receptacles. Services may be denied for reasons including, but not limited to, the following:

- a. Gates are locked;
- b. Gates are wired or tied shut;
- c. One or more dogs are loose in the yard or tied too close to the receptacle;
- d. Receptacles are filled with liquid;
- e. Receptacles have sharp edges, broken handles or should otherwise be replaced; or
- f. Receptacles contain prohibited items.

- g. Customers in violation of parts of this chapter or other ordinances, operating policies or regulations.

(b) *Prohibited items.* Certain items, by their nature, prohibit disposal or collection by ordinary or routine means due to their size, weight, volume, bulk, putrescibility, injurious or hazardous characteristics. The following is a nonexclusive list of the type of items that shall not be collected by the service provider as part of its routine service. Placement of these items or similar items in receptacles serviced by the provider is prohibited:

- (1) Household or industrial appliances and furniture;
- (2) Carpets or carpet scraps;
- (3) Tires;
- (4) Wooden crates or cardboard boxes that have not been collapsed or flattened;
- (5) Logs or limbs;
- (6) Bed springs;
- (7) Rock, dirt, concrete blocks or other construction and demolition waste;
- (8) Liquids of any type not in a sealed container;
- (9) Wet garbage not in a waterproof bag;
- (10) Household solid waste not in an approved bag;
- (11) Vehicle batteries;
- (12) Toxic, caustic, infectious, contagious, explosive or otherwise hazardous waste:
  - a. The service provider shall not collect nor handle toxic, contagious, explosive or otherwise hazardous waste for disposal. Such waste shall be disposed of in accordance with federal, state and local laws and procedures.
  - b. It shall be a violation of this chapter for any person to dispose of toxic, caustic, contagious, explosive or otherwise hazardous waste in receptacles of any type without the knowledge and approval of collection service.

- (13) Leaf and limb materials as defined in this chapter.

- a. It shall be unlawful for any person to place or mix leaf and limb materials with solid waste within Athens-Clarke County.

(c) *Maintenance of receptacle and area surrounding.* Owners, occupants, agents and, when appropriate, service providers are responsible for keeping receptacles in a serviceable condition, reasonably clean and free of decaying matter, and placed in such a manner as to not interfere with the routine utilization of the right-of-way. The solid waste director at his discretion may designate locations for, or deny the placement of, receptacles to better facilitate the use of public rights-of-way. The area surrounding receptacles shall be free and clear of accumulations of refuse. Where two (2) or more occupants, owners or agents share the same receptacle, it shall be the joint responsibility of all of the users to maintain the area surrounding the receptacle. Maintenance of receptacles shall be the responsibility of the owner of the receptacle.

(d) *Removal of tenant property.* Owners or agents of the owner shall be responsible for items removed from real properties rented or leased to others and placed in residential yards, rights-of-way, or adjacent commercial structures. Fees levied for the removal of such items shall be the responsibility of the owner or authorized agent.

(e) *Dead animals.* The property owner may elect to have the franchisee collect a dead house pet or other small animals. In such case, the dead house pet or other small animals shall be put into a plastic bag by the customer, placed at the curb, and shall be collected by the franchisee. Such service shall be on an on-call basis during regular operating hours, considered a special service, and may be subject to additional fees.

(f) *Disposal of vehicle parts or junked vehicles.* The franchisee reserves the right to deny pickup and disposal of vehicle parts or junked vehicles.

(g) *Unauthorized disposal.* Placement of commercial or residential solid waste, recyclable materials, leaves, limbs, or other materials by any person in the receptacle of another is prohibited

without the express permission of the owner or other person in lawful possession of said property. This provision includes, but is not limited to, the unauthorized disposal of commercial or residential materials as noted above in public waste or recycling cans or dumpsters.

(h) *Unscheduled service.* Items (1), (2), and (4) through (6) of subsection (b) above and leaf and limb materials, as defined in this chapter, may be disposed of by calling the franchisee and making an appointment to have said materials removed at the customer's expense on a cost-of-service basis. This service shall classify the requester as a special customer, and permits the franchisee the right to accept or refuse service. Items to be collected shall be placed next to the customer's refuse receptacle or another location that meets with the approval of the franchisee and the director.

(i) *Separating targeted materials from solid waste.* The owner of each residential, commercial, institutional and industrial property within Athens-Clarke County electing to participate in recycling activities shall be responsible for keeping targeted materials separate from solid waste generated on their premises and properly preparing them for recycling

(j) *Unlawful dumping.* No person shall deposit or cause to be deposited, nor sort, scatter, throw, drop or leave any solid waste, hazardous waste, banned materials, construction or demolition debris, leaf and limb materials or recyclable material, as herein defined, upon or into any street, right-of-way, alley, or other public or private property within Athens-Clarke County.

(k) *Accumulation of refuse.* No owner or occupant of any establishment shall permit the accumulation of solid waste upon any premises for a period in excess of 15 days.

(l) *Composting and recycling.* Leaf and limb materials may be accumulated indefinitely for composting or other processing purposes in a manner that will not harbor rodents or become a public nuisance. Source-separated recyclable material may be accumulated indefinitely in a man-

ner that will not become a public nuisance for the purpose of and in a form acceptable for transport and delivery to a recycling facility.

(m) *Preparation of materials.* Franchisee may require that solid waste be contained in receptacles.

(Ord. of 4-4-95, § 1; Ord. of 10-1-96, §§ 1, 2)

#### Sec. 5-2-15. Same—Residential customers.

(a) *Owner responsibility.* Owners of owner-occupied dwellings and owners and tenants of tenant-occupied single-family, duplex, and fourplex dwelling units are responsible for compliance with the provisions set forth for all customers and those set forth below. Owners shall ensure their tenants are informed of tenant responsibilities regarding the temporary storage of solid waste, maintenance of receptacles and areas surrounding receptacles, scheduled routine services, and reasons for noncollection.

(b) *Residential backyard service.* Residential customers who receive backyard garbage service from the solid waste department shall provide approved garbage cans, roll-carts or bags as defined in this chapter. A number of receptacles adequate to hold refuse normally accumulating between scheduled collection shall be provided on each premise by either the customer, or the franchisee, for collection by the franchisee. All containers for residential service shall be located in one (1) place for each dwelling unit.

(c) *Residential curbside service.* Residential customers who receive curbside garbage service shall be either provided with approved garbage cans, roll-carts or bags by their franchisee or shall provide themselves with approved garbage cans, roll-carts or bags as defined in this chapter. A number of receptacles adequate to hold refuse normally accumulating between scheduled collection shall be provided on each premises by either the customer, or the franchisee, for collection by the franchisee. All containers for residential service shall be located in one (1) place for each dwelling unit.

(Ord. of 4-4-95, § 1)

**Sec. 5-2-16. Same—Commercial customers generally.**

Persons responsible for compliance with this chapter shall be the local manager in charge of the operation of the enterprise or the local manager in charge of the multifamily dwelling at the customer's location and, when appropriate, the manager of the service provider. In addition to restrictions and requirements otherwise applicable to all customers, the following provisions shall apply:

(a) *Services.* Services shall be determined by the following factors: Type of waste, volume of waste, location, type of commercial enterprise, accessibility of receptacles, environmental impact of receptacles, topography, and efficiency. The franchisee shall provide information regarding the types of services available or required for the customer's location based upon requirements outlined in this chapter.

(1) *Dumpster service.* Commercial customers who utilize dumpster service shall comply with the following requirements for dumpster sites and dumpster enclosures.

a. *Dumpster screening.* All dumpsters must be screened from view as much as possible. Screening walls may be used to conceal the containers and assist in controlling any loose debris which surrounds the dumpsters.

b. *Dumpster sites.* Each solid waste dumpster shall be placed on a raised concrete pad; minimum size 8' x 12'. The pad shall be at least six (6) inches thick. Concrete shall be 3,000 psi test strength. There must be a minimum three-foot clearance between the container and the screening wall. There shall be a clear and level loading area (nine (9) feet wide and 25 feet long) with an approximately 50-foot turning radius in front of each container for the use of the servicing vehicle. There shall be a minimum of 25 feet of vertical clearance above the dumpster pad.

c. *Dumpster enclosure.* If gates are installed, they must be opened by the customer on scheduled pickup days.

d. *Prohibited areas.* A dumpster shall not be located on a public right-of-way.

(2) *Receptacle service.* Receptacle services may be provided to customers who are not, or cannot be, serviced by a dumpster. This restriction includes, but is not limited to, multifamily dwellings where dumpster servicing vehicles cannot safely operate.

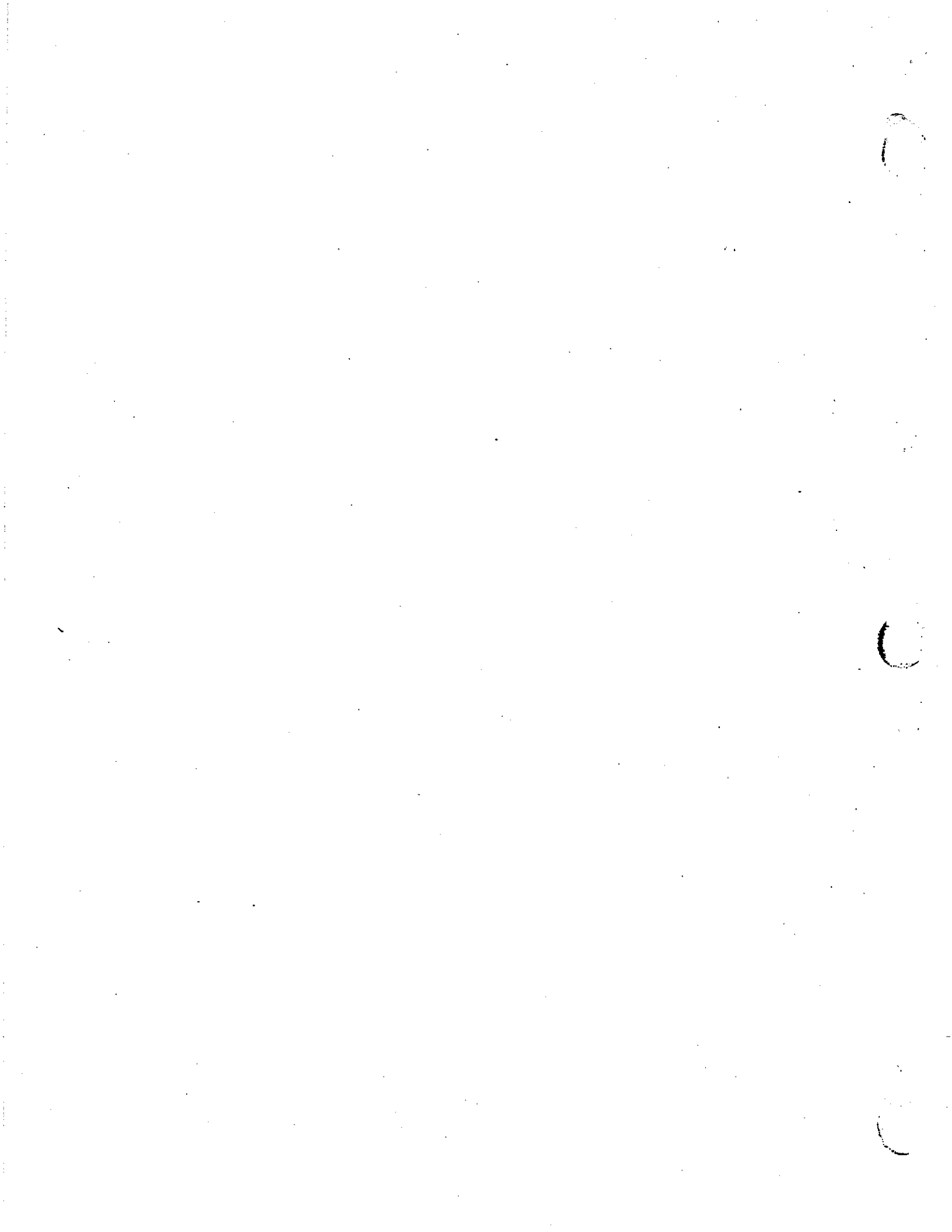
a. *Approved locations for receptacles.* Receptacles shall not remain at curbside or roadside for any purpose other than scheduled pickup. At times other than scheduled collection times, receptacles shall be located in storage areas designated by the franchisee and approved by the director. Storage areas of receptacles for new or rebuilt structures shall be designated by the franchisee and approved by the director. A new or rebuilt structure shall not be approved for occupancy or business operation until adequate measures have been taken to accommodate refuse storage and collection as set forth in section 5-2-53.

b. *Collection service.* Customers receiving receptacles service, who desire service on scheduled collection days, shall position their container(s) at the curb or edge of the roadway on scheduled collection days, and remove them after collection. Receptacle removal shall be within eight (8) hours for those customers receiving daily service, and 12 hours for all other customers. Commercial customers may be exempted from moving their

receptacles, with the approval of the solid waste director, for the following reasons:

1. The solid waste director determines that the receptacles can be more efficiently serviced if they remain within a designated area.
2. All individuals residing in a particular dwelling unit of a





multifamily structure having the demonstrable inability, due to age or physical handicap, to move the receptacle to the roadway or street.

- (3) *Bag service—Downtown Tax/Central Business District.* Those commercial and residential customers who cannot receive other garbage pickup or disposal service due to their location, availability of space for receptacles, or other reasons of serviceability may, with the permission of the solid waste director, deposit their refuse in approved bags for collection by the franchisee authorized by the CEO and commission to provide such service in the Downtown Tax District. Bags shall be securely tied or wired closed and not weigh more than 40 pounds. Scheduled collection of refuse from the curb shall occur on a predetermined schedule as set forth in established policies and procedures. Authorized receptacles shall not accumulate, block parking meters, or otherwise clutter walkways during other than collection periods. Each business shall designate an area, approved by the solid waste department, for the storage of any authorized receptacles prior to collection in accordance with this chapter and established policies and procedures.

- a. For the purpose of this chapter, the downtown business district shall be defined as that area in Athens-Clarke County, Georgia, described as follows: Beginning at the intersection of Dougherty Street and Pulaski Street; running thence east on Dougherty Street to Thomas Street; running thence south on Thomas Street to Strong Street; running thence east on Strong Street to Foundry Street; running thence south on Foundry Street to Oconee Street; running thence northwest on Oconee Street to South Thomas Street; running

thence South on South Thomas Street to Fulton Street; running thence west on Fulton Street to South Jackson Street; running thence north on South Jackson Street to East Broad Street; running thence west on East Broad Street to Pulaski Street; running thence north on Pulaski Street to the intersection of Pulaski Street and Dougherty Street, the beginning point.

- (b) *Specific commercial customers:*

- (1) *Food service establishments:*

- a. Restaurants or food concession businesses shall have collection by the authorized franchisee a minimum of three (3) times per week, and such businesses shall store all wet garbage and food in authorized waterproof bags for collection. Failure to provide waterproof bags shall permit the franchisee to discontinue service after written notice to such establishment, and where applicable, copy the director of the solid waste department.
- b. Used cooking grease, oil and other liquids, semiliquids and solids of this nature shall be disposed of through private contract, self-disposal or through special collection by the franchisee on a cost-of-service basis. No person shall dispose of wastes of this nature in the sewer system of Athens-Clarke County. Such wastes, if collected by the franchisee, shall be properly sealed by the customer in approved five-gallon disposable containers. Customers who dispose of such wastes themselves or through private contract shall take similar or other appropriate preventive actions to ensure such wastes do not spill on Athens-Clarke County sidewalks, streets or roadways while being transferred to a collection

vehicle or while being transported to an appropriate disposal facility.

Customers or other persons responsible for local management of the food service establishment shall not allow waste residue from transfer containers to accumulate on walkways or streets where they may endanger the safety of pedestrian or vehicle traffic. On the day of collection, customers shall place their filled authorized receptacles outside their establishment in a predesignated area approved by the franchisee and the solid waste director as set forth in established policies and procedures.

c. All food service establishments shall:

1. Place all garbage in approved disposable containers, securely closed, before placing garbage in the authorized receptacles or in a predesignated area approved by the franchisee and the solid waste director as set forth in established policies and procedures.
2. Not use bags as a final means of storing garbage except where there is scheduled daily pickup and except where used with volume reducing equipment. Such container shall be watertight, securely closed, and shall not exceed 40 pounds when filled.
3. Dispose of wastes that result from cleaning solid waste receptacles into a sanitary or combination sewer or provide such other alternatives, as approved by the Clarke County Health Department that are capable of maintaining a sanitary condition.

- (2) *Hospital, clinics or undertakers' shops.* It shall be unlawful for any person to dispose of soiled lint, cotton or ban-

dages or infectious wastes or refuse of any character whatsoever from any hospital, sanitarium, infirmary, clinic or undertakers' establishment or funeral parlor, whether public or private, in any manner, except in accordance with established regulations approved by the State of Georgia, Department of Natural Resources, Environmental Protection Division.

- (3) *Industrial enterprises.* The production of industrial waste and other wastes, both putrescible and nonputrescible, shall cause the producers thereof to be classified as a special customer. Solid waste generated at industrial facilities that is not industrial waste as defined herein, shall be subject to all applicable provisions of this chapter. Alternative service and methods of storage, handling and disposal of such waste shall be subject to the approval of the solid waste director on an individual basis. Industrial waste is exempt from the provisions of this chapter, provided that the handling of such waste is done in accordance with applicable environmental and public health regulations and codes.

(Ord. of 4-4-95, § 1; Ord. of 7-5-95, § 5)

**Sec. 5-2-17. Other commercial activities.**

(a) *Privately contracted collectors and others.* Privately contracted collectors engaged in providing refuse, leaf and limb, collection services in addition to those services provided by a franchisee for commercial or residential customers within Athens-Clarke County, who are located outside or within Athens-Clarke County and use Athens-Clarke County streets or roadways, and self-haulers shall:

- (1) Comply with local, state and federal rules and regulations regarding the storage, handling, transporting and disposing of solid waste and other materials.
- (2) Dispose of waste materials only at landfills permitted by the Environmental Protection Division (EPD) of the Georgia Department

of Natural Resources when disposing solid waste within the State of Georgia. The transfer of any refuse into receptacles serviced, or onto property within Athens-Clarke County is prohibited.

- (3) Operate only approved refuse transportation vehicles designed or modified to prevent debris from dropping or blowing away, and sealed to prevent waste liquids from spilling on the streets.
  - (4) Obtain any other permits required by law.
- (b) *Construction / demolition contractors:*
- (1) The property owner or owners and the prime contractor in charge of a construction-site and/or demolition-site shall be required to furnish solid waste and/or recycling containers for solid waste and/or recovered materials produced by construction and by workers. All solid waste from construction, demolition or related activities shall be picked up and placed in containers by the end of each workday. Provided, however, that construction material and debris which cannot be blown away by wind or blown or carried away by any other natural force shall not be affected by this provision until completion of said construction or demolition.
  - (2) No material shall be collected by the franchisee resulting from construction, remodeling or demolition of buildings, or any mixtures of solid wastes containing building materials, including floor and carpet scraps.
  - (3) No debris from burned houses or their contents shall be collected by the franchisee.
  - (4) The location of bulk containers used at construction/demolition-sites shall meet with the approval of the solid waste director and the building inspector.
- (c) *Scavengers.* It shall be unlawful for any person to operate as a scavenger within Athens-Clarke County. Unauthorized removal of recyclable materials from containers provided for the temporary storage or collection of such materials shall be deemed to be unlawful.

(d) *Special events.* Persons requesting the use of public streets and sidewalks for the purpose of special events shall meet the requirements set forth in title 6, chapter 5 of this Code.

(e) *Street vendors:*

- (1) Street vendors shall be required to purchase in advance, from the solid waste department, a minimum quantity of two (2) official garbage bags per week for every week they anticipate they will be in business for the proper disposal of their solid waste. The fee shall be \$1.00 per bag to cover the cost of purchasing the bag and the cost of disposing of the waste in said bag at the landfill.
  - (2) Street vendors shall also be required to register for commercial curbside collection services through the franchisee authorized by the mayor and chair and commission to provide such service in the Downtown Tax District.
- (f) *Privately contracted leaf and limb collectors / service providers.* Privately contracted leaf and limb collectors engaged in providing leaf and limb collection services, whether or not they are in addition to those services provided by a franchisee for commercial or residential customers within Athens-Clarke County, and who are located outside or within Athens-Clarke County and who use Athens-Clarke County streets or roadways and who desire to be placed on Athens-Clarke County's list of approved leaf and limb collectors shall be required to adhere to the following criteria:
- (1) [*Application.*] Every person desiring to engage in the collecting, transporting, delivering or disposing of leaves and limbs generated by another person within Athens-Clarke County shall make written application to the solid waste department on forms prescribed by the solid waste manager.
  - (2) [*Occupational tax certificate required.*] Service providers shall possess a valid occupational tax certificate.
  - (3) [*Capability.*] Service providers shall be capable of collecting leaves, limbs, grass clippings, pine straw and other leaf and limb material as defined in this chapter.

- (4) *[Name and address of disposal facility.]* Service providers shall be required to provide Athens-Clarke County with the name and address of their principal disposal facility for the leaf and limb materials.
- (5) *[Estimates for services.]* Service providers shall be required to provide an estimate for services if requested by the customer.
- (6) *Responsibility of service providers regarding debris and fluids.* It shall be the responsibility of any service provider collecting leaf and limb materials from the right-of-way to sweep or otherwise remove all debris located on the public right-of-way prior to leaving the collection site.
- (7) *Insurance.* It shall be unlawful for any operator of any leaf and limb collection service to fail to maintain the proper insurance as required in this chapter. Each leaf and limb service provider shall provide to the solid waste department proof of insurance as set forth in section 5-2-28 of this Code.
- (8) *Availability.* All service providers shall be required to provide a listed phone number, business address and be open during normal business hours.
- (9) *Disposal standards.* Service providers shall be required to dispose of all leaf and limb material at construction and demolition debris landfills, inert landfills or composting or mulching facilities in accordance with title 12, chapter 8 of the O.C.G.A.  
(Ord. of 4-4-95, § 1; Ord. of 7-5-95, § 6; Ord. of 7-2-96, § 1; Ord. of 9-3-96, § 1; Ord. of 7-1-97, § 2)

#### Sec. 5-2-18. Disposal of needles.

(a) Any person that uses disposable needles shall be required to dispose of these in containers that are rigid, puncture-resistant and leakproof, and which are taped closed or tightly lidded to completely contain the contents therein and prevent any spillage. Said containers shall be set aside from other household garbage for pick up by the franchisee. This section shall apply only to persons residing in single-family dwelling units and single-family residential premises.

(b) Notwithstanding subsection (a) hereinabove, it shall be unlawful for any person to dispose of infectious wastes, disposable scalpel blades, needles and other sharp objects in any dumpster or any other container of solid waste which is serviced by any franchisee.

(Ord. of 4-4-95, § 1)

#### Sec. 5-2-19. Disposal of garbage generally.

(a) No person shall unlawfully empty, dump or otherwise place any trash, tin cans, garbage, rubbish, dead animals or other discarded personal property upon the right-of-way of any public road in Athens-Clarke County or upon the lands of another.

(b) Any person removing a wrecked or damaged vehicle from a highway shall remove all glass or other injurious substances dropped upon the highway from such vehicle.

(c) No person shall haul, convey or transport in any manner, trash, rubbish, garbage or waste matter in any form over and along the streets, highways and other public places upon trucks, carts, cars or other modes of transportation without having such trash, rubbish, garbage or waste tightly covered with a canvas tarpaulin, or other equally suitable material, to prevent littering the streets, highways or other public places of the county. Asphalt and baled or containerized waste matter are exempted from this cover provision.

(Ord. of 4-4-95, § 1)

#### Sec. 5-2-20. Abandonment of personal property within public rights-of-way.

Whenever personal property remains on the streets and sidewalks within public rights-of-way within the confines of Athens-Clarke County for more than 96 hours, said property shall be deemed to be abandoned and shall be disposed of by the appropriate department.

(Ord. of 4-4-95, § 1)

#### Sec. 5-2-21. Responsibility of franchisees generally.

All franchisees and their customers shall be required to adhere to the collection schedules set out in this chapter.

(a) No person shall engage in the business of collecting, transporting, delivering or disposing of solid waste, other than industrial waste, generated by another person within Athens-Clarke County without first obtaining a franchise, unless considered a self-hauler under this chapter.

(b) Every person desiring to engage in the collecting, transporting, delivering or disposing of solid waste, other than industrial waste, generated by another person within Athens-Clarke County shall make written application to the solid waste department on forms prescribed by the solid waste director.

(c) Franchisees must comply with this chapter as well as any policies and/or procedures, including the provision of recycling collection to all who receive collection of solid waste.

(d) In addition to any other permit required by Athens-Clarke County, all persons now or thereafter engaged in the business of the collection or transportation of solid waste, other than industrial waste, in Athens-Clarke County shall annually apply for a franchise to operate such business. The application shall be filed with the solid waste department and a franchise shall not be issued until the solid waste department has approved the application in writing.

(e) No franchise shall be issued or renewed except upon a written application available from the solid waste department in a form prescribed by Athens-Clarke County and setting forth such facts as Athens-Clarke County may deem appropriate, including, but not limited to the franchise application information outlined in established policies and procedures.

(f) Maintaining passage on public streets. Franchisees shall, to the greatest extent practicable, avoid stopping collection vehicles so as to block the passage of other vehicles and pedestrians on public streets and sidewalks.

(Ord. of 4-4-95, § 1)

#### Sec. 5-2-22. Franchisees; billing and fees.

(a) The franchisee shall set equitable fees for comparable collection services and charges for commercial and residential collection and removal services shall be charged to the owners of

the real property served, except that by requesting services, any tenant may become jointly bound to pay same.

(b) At the time of initial application for a franchise, an application fee of \$100.00 shall be paid to Athens-Clarke County. Said application fee shall be nonrefundable.

(c) A franchise fee of \$1.00 shall be paid to Athens-Clarke County for each franchise decal received. Said decal shall be purchased annually.

(d) At the time of the renewal of the franchise, a renewal fee of \$50.00 shall be paid to Athens-Clarke County.

(Ord. of 4-4-95, § 1)

#### Sec. 5-2-23. Requirements; conditions of franchisee.

(a) *Condition for franchise.* It shall be a condition of each franchise that the franchisee shall comply with all the following:

- (1) All provisions of this chapter, and the policies and/or procedures promulgated under authority of this chapter.
- (2) All applicable federal, state, county and local laws, statutes, rules and regulations, including but not limited to those pertaining to the collection, transport, delivery or disposal of solid waste generated within Athens-Clarke County.
- (3) All applicable provisions of the Athens-Clarke County Unified Government Solid Waste Plan as required under the Comprehensive Solid Waste Management Act of 1990 (O.C.G.A. § 12-8-20 et seq.) and any agreements regarding inter-county transport of solid waste authorized or restricted by the Unified Government of Athens-Clarke County and other counties.

(b) *Residential service.* The franchisee shall provide, or arrange to provide through subcontract, weekly collection services for solid waste and biweekly collection services for recyclable materials on the Targeted Materials List.

(c) *Commercial service.* The franchisee shall provide, or arrange to provide through subcontract, collection services for solid waste and recyclable material on the Targeted Materials List. The collection services shall be at a frequency that meets the customers needs in accordance with established policies and procedures developed by the solid waste department.

(d) *Fees for service.* Fees for services shall be charged to customers on a volume-based fee system basis.

(e) *Annual reports.* Any annual reports required hereunder or set in established policies and/or procedures shall be filed with the solid waste department at the time of their franchise renewal or September 1, or whichever comes first.

(f) *Denial of franchise.* The solid waste department may deny the issuance of the franchise for any of the following reasons:

- (1) Failure of the applicant to comply with this chapter.
  - (2) Violations of this chapter or any other applicable federal, county and local laws, statutes, rules and regulations, including, but not limited to, those pertaining to the collecting, transporting, delivering or disposing of solid waste generated within Athens-Clarke County.
  - (3) Prior criminal convictions in connection with solid waste collection, processing and disposal activities in the last 10 years (other than minor traffic offenses) by the applicant, its subsidiaries or its parent company or prior license revocation(s) by the applicant, its subsidiaries or its parent company.
  - (4) Misrepresentations of any material fact in the application for the franchise.
- (Ord. of 4-4-95, § 1; Ord. of 6-3-97, § 3)

#### Sec. 5-2-24. Franchisees—Termination of franchise.

(a) Franchises may be terminated by mutual agreement of Athens-Clarke County and the franchisee at any time. Franchisees may terminate franchises by giving 60 days' notice to the director

of the solid waste department and furnishing evidence to the director that all unused payments from customers have been refunded. The department shall make said evidence available to any aggrieved customer of said franchisee, but Athens-Clarke County shall have no liability to any such customer for failure of any franchisee to comply with its contractual obligation to its customers.

(b) Franchises are nontransferable.  
(Ord. of 4-4-95, § 1)

#### Sec. 5-2-25. Revocation of franchise.

Athens-Clarke County shall have the right to revoke the franchise of any person that fails to abide by any provision of this chapter and any policies and procedures authorized hereunder. Before revocation of a franchise, the solid waste department shall inform the applicant of its intention and provide the applicant with an opportunity to be heard before the administrative hearing officer (AHO) after which the AHO shall make its final decision. Prior revocation of a franchise shall be sufficient grounds for refusal to certify any future application by such franchisee.

(Ord. of 4-4-95, § 1)

#### Sec. 5-2-26. Vehicle requirements.

(a) All persons collecting and disposing of solid waste material for a fee shall comply with the following requirements:

- (1) *Weight and size.* Vehicles and containers shall meet all requirements of the Georgia Department of Transportation for highway safety and local ordinances governing weight and size for the streets which must be traveled for collection. If deemed necessary, then vehicles may be subject to unannounced inspection by Athens-Clarke County officials.
- (2) *Enclosed vehicles.* Vehicles used for the collection or transportation of solid waste shall be enclosed at all times, except during the loading and unloading thereof so as to prevent the contents from falling, leaking, or blowing out of the trucks and shall be enclosed, weather-tight, substantially leakproof, easily cleanable and constructed of durable metal.

- (3) *Audible alarm.* All vehicles used for the collection or transportation of solid waste shall have an operating audible alarm which sounds when any such vehicle backs up or is in reverse.
- (4) *Emergency lights.* All vehicles used for the collection or transportation of solid waste shall have an operating, flashing or revolving amber light mounted near the top of the vehicle and visible from its rear. All franchisees shall comply with any corresponding state or federal laws or regulations.
- (5) *Discharge of load.* All vehicles used for the collection or transportation of solid waste shall be able to rapidly discharge its load within a 15-minute time period at any Athens-Clarke County operated disposal facility.
- (6) *Exempt equipment.* The following solid waste collection equipment shall be exempt from the vehicle requirements enumerated in subsection (a)(2) above; provided, however, that nothing in this section excludes compliance with all other vehicle requirements specified by this chapter:
- a. Roll-off equipment;
  - b. Leaf, limb, or brush collector equipment;
  - c. Knuckle-boom picker equipment;
  - d. Open-top equipment; or
  - e. Transfer trailer.
- (Ord. of 4-4-95, § 1)
- (c) Registration of and title to the vehicles shall be in the name of the franchisee or a leasing agent with a duly authorized power of attorney issued in the name of the franchisee.
- (d) Franchisees shall provide an adequate number of vehicles for regular collection services.
- (Ord. of 4-4-95, § 1)

#### Sec. 5-2-28. Insurance.

(a) At the time of the submission of a signed franchise agreement, and annually thereafter, each franchisee shall provide to the solid waste department proof of insurance as follows:

- (1) Statutory workers' compensation insurance.
- (2) Reserved.
- (3) Vehicle liability:
  - a. \$100,000.00 limit per person.  
\$300,000.00 per occurrence for bodily injury.  
\$100,000.00 property damage.

(b) Umbrella liability insurance coverage at least as broad primary coverage in an amount of \$1,000,000.00.

(c) No cancellation, nonrenewal or lapse in coverage of insurance shall be effective until the expiration of 10 days' notice of intended cancellation, nonrenewal or lapse in coverage has been given in writing to the director of solid waste by registered mail or personal delivery of the notice. It shall be a requirement under this chapter that this be a provision of and a part of any insurance policy submitted under this chapter.

(Ord. of 4-4-95, § 1; Ord. of 12-3-96, §§ 1, 2; Ord. of 3-4-97, § 1)

#### Sec. 5-2-29. Opportunity to recycle.

(a) All franchisees shall offer to their residential and commercial customers alike the option of having their recyclable materials collected at least biweekly. Recyclable materials to be collected shall include those on the Targeted Materials List.

#### Sec. 5-2-27. Identification.

The following items shall at all times be clearly visible on each and every vehicle used in the collection or transportation of solid waste including temporary replacement vehicles:

- (a) The identity and telephone number of the franchisee on both sides of the vehicle displayed by letters or characters at least three (3) inches in height; and
- (b) A franchise decal placed conspicuously on the front windshield of each vehicle.



(b) All franchisees shall offer an appropriate container for those residential or commercial customers opting for this recycling service. Any franchisee providing such a container to any such customer may charge a fee for such container.

(c) In no event shall any of the recyclable materials collected pursuant to this optional recycling service be disposed of in any landfill, unless rejected by the market due to unacceptable levels of contamination.

(d) Other than on scheduled collection days, recycling receptacles shall not be located within the public right-of-way nor at any other locations readily visible from such public right-of-way. (Ord. of 4-4-95, § 1; Ord. of 6-3-97, § 2)

**Sec. 5-2-30. Hours of collection.**

(a) No person or entity shall engage in the residential collection of any solid waste or recyclable materials from dumpsters, containers, or receptacles of any kind or type except during the hours of 7:00 a.m. until 9:00 p.m. unless performing emergency work to safeguard the immediate health, safety and welfare of the public.

(b) No person or entity shall engage in the commercial collection of any solid waste or recycling from dumpsters, containers, or receptacles of any kind or type except during the hours of 7:00 a.m. until 11:00 p.m., with the exception of commercial curbside collection activities in the Central Business District performed by the Athens-Clarke County Solid Waste Department, unless performing emergency work to safeguard the immediate health, safety and welfare of the public.

(c) The director of solid waste is hereby authorized to review and approve alternate collection hours in accordance with established policies and procedures. (Ord. of 4-4-95, § 1; Ord. of 5-6-97, § 1)

**ARTICLE 4. LANDFILL REGULATIONS**

**Sec. 5-2-31. Franchisees and self-haulers generally.**

(a) Any person residing or doing business in Athens-Clarke County or Oglethorpe County shall be allowed to use the landfill subject to the

provisions set out in the contract between Athens-Clarke County and Oglethorpe County for use of the landfill dated August 5, 1992, a copy of which shall be made available for public inspection in the office of the clerk of commission.

Any persons residing or doing business in Oconee, Greene, or Madison Counties or the cities of Union Point or Greensboro shall be allowed to use the landfill subject to the provisions set out in the individual landfill usage agreements dated April 6, 1994, between Athens-Clarke County and Oconee, Greene, and Madison counties and the cities of Union Point and Greensboro, a copy of which shall be made available for public inspection in the office of the clerk of commission.

(b) All garbage and refuse shall be dumped in the area designated by an attendant on duty or by appropriate signs. All directional and speed limit signs shall be obeyed.

(c) No person shall move, remove or cross any fence or barrier or shall move, remove or disobey any sign at the landfill.

(d) The following materials shall not be disposed at any solid waste disposal facility having a liner and leachate collection system or requiring vertical expansion located within Athens-Clarke County:

- (1) Septic tank sludge and scum;
- (2) Live animals and fowl;
- (3) Automobiles and objects of similar size;
- (4) Burning or smoldering materials;
- (5) Inert wastes, leaf and limb material, and construction and demolition wastes as defined in this chapter.

In the event the Oglethorpe County Landfill is unable to accept the wastes set forth above, then the Athens-Clarke County Landfill may accept them for a period of time not to exceed 90 days.

- (6) Lead acid batteries;
- (7) Tires;
- (8) Paint;
- (9) All liquids;

- (10) Any container designed to hold liquids, unless lids are removed. Fifty-five (55) gallon drums are prohibited.
  - (11) Any other material prohibited by the State of Georgia, Department of Natural Resources, Environmental Protection Division.
- (e) No person shall set fire or burn solid waste at any designated disposal facility or disposal site.
- (f) No person shall rummage through the solid waste at any designated disposal facility or disposal site. No person shall remove any solid waste material from the landfill.
- (g) All prohibited materials delivered to the landfill shall be removed within 12 hours of notification. The cost of removing the materials will be at the customer's expense.
- (h) All users of the landfill, except those considered self-haulers under this chapter, shall apply for a landfill permit as set forth in established policies and procedures.
- (i) Discharge of load. All vehicles used for the collection or transportation of solid waste shall be able to discharge its load within fifteen minutes at any Athens-Clarke County operated disposal facility.  
(Ord. of 4-4-95, § 1; Ord. of 10-1-96, § 3)

**Sec. 5-2-32. Service collections; landfill; penalty.**

- (a) *Categories of landfill customers.* Landfill customers shall be categorized as follows:
- (1) *Cash/check customer.* Landfill customers who pay as they use the landfill.
  - (2) *Contract users.* Landfill customers who are required to pay a deposit up front based on the estimated volume of waste to be landfilled in any given month. This deposit shall be monitored by the Landfill Manager and the customer notified when the deposit is close to being depleted.
  - (3) *Billing customer.* Landfill customers who use the landfill on a regular basis. In addition, as of September 1, 1995, new

customer accounts established shall be required to post a security deposit equal to 10 percent of their estimated monthly volume of waste landfilled.

(b) *Billing customers.* If bill is not paid within 30 days of the due date, as determined by the finance department, a 10 percent penalty will be applied to the unpaid balance. For every additional month the balance is left unpaid, an additional one (1) percent per month will be applied to the unpaid balance.  
(Ord. of 7-5-95, § 7)

**Secs. 5-2-33—5-2-49. Reserved.**

**ARTICLE 5. SCHEDULE OF FINES**

**Sec. 5-2-50. Violations; schedule of fines.**

(a) *Generally.* It shall be unlawful to dispose of any solid waste in Athens-Clarke County except as specified in this chapter.

(b) *General violations.* The minimum fines for the following violations shall apply to all private residences, business establishments, and private institutions within Athens-Clarke County.

- (1) Placing prohibited items other than dangerous items in a trash receptacle for collection or disposal ..... \$25.00
- (2) Placing a dangerous (toxic, caustic, contagious, explosive or otherwise hazardous) item in a trash receptacle for collection or disposal ..... 1,000.00
- (3) Placing trash or garbage on the property of another or in the waste receptacle of another without permission... 25.00
- (4) Dumping bulk trash or garbage on vacant lots or public roadway ..... 100.00
- (5) Disposal of grease into the Athens-Clarke County sewer system by food service establishments resulting in blockage or back up of the system,

|  |        |
|--|--------|
| plus Athens-Clarke County costs .....  | 100.00 |
| (6) Spillage of grease or cooking residue on sidewalks or roadways, or in public flower beds | 50.00  |
| (7) Abandoning furniture or other items on the street ...                                    | 100.00 |
| (8) Overloading a dumpster....   | 25.00  |
| (9) Placing a dumpster in unauthorized area .....  | 50.00  |

(c) *Food service sanitation violations.* The minimum fines for the following violations shall apply to all food service establishments:

|  |         |
|--|---------|
| (1) Failure to have wet garbage removed at least three (3) times weekly .....  | \$50.00 |
| (2) Failure to dispose of putrescible garbage in approved bags .....           | 25.00   |
| (3) Failure to maintain clean dumpsters, roll carts or other receptacles ..... | 25.00   |

(d) *Central Business District violations.* The minimum fines for the following violations shall apply to all businesses, institutions, and residences in the Downtown Business District:

|  |         |
|--|---------|
| (1) Disposing of garbage or trash in public waste receptacles meant for pedestrians .....                            | \$25.00 |
| (2) Disposing of garbage or trash in front of the business establishment of another .....                            | 50.00   |
| (3) Placing loose garbage on the sidewalk or street.....   | 25.00   |
| (4) Placing roll carts or bagged garbage on the street or sidewalk at other than established collection periods .... | 25.00   |

(e) *Specialty and contractor sanitation violations.* The minimum fines for the following violations shall apply to all specialty business such as medical, industrial, and contract refuse collectors:

|  |          |
|--|----------|
| (1) Disposal of medical, dental, clinic, or undertaker refuse other than required by ordinance .....   | \$100.00 |
| (2) Disposal of industrial or construction by-products in regular trash.....   | 100.00   |
| (3) Disposal of waste in other than an authorized landfill .   | 1000.00  |
| (4) Transporting waste material in a vehicle not designed and/or not capable of containing it, resulting in the spillage of liquid or solid waste upon the public right-of-way | 500.00   |
| (5) Operating and collecting refuse within Athens-Clarke County without a license ...  | 500.00   |
| (6) Scavenging.....  | 100.00   |
| (7) Spilling wet concrete or cement on roadway .....   | 300.00   |

(Ord. of 4-4-95, § 1)

**Sec. 5-2-51. Recyclable materials.**

(a) *Term defined; separation of material required.* "Recyclable materials" are those items listed on the Targeted Materials List and any other material that Athens-Clarke County deems to be recyclable and adds to the Targeted Materials List. Recyclable materials shall be set at the curb on the designated collection days and properly placed in designated and approved collection containers supplied by the franchisee. Persons may also dropoff recyclable materials at approved Athens-Clarke County recycling dropoff stations, or sell or donate such materials.

(b) *Damage, removal, etc., of materials or containers prohibited.* It shall be unlawful to damage, alter or remove from the curbside or designated dropoff stations the recyclable materials or collection containers.

(c) *Fines for violations.* The minimum fines for violations of this section shall be as set forth below:

|                        |         |
|------------------------|---------|
| (1) First offense..... | \$25.00 |
|------------------------|---------|

- (2) Second offense..... 50.00
- (3) Each subsequent offense ... 100.00  
to 250.00

(d) *Rights of generator/owner.* Notwithstanding any other provisions of this chapter, Athens-Clarke County shall not require any generator or owner of recyclable or recovered materials to transfer any such materials to Athens-Clarke County, to its designee, or to any designated facility, unless the generator or owner of the recovered materials voluntarily makes those materials available to Athens-Clarke County or its designee and has relinquished any rights to or ownership of such materials. A person shall not be prohibited or prevented from selling, purchasing, accepting, conveying, or transporting any recovered materials for purposes of recycling those materials into a raw material or finished product, other than for use as a fuel or for purposes of disposal.  
(Ord. of 4-4-95, § 1)

**Sec. 5-2-51.1. Solid Waste Improvement Fund.**

(a) The manager is hereby authorized to reduce any and all recycling fees set out in title 5, chapter 2 of this Code and any and all recycling processing fees set forth in the materials recovery facilities contract between the currently established fees and zero dollars (\$0.00).

(b) The manager is required to advise the mayor and chair and commission and the solid waste citizen advisory committee of said revisions, whenever possible, at least 10 days prior to implementation but not later than five (5) days after implementation.  
(Ord. of 8-6-96, § 1; Ord. of 1-7-97, § 1; Ord. of 7-1-97, § 1)

**Sec. 5-2-52. Landfill fee schedule.**

The landfill rates shall be as follows:

(a) *Residential refuse:*

- (1) Customers shall be limited up to six (6) standard trash bags (20" x 40") of refuse per vehicle, per day and shall be assessed a fee of \$0.50 per trash bag.

- (2) All unbagged loads of refuse, or bagged loads of refuse which exceed six (6) standard bags per vehicle shall be assessed a fee at the rate of \$5.00 per vehicle. The \$5.00 fee per vehicle shall apply to all automobiles, including pickup trucks where the garbage does not extend above the normal, standard manufactured truck bed. This excludes loads of leaf and limb materials as defined in section 5-2-2.

(b) *Commercial solid waste and leaf and limb:*

- (1) The landfill fee for solid waste and other refuse shall be \$34.00 per ton. When the scales are inoperable, then the fee shall be as follows:  
Compacted ..... \$10.25 per cubic yard  
Noncompacted ..... 3.90 per cubic yard
- (2) Commercial customers shall be assessed \$14.00 per ton for all loads of leaf and limb materials, as defined in section 5-2-2. When the scales are inoperable, then the fee shall be \$3.50 per cubic yard.

(c) *Surcharges:*

- (1) Customers shall be assessed a fee at the rate of \$34.00 per ton plus a \$25.00 surcharge per load for all nonhazardous manifested loads which the landfill manager shall properly validate.
- (2) Customers shall be assessed a fee at the rate of \$34.00 per ton plus a \$40.00 surcharge per load plus \$1.00 per ton for any load which requires landfill personnel or equipment to assist in off-loading or any other special handling.
- (3) Customers shall be assessed a fee at the rate of \$34.00 per ton plus a \$10.00 surcharge per load for all uncovered loads which the landfill manager or his/her designee shall properly validate. Customers will be provided with one (1) tarp as part of this surcharge.

(d) *Other fees:*

- (1) All commercial landfill customers, excluding residential users of the landfill, requesting to use the Athens-Clarke County landfill shall complete and apply for a landfill permit. These customers shall be assessed a fee of \$10.00 to process the application.
- (2) Approved commercial landfill customers shall be required to exhibit a decal on each of their vehicles. These customers shall be assessed a fee of \$1.00 per decal per vehicle.
- (3) The solid waste director shall have the authority to reduce the posted tipping fee on a case-by-case basis by the estimated value of any material relative to its use as intermediate cover or as an application to other landfill operations.

beverage cans, and aseptic/paperboard juice or frozen food packaging) in accordance with established policies and/or procedures).

Scrap metal (includes the following items: refrigerators, ranges, bicycles, etc.).

(Ord. of 4-4-95, § 1; Ord. of 7-5-95, § 8; Ord. of 7-2-96, §§ 1—3; Ord. of 6-3-97, §§ 1, 2)

(e) *Residential recycling:*

- (1) Customers shall be assessed a fee of \$1.75 per cubic yard for all loads of leaf and limb materials (as defined in section 5-2-2) to be mulched at the designated point within the landfill area.
- (2) Customers who purchase mulch from Athens-Clarke County shall be charged a fee of \$7.00 per pickup truck or 1,000 pounds.
- (3) Customers shall be allowed to deposit the following materials at no charge at the recycling center locations located within the landfill area:

Commingled paper (includes the following items: newspaper, magazines, corrugated cardboard, office paper, junk mail, and textiles (bagged) in accordance with established policies and/or procedures).

Commingled containers (includes the following items: aluminum, glass, plastics numbered 1 and 2, steel, tin, or bimetal food or

**Sec. 5-2-53. Building permits.**

No building permit shall be issued for construction of any commercial structure, including a multifamily structure, unless or until arrangements for the storage of refuse and location of receptacles have been approved by the solid waste director.

(Ord. of 4-4-95, § 1)

**Sec. 5-2-54. Violations.**

(a) Any person violating any provisions of this chapter shall be punished as set forth in section 1-1-5 of this Code.

(b) Upon conviction of any sanitation violation, any tenant, owner or resident manager who at that time has two (2) prior convictions for which fines have not been paid shall be subject to an additional \$100.00 penalty and suspension of any occupation tax certificate to operate within Athens-Clarke County, if the court so finds.

(c) In addition to fines and penalties, the court shall be authorized to assess actual costs for any removal of trash, garbage, or debris performed by the solid waste department.

(Ord. of 4-4-95, § 1)

## Athens-Clarke County— A Southern Perspective

**A**thens, Georgia, is equal parts bustling college town and charming city of the old South. But don't mistake Athens for a city behind the times. In 1990, the city of Athens and the county of Clarke merged to form the unified government of Athens-Clarke County. Then, in 1994, shortly after moving from a tax-based fee to a flat rate for solid waste collection, the County Commission voted to implement a municipal PAYT program to encourage recycling and extend the life of its landfill.

The County Commission decided to implement PAYT only in the old city limits of Athens (population 40,000). The commission switched to PAYT to provide an economic incentive for residents to recycle more. At the time, the city was in the process of building a materials recovery facility (MRF), which opened in 1995, and the commission wanted to ensure that the MRF would have a steady stream of recyclables to process.

### How Does It Work?

Under the variable-rate system, Athens-Clarke offers collection service ranging from one 20-gallon can to five 32-gallon cans per week. (See box for service rates.) Most residents of Athens-Clarke have signed up for two 32-gallon cans. For overflow, residents can purchase stickers for \$2 to affix to their bags.

### Athens-Clarke Rate Structure\*

| Service          | Monthly Fee |
|------------------|-------------|
| 1 20-gallon can  | \$12        |
| 1 32-gallon can  | \$13        |
| 2 32-gallon cans | \$16        |
| 3 32-gallon cans | \$22        |
| 4 32-gallon cans | \$30        |
| 5 32-gallon cans | \$42        |

\*The rates are based on one pickup per week and are billed on a monthly basis.

At the same time it instituted the residential PAYT program, the commission also started a PAYT program in the downtown business district of Athens. In the commercial curbside program, downtown businesses use special trash bags that cost \$1 each and can be purchased at three different municipal offices downtown. The cost of the bag pays for the cost of waste disposal. In addition to purchasing the bags, businesses pay a fixed monthly fee based on their collection frequency. Pickup schedules range from two times a week (\$15 per month) to three times a day and twice on Sundays (\$154 per month).



## Making It Happen

"You can't have enough education," instructs Jim Corley, director of solid waste at the Athens-Clarke Solid Waste Department. For a full year before implementation, the Commission publicized the upcoming change to PAYT. From newspaper inserts and articles to formation of a citizens' advisory group to meetings with haulers to speeches to civic groups, the city left no stone unturned in getting the word out about PAYT.

Athens-Clarke has learned that education about PAYT must be ongoing, in large part due to the high turnover of university students. University of Georgia students make up 30 percent of Athens' population. Every year, the Solid Waste Department subscribes approximately 4,800 new households at the beginning of the school year and after the holiday break. Two years into the program, the county hired a customer service officer to help with public education. In addition to a quarterly newsletter and providing tours to university classes, the Solid Waste Department publishes and distributes a resource guide at the beginning of the school year. The guide lists materials that can be recycled, hours of pickup, location of drop-off centers, and customer service hours of operation.

While relatively smooth, the switch to unit pricing was not complaint free. Before unification of Athens-Clarke County, residents paid for solid waste collection through the property tax. In 1992, the Commission began charging a flat fee for solid waste as part of the water bill. In the minds of many longtime residents, however, garbage collection had been "free" in the past and they didn't understand why there must be a charge for it now. Since this transition took time for some residents, Corley suggests hiring a compliance officer at the beginning of the program. "We didn't have any problems with illegal dumping, but we did have some people that refused to comply with the new program. It would have been easier if there had been someone dedicated to those issues from the start." Athens-Clarke hired a compliance officer 2 years after the inception of PAYT. The officer is in charge of notifying the offender of the compliance issue and educating them on what they need to do to comply in the future. If after three notifications the offender still does not comply, the matter is sent to the County Marshall for citation.

Educating residents was just one part of the PAYT curriculum for Athens-Clarke County. Instituting PAYT also meant the city's collection crews had to adjust to a new way of operating. Rather than picking up all set-outs, the crews had to learn to leave and report unauthorized cans and bags to the Solid Waste Department so that it could follow up with the resident.

*(continued on page 4)*

## PAYT Does the Job

The recycling rate in Athens-Clarke has increased every year since the beginning of PAYT. In FY 1996, the county collected an average of 357 tons of recyclables per month. In FY 1999, that number increased by 246 percent to 880 tons per month. In addition, the county

was able to reduce its garbage truck fleet by two vehicles and consequently decrease its collection costs.

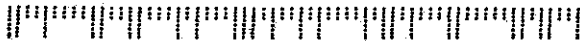
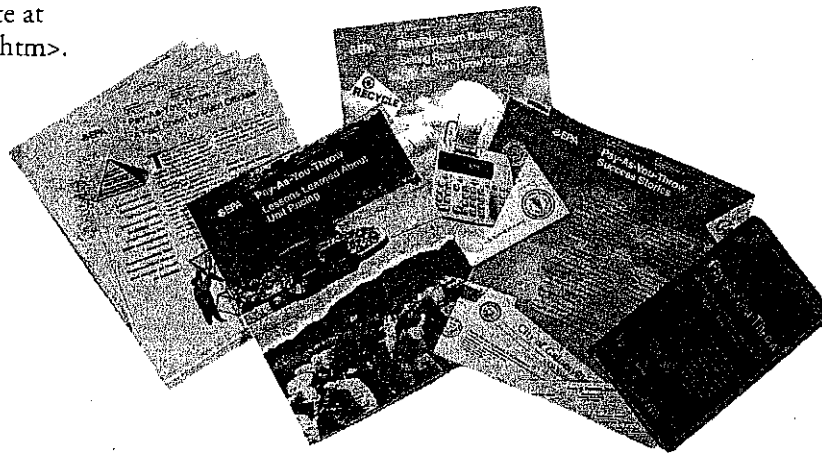
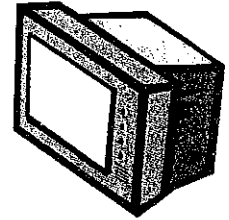
For more information on Athens-Clarke County's PAYT program, contact Jim Corley at 706 613-3501, extension 305.

## Everything You Ever Wanted to Know About PAYT

With a simple click of your mouse or quick toll-free call, you can be the proud new owner of the PAYT resource of your choice. Order the booklet on rate structure, the video on the nuts and bolts of PAYT, a success stories, or the how-to guidebook. Every one of these items is available to you at no cost simply by calling the PAYT Helpline at 800 EPA-PAYT or visiting the PAYT Web site at <[www.epa.gov/payt/tools.htm](http://www.epa.gov/payt/tools.htm)>.

## Stay Tuned for More on PAYT

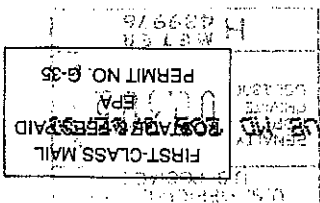
More than 150 community access cable channels across the country are scheduled to air the PAYT video, *Pay-As-You-Throw: A New Trend in Sustainable Waste Management*. Check with your local channel when PAYT will be on your airwaves.



30329 4UMP

Karen Sabatini  
Recycling Coordinator  
Georgia Department of Community Affairs  
60 Executive Park South  
Atlanta, GA 30329

U.S. Environmental Protection Agency  
Cantebury (5306W)  
Washington, DC 20460  
Official Business, Penalty for Private Use \$300



# COLLECTING GARBAGE FEES AND PAY-AS-YOU-THROW

**Sharyn Dickerson**

Assistant Director/Waste Reduction Manager  
Athens-Clarke County Solid Waste Department  
Athens, Georgia

## ABSTRACT

The idea of "Pay-As-You-Throw" fee systems is certainly not new. "Pay-As-You-Throw" has been around since the 1950's and 1960's in places such as Washington State, Michigan and California. Whether you refer to these systems as "Volume Based Fee Systems" or "Variable Rate Fee Structures," the goal is the same: to charge for individual use of garbage services. This fee system mirrors that used by other utilities, such as water, gas and electricity.

Athens-Clarke County (Athens-Clarke) is the only local government in the state of Georgia to implement this type of garbage fee system for *both* its residential and commercial customers.

The purpose of this paper is to:

- (1) Review the different types of Pay-As-You-Throw garbage fee systems selected and recycling services established for residential and commercial customers in Athens-Clarke,
- (2) Describe the funding mechanisms and structures of these programs, and
- (3) Provide an update of these "Pay-As-You-Throw" programs since their implementation in September of 1995.

## INTRODUCTION

Athens-Clarke County, Georgia is located approximately 70 miles northeast of Atlanta, the state capital. In November of 1992, Athens-Clarke officially adopted Georgia's waste reduction goal (established by the Solid Waste Management Act of 1990) to reduce waste entering local landfills 25% by July 1, 1996. Upon adoption of this state goal, Athens-Clarke began developing a comprehensive solid waste reduction plan for our community. Throughout the development of Athens-Clarke's plan, key members of the community, including the Athens-Clarke County Commission and a Solid Waste Citizen Advisory Committee, met to discuss and review work completed and provide direction for Athens-Clarke staff.

The cornerstone of Athens-Clarke's waste reduction plan was the procurement of a Materials Recycling Facility. By Commission decision, this facility is a private-public partnership. The private vendor,

FCR, Inc., owns and operates the recycling facility and Athens-Clarke owns the property where the facility is located and oversees the operating contract. The development of not only this facility, but also a comprehensive solid waste ordinance, provided the necessary support to implement the residential and commercial "Pay-As-You-Throw" garbage fee systems. In addition, the following supportive services were established:

- Expanded Residential Curbside Recycling
- Commercial Curbside Recycling (Small Business)
- Commercial Dumpster Recycling (Large Business)
- Countywide Residential Leaf and Limb

Non-exclusive franchising of solid waste service providers (i.e.: haulers), a comprehensive compliance plan and a countywide education and outreach strategy were also developed and implemented. In September 1995, after three years of research, planning and development, the above noted services and plans were implemented.

## BACKGROUND

In 1991, the governments of the City of Athens and the County of Clarke merged to form the Unified Government of Athens-Clarke County. This was the second such merger of city and county governments in the state of Georgia. Athens-Clarke County provides exclusive solid waste management services to 8,600 households and 550 small commercial (curbside) establishments located within the former city limits of Athens (a.k.a.: the Urban Services District). In addition, Athens-Clarke competes with private sector waste service providers for large commercial dumpster customers located within the boundary of the county. Athens-Clarke services approximately 300 customer accounts of this type.

Athens-Clarke is home to the University of Georgia (UGA) with student enrollment estimated at 30,000. With a total population of 100,000 in the smallest land-based county in the state (about 125 square miles), traffic, residential and commercial development, water consumption and solid waste management have all become, and continue to be, significant issues for our community.



### History of Garbage Programs

Athens-Clarke's local ordinance, supported by Georgia law, establishes our responsibility for ensuring the health and safety of those living and/or working in densely populated areas. Thus, residents living in the Urban Services District and small commercial curbside businesses located in the Central Business District are required to use and pay for solid waste collection services. These services are exclusively provided to them by Athens-Clarke through its Solid Waste Department. Although large commercial dumpster customers within the county are required to use and pay for solid waste collection services, Athens-Clarke must compete against private sector waste service providers for these accounts.

Prior to Athens-Clarke's 1992 adoption of the state's waste reduction goal, the following services existed:

- Residential garbage collection - *twice-a-week*, backyard service with no specific limitations on the amount collected,
- Commercial curbside garbage collection - servicing 90-gallon roll carts placed on the sidewalk in front of each business establishment, and
- Commercial dumpster garbage collection - servicing either 2-, 4-, 6-, or 8-cubic yard containers on an as needed basis.

In the fall of 1992, the following change to solid waste services was implemented:

- Residential garbage collection services were changed to *once-a-week*, backyard with no specific limitation on the amount collected.

In the fall of 1995, the following changes to solid waste services were implemented as part of the comprehensive solid waste plan for Athens-Clarke:

- Residential "Pay-As-You-Throw" garbage fee system (described as a "Subscribed Can-Decal and Overflow Sticker" system), and
- Elimination of 90-gallon roll cart service and establishment of commercial curbside "Pay-As-You-Throw" garbage fee system (described as a "Bag" system) for small commercial and residential units located in the Central Business District.

No additional changes to solid waste service delivery have occurred since the fall of 1995.

### History of Recycling Programs

Coordinated recycling activities between the local government and the community can be traced as far back as 1976. However, it was not until the fall of 1989 that the City of Athens' Sanitation Department implemented a door-to-door recycling collection program. The City of Athens was the first municipality in the state to provide a curbside residential recycling program. This "pilot" recycling program provided curbside collection services to approximately 2,500 of the 8,600 residential households in the service district.

It was the opinion of Athens-Clarke officials that to have a viable and successful "Pay-As-You-Throw" garbage fee system, it was imperative to provide convenient and user-friendly waste disposal alternatives (i.e.: recycling collection programs, etc.).

In September of 1992, the following change to recycling services occurred:

- Residential curbside recycling collection - expanded to include *all* 8,600 households located in the Urban Services District, providing twice-a-month pickup service.

In the fall of 1995, the following changes to recycling services were implemented as part of the comprehensive solid waste plan for Athens-Clarke:

- residential curbside recycling pickup service increased from twice-a-month to *once-a-week* (same day as garbage pickup) and an additional nine recyclable items were targeted,
- commercial curbside recycling pickup service was established, offering three pickups a day, seven days-a-week, and
- commercial dumpster recycling pickup services were established for large businesses located within the county.

In the fall of 1997, the following change to recycling services occurred:

- *empty* aerosol cans were added to the list of targeted recyclable items collected from both residential and commercial customers.

No additional changes have occurred to recycling services since the fall of 1997.

### **PAY-AS-YOU-THROW GARBAGE FEE SYSTEMS ESTABLISHED IN ATHENS-CLARKE**

Athens-Clarke has established "Pay-As-You-Throw" garbage fee systems for residential, commercial curbside and commercial dumpster services.

[Note: It is important to note that the services described below are provided by Athens-Clarke through its Solid Waste Department. Although private solid waste service providers are required to offer "Pay-As-You-Throw" garbage fee systems to their residential and commercial customers, their services may be delivered differently].

#### **Residential "Pay-As-You-Throw"**

The residential "Pay-As-You-Throw" garbage fee system used in Athens-Clarke requires residents select, through a subscription process, the size and number of garbage cans they need to be emptied each week. Based on their selected subscription level, residential customers are billed monthly by Athens-Clarke through the Water/Utility bill. Once a resident subscribes to his/her garbage service level, the appropriate number of "can-decal(s)" are provided. However, based on a Commission decision, during the first three months of the

program start-up (September 1995-November 1995), all residents were charged for two-32 gallon cans (the "basic garbage service level"). This three-month time frame was considered a "pilot" for the residential "Pay-As-You-Throw" garbage fee system. The idea was to offer residents the opportunity to participate in the newly expanded curbside recycling services for a few months so that they might be able to better determine the actual garbage service level they needed.

On their scheduled collection day, residents are instructed to place their garbage out (backyard) in their can(s) for pickup. Directions are provided to residents on the proper placement of the decal(s) on their trash can(s). If a resident has more trash than they can place in their garbage can(s) in any given week, then they may:

- (a) hold the trash back until the following weekly pickup,
- (b) purchase a \$2.00 "overflow sticker" to place on the extra bag of trash for pickup or
- (c) take it to the landfill and pay the associated disposal fees.

#### **Commercial Curbside "Pay-As-You-Throw"**

The commercial curbside "Pay-As-You-Throw" garbage fee system used by Athens-Clarke requires businesses select, through a subscription process, the garbage service level (i.e.: collection frequency) they need. Customers are charged a fixed "base" monthly fee according to their selection. Customers are also required to place their garbage in authorized plastic bags which have Athens-Clarke's logo imprinted on them. These bags cost \$1.00 each. This "bag fee" covers the cost of the bag itself, the cost of disposing of the waste in the bag and a small portion of administrative overhead expenses. The monthly "base fee" covers the cost of providing recycling collection services offered to these commercial customers.

#### **Commercial Dumpster "Pay-As-You-Throw"**

Commercial dumpster services have always operated under a true "Pay-As-You-Throw" garbage fee system. This fee system charges a monthly service fee based on the following three factors:

- 1) Size of the dumpster,
- 2) Number of dumpsters, and
- 3) Number of pickups per week.

#### **RECYCLING SERVICES ESTABLISHED IN ATHENS-CLARKE**

Athens-Clarke has established recycling collection programs for residential curbside, commercial curbside and commercial dumpster services.

[Note: It is important to note that the services described below are provided by Athens-Clarke through its Solid Waste Department. Although private solid waste service providers are required to offer the "opportunity to recycle" to their residential and commercial customers, their services may be delivered differently].

#### **Residential Curbside Recycling Services**

Residents are instructed to place their recyclables at the curb for pickup on the same day as their scheduled weekly garbage pickup. Athens-Clarke provides each residential household/unit with two, 18-gallon recycling bins: one green in color and one blue in color. Residents are instructed to commingle recyclable paper items and place them in the blue bin. Likewise, residents commingle recyclable bottles and cans and place them in the green bin. Unlike garbage services, residents are directed to place their recycling bins at the curb for pickup. As noted previously, recycling pickup is scheduled for the same day as garbage pickup.

The expansion of the residential recycling program in September 1995 provided for the collection of the "traditional four" recyclable materials:

- 1) newspaper,
- 2) glass,
- 3) aluminum,
- 4) plastic

and the addition of the following nine recyclable items:

- 1) brown paper bags,
- 2) old magazines,
- 3) telephone books,
- 4) office paper,
- 5) paperboard/boxboard,
- 6) junk mail,
- 7) milk and juice cartons,
- 8) steel, bi-metal and tin cans, and
- 9) aseptic containers.

#### **Commercial Curbside Recycling Services:**

Commercial curbside customers are instructed to place their recyclables on the sidewalk in front of their business or residence for pickup. These customers are responsible for placing their recyclables in "transparent" plastic bags for collection on a predetermined schedule. Customers are further instructed to keep commingled recyclable paper items and commingled recyclable bottles and cans separate by placing them in different bags for collection by Athens-Clarke crews. As noted previously, recycling pickups are scheduled to occur three times a day, seven days a week.

#### **Commercial Dumpster Recycling Services:**

Commercial dumpster customers interested in recycling services are provided a dumpster, sized to fit their individual needs. These customers are instructed to place their recyclables in the dumpster for pickup.

Athens-Clarke provides recycling dumpster services for the collection of bottles and cans from a few businesses and multi-family establishments. However, the majority of recycling dumpster services are for the collection of commingled paper items. Commercial customers who have garbage services

with Athens-Clarke receive recycling services at no additional charge. However, Athens-Clarke will provide (for a monthly fee) recycling services to commercial customers who select to participate in recycling services only.

## FUNDING MECHANISMS FOR PROGRAMS

Prior to unification, residential and commercial garbage collection services were supported entirely through property taxes levied from residents and commercial establishments, respectively, located in the Athens City limits. After unification and between fiscal years 1992 and 1993, waste collection services transitioned (over a 20-month period) from a property tax to a flat monthly user fee. In fiscal year 1993, solid waste services became fully funded through a monthly user fee charged directly to the customer. In 1995, solid waste services were changed to a volume-based user fee (i.e.: Pay-As-You-Throw fee system), where customers are charged for their individual use of garbage services. See Graph A.

### Financing Recycling Programs

Athens-Clarke has implemented a strategy that relies on two different funding mechanisms: customer user fees and funding from the government owned and operated landfill.

Since 1995, the cost of providing commercial curbside and commercial dumpster recycling collection services have been funded through "Pay-As-You-Throw" user fees charged to the commercial customer. However, it was fiscal year 1997 before the cost of providing residential recycling collection services was funded through "Pay-As-Throw" user fees and charged directly to the resident.

Athens-Clarke has a contract with FCR, Inc. of Charlotte, N.C. to pay for the processing of the recyclables collected from our programs at their Recovered Materials Processing Facility (RMPF) located in Athens. The cost to process these recyclables at the RMPF is funded by the Landfill Enterprise Fund. Athens-Clarke views these expenses as an "opportunity cost" for the landfill. Educational support for the collection services offered by Athens-Clarke is also funded by the Landfill Enterprise Fund for the same reason.

[Note: the landfill is considered an enterprise fund since it relies entirely on user fees charged to customers entering the landfill. Moreover, with the exception of special purpose local option sales tax capital projects, the landfill operates independent of tax subsidies].

### UPDATE: "PAY-AS-YOU-THROW" LESSONS LEARNED

Athens-Clarke has learned a lot from implementing our "Pay-As-You-Throw" garbage fee systems.

The following is a list of things we would do differently, if we had it to do all over again:

- 1) **Implement one "Pay-As-You-Throw" garbage fee system at a time.** Athens-Clarke implemented the residential and commercial curbside "Pay-As-You-Throw" systems and established the recycling collection programs all at once in the month of September 1995. Although the programs have been successful in accomplishing our goals, the first six months of these programs were hectic and highly stressful!
- 2) **Hire a full-time compliance officer and a full-time customer service representative.** Customer non-compliance was a direct result of the new "Pay-As-You-Throw" program. Non-compliance problems ranged from customers using a collection containers (either trash cans or bags) that did not conform to their selected subscription level to residential customers phoning our main office indicating they never received their trash can decal(s), when in fact they had been mailed to them.

[Note: In 1996, Athens-Clarke hired a Compliance Officer and in the summer of 1998 hired a Customer Service Representative. These new hires were made possible by reclassifying vacant positions within the department].

- 3) **Spend more time training employees about the programs and ensuring them of management's support.** Up until the "Pay-As-You-Throw" garbage programs were implemented in the fall of 1995, solid waste collectors had been instructed to collect everything set out by our customers. However, with the implementation of the "Pay-As-You-Throw" garbage programs, they were told not to collect waste that did not comply with program guidelines. In discussions with collection crews, they indicated they were concerned they would be reprimanded if they didn't collect all the waste. In fact, they believed they were not doing their job if they left anything behind.
- 4) **Develop a comprehensive solid waste compliance plan.** Although the solid waste ordinance had been rewritten, it was not until after the programs were implemented that staff realized a progressive compliance plan was needed.

[Note: Athens-Clarke has a comprehensive compliance program in place and has been effective in bringing these matters under control].

### CONCLUSION

Athens-Clarke has accomplished a great deal in the past seven years. Solid waste customers, whether residential or commercial, now receive a bill that

accurately reflects their individual use of garbage services and are no longer subsidizing the cost of garbage services for those who do not participate in local waste reduction and recycling efforts.

Overall, since our local waste reduction efforts began in 1992, the average monthly residential waste disposed per household has decreased 48.85% from 171.99 lbs/household/month in Fiscal Year (FY) 1992 to 102 lbs/household/month in FY98. Unfortunately, due to accounting practices at our landfill, a similar comparison for commercial curbside and commercial dumpster waste is not possible.

Given that Athens-Clarke's goal in creating these waste reduction programs is to reduce the amount of waste bound for the local landfill, it appears that the "Pay-As-You-Throw" garbage fee systems, in concert with the recycling programs, have been highly successful.

BY JAMES T. CORLEY & SHARYN DICKERSON

## Pay-As-You-Throw

**W**ith WasteExpo once again in Atlanta, we are honored to acquaint you with our Pay-As-You-Throw (PAYT) program and share with you our accomplishments and lessons learned in the PAYT arena.

Athens, home to the University of Georgia with a student enrollment of 30,000, is 70 mi. northeast of Atlanta. Serving a total population of 100,000 in the smallest land-based county in Georgia (about 122 mi.<sup>2</sup>), the Athens-Clarke County Solid Waste Department faces significant issues in our community. As a unified government—in 1991, the governments of the City of Athens and the County of Clarke merged—we have been able to accomplish a great deal in the area of solid waste management.

### How PAYT Evolved

PAYT fee systems are certainly not new. These types of programs have been around since at least the 1950s. The goal of PAYT is to charge for individual use of garbage services. PAYT mirrors fee systems used by other utilities, such as water, gas, cable, and electricity.

We began developing a comprehensive solid waste-reduction plan for our community in November 1992. Throughout the development of our plan, key community leaders, including elected officials and a Solid Waste Citizen Advisory Committee, met to discuss and review work completed and to provide direction.

The cornerstone of our plan is the Recovered Materials Processing Facility (RMPF), a public/private partnership. The private vendor, FCR Inc. of Charlotte, NC, owns and operates the RMPF, and we own the property where the fa-

cility is located and oversee the operating contract. The RMPF, and the development of a comprehensive solid waste ordinance, supplied the support necessary to implement our PAYT programs in September 1995.

We provide exclusive solid waste management services to 8,600 households and 550 small commercial (curbside) establishments located within the Urban Services District. It is our opinion that to have a successful PAYT program, it is imperative to offer convenient and user-friendly waste-disposal alternatives such as recycling.

### Our Programs

**Residential PAYT.** Our residential PAYT program requires residents to select, through a subscription process, the size and number of garbage cans they need to be collected each week. Based on their selection, residents are billed monthly on their water/utility bill. Residents provide the can(s) on which staff places the authorized decal(s).

**Residential Recycling.** Residents place their recyclables at the curb for pick-up on the same day as their weekly garbage pickup. We provide each resident with a blue and a green 18-gal. recycling bin. Residents may commingle recyclable paper items and place them in the blue bin. Likewise, residents commingle recyclable bottles and cans and place them in the green bin.

**Commercial Curbside PAYT.** Our commercial PAYT program requires businesses to select, through a subscription process, the garbage-collection frequency they need. Customers are charged a monthly fee according to their selection. This fee also covers the cost of recycling-collection services described below. Customers are required

to place their garbage in authorized plastic bags with Athens-Clarke County's logo imprinted on them. These bags cost \$1 each. The bag fee covers the cost of the bag, disposal of the bagged waste, and some administrative expenses.

### Commercial Curbside Recycling.

Commercial customers may place their recyclables on the sidewalk in front of their business for pickup. Recyclables must be stored in transparent plastic bags for collection. Customers are instructed to keep commingled recyclable paper and commingled recyclable bottles and cans separate by placing them in different bags. Recycling pickups are scheduled three times a day, seven days a week.

### Funding Our Programs

Prior to unification, residential and commercial waste and recycling collection services were supported entirely through property taxes. After unification and between fiscal years (FY) 1992 and 1993, waste-collection services transitioned to a fixed monthly user fee. In 1995, these services were changed to the current PAYT fee system.

The cost to process collected recyclables is funded by the Landfill Enterprise Fund. We view these expenses as an "opportunity cost." Educational support is also funded through the landfill for the same reason. Athens-Clarke has a contract with FCR Inc. to pay for processing these recyclables at its RMPF in Athens.

### Lessons Learned

We have learned a great deal from implementing PAYT. If we had it to do all over again, we would:

- Implement one PAYT program at a

time. We implemented both residential and commercial curbside PAYT programs and their respective recycling programs at the same time. Although the programs have been successful, the first six months after implementation were hectic and stressful.

- Hire a compliance officer and a customer-service representative before program implementation. Customer non-compliance was a direct result of the new PAYT programs. Problems ranged from customers using improper collection containers to customers bagging trash and trying to pass it off as recyclables.
- Spend more time training employees. Prior to the implementation of PAYT, our collection crews were instructed to collect everything set out by our customers. After PAYT was implemented, however, our crews were directed not to collect waste that did not comply with program guidelines. We learned that our crews were worried that they would be reprimanded if they didn't collect all of the waste.
- Develop a comprehensive solid waste compliance plan.

### Summary

By implementing PAYT in our community, Athens-Clarke has accomplished the following:

- Our customers receive a bill that accurately reflects their individual use of garbage services.
- Our customers no longer subsidize the cost of waste services.
- The average monthly residential waste disposed per household has decreased 48.85% from 171.99 lb./household/month in FY 1992 to 102 lb./household/month in FY 1998. A similar comparison for commercial waste is not available.

In conclusion, it has been our experience that residents and commercial businesses prefer PAYT fee systems to fixed monthly user fees and/or tax levies, especially when alternative disposal options, such as recycling, are made available to

them. PAYT is, after all, a more fair way to charge for services.

**MSW**

*James T. Corley is solid waste director*

*and Sharyn Dickerson is assistant director/waste-reduction manager for the Athens-Clarke County Solid Waste Department in Athens, GA.*

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**APPENDIX L**

Agreement for  
Refuse and Recycling Collection

**Agreement for Residential, Commercial, and Roll-off  
Refuse and Recycling Collection**

THIS AGREEMENT, made this 9<sup>th</sup> day of December, 1996 by and between ~~██████████~~  
~~██████████~~ (hereafter the "City") and United Waste Services, Inc. and  
Robertson Sanitation, United's Residential Division, (hereafter the "Company").

WITNESSETH:

WHEREAS, the City and the Company desire to enter into a contract in connection with the collection of residential, commercial, and roll-off refuse and recycling in the City pursuant to the terms set out in this Agreement.

NOW, THEREFORE, for and in consideration of the mutual promises, benefits and advantages made, flowing and accruing to and from each other, the parties hereto agree as follows:

**SECTION I: GENERAL**

1. Agreement

The City grants to the Company, the exclusive right to operate all residential, commercial, and roll-off refuse collection services upon, over and across the present and future streets, roads, alleys, bridges, easements and other public places located within the present and future limits of the City of Duluth, Georgia. The City will not be responsible for the payment of services rendered to persons whose residences are located outside the Duluth City limits as defined by the most current map of the City. If any areas are annexed into the City, the Company will commence servicing the newly annexed areas within fifteen (15) days after the effective date of annexation by the City. The Company will ensure those areas not within the City limits are excluded from any and all related services provided through this Agreement, and that County routes and City routes remain completely separated.

2. Term

The term of this agreement shall commence 12:01 AM January 1, 1997 and shall run thereafter for a period of the **five (5) years and six (6) months** expiring at midnight June 30, 2002.

3. Option to Renew

After the initial term, this Agreement shall be **automatically renewed** from year to year unless either party shall give written notice of termination to the other party at least ninety (90) days prior to the annual termination date. (NOTE: This requirement is



included due to potential changes in membership of the governing body following annual elections.)

## SECTION II: COMMERCIAL

### 1. Collection Services - Commercial

The Company shall provide containers of uniform type and color for the collection of garbage and other refuse from all apartments, condominiums, other multi-family residential units, offices, business, industries, restaurants, and establishments other than single family dwellings or duplexes within the City limits, which generate two cubic yards or more of garbage or refuse per week (hereinafter "Commercial Customers"). Commercial Customers may elect to utilize residential service as defined below if they do not generate two cubic yards or more of garbage or refuse per week. The Company shall do and perform the following:

(A) Furnish to Commercial Customers operated or carried on within the City limits such commercial garbage and refuse collection service as it is deemed necessary by the customer; except that where necessary to protect the public health, the City shall have the authority to require more frequent collections be made for an appropriate additional payment.

(B) Furnish containers for all Commercial Customers which generate two cubic yards or more of garbage and/or refuse per week, which container shall be picked up and emptied at such times as shall ensure adequate and sanitary removal services at such locations.

(C) Keep in good working order all of the containers furnished pursuant to subparagraph (B) hereof.

(D) Restaurants, condominiums, apartments and other multi-family establishments will be picked up a minimum of two times each week.

(E) Deposit all commercial solid waste collected hereunder at an approved sanitary landfill which meets all current Federal, State, and local requirements. All commercial recyclable items collected hereunder must be taken to an approved recycle processing center.

(F) All garbage, trash and other refuse required to be collected by the Company under subparagraph (B) hereof shall be placed in containers by Commercial Customers. Containers shall not be overloaded to the extent that the top lids cannot be fully closed. The Company shall be responsible for collecting garbage or trash scattered by its employees if such containers are not overloaded.

(G) All routing and scheduling of trucks used for the pickup of trash and garbage from containers shall be left to the discretion of the Company to the end that the scheduled pickups shall be reasonably and equally spaced during each week and shall assure maximum efficiency of operation consistent with service to the customers. With the exception as stated in paragraph 1, and further, that commercial pickup will not be accomplished during the following hours: Monday through Friday no earlier than 6:00 AM and no later than 7:00 PM.

(H) The City will take such steps as necessary to ensure that all containers shall be freely accessible to the Company and not blocked or placed in unsafe locations for the pickup operation.

(I) The Company shall furnish the City with statistical data including volume and tonnage of commercial solid waste collected by category during each preceding thirty-day period.

2. Collection Fees - Commercial

(A) All commercial customers within the City using containerized service shall be billed directly by the Company in amounts not to exceed those set forth as follows:

**COMMERCIAL REFUSE  
AND RECYCLING**

| Frequency                   | 1/week  | 2/week   | 3/week   | 4/week   | 5/week   | 6/week   |
|-----------------------------|---------|----------|----------|----------|----------|----------|
| Size                        |         |          |          |          |          |          |
| 2 yd <sup>3</sup>           | \$48.20 | \$75.30  | \$93.75  | \$126.30 | \$141.40 | \$160.50 |
| 4 yd <sup>3</sup>           | \$64.10 | \$102.20 | \$130.50 | \$160.10 | \$190.10 | \$220.30 |
| 6 yd <sup>3</sup>           | \$82.10 | \$146.50 | \$166.40 | \$186.20 | \$206.25 | \$236.60 |
| 8 yd <sup>3</sup>           | \$98.25 | \$188.20 | \$252.40 | \$328.50 | \$389.15 | \$456.20 |
| 8 yd <sup>3</sup> (recycle) | \$49.50 | \$98.50  | \$147.25 | \$196.25 | \$245.50 | \$294.75 |

(B) The charge for precompacted material and for rental of compactors and compactor containers shall be negotiated directly between the Company and Roll-off Customer involved.

(C) The charge for roll off containers or service, items requiring special handling due to size, weight, type of material, and jobs requiring special equipment, special methods of placement and other unique or unusual equipment or service requirements will be negotiated between the Company and the Roll-off Customer

involved. If agreement cannot be reached between the Company and such Roll-off Customer, the matter will be submitted to the City, and City's decision shall be binding on both parties.

(D) The Company will invoice each Commercial and Roll-off Customer directly on a monthly basis. The City will cooperate with the Company in its attempts to collect overdue and unpaid accounts. The Company shall be authorized to require such deposits as it deems necessary or advisable for single service requests, short service or other special circumstances. The Company is further authorized to charge and collect service charges for late payments as provided by Georgia Law.

(E) The Company will pay the City a franchise fee based on 7.5% of the total Commercial. This franchise payment will be sent to the City on a monthly basis.

### **SECTION III: RESIDENTIAL**

#### **1. Collection Service - Residential**

Residential Solid Waste shall mean household garbage and waste defined as putrescible animal, fruit and vegetable matter resulting from the preparation, cooking, storage, sale and serving of food; cans; glass; paper; and other containers and other material that is generated as household garbage.

(A) Residential solid waste shall be collected on Wednesday of each week between the hours of 7:30 AM and 7:30 PM. The waste shall be placed by residents for collection at the curb no later than 7:00 AM on each collection day.

(B) Only residential solid waste which is contained in or placed with specialized plastic bags provided to designated retail outlets and to the City by the Company shall be collected by the Company pursuant to this Agreement (see Appendix A, Residential Solid Waste "Bag" Collection Guidelines). Company shall sell to the City and designated retail stores plastic garbage bags of a unique color not readily available in other than designated retail stores. The plastic bags shall have at least 32 gallon capacity and a thickness of 2.5 mils.

(C) During the initial period of this Agreement, the Company will honor all specialized plastic bags previously sold to Duluth residents by Waste Management of Atlanta for a period of approximately one (1) month until the date of January 31, 1997.

(D) The Company shall bill the City and the City shall pay the Company for such plastic bags on a thirty (30) day net invoice basis from the date of delivery at an initial rate of \$ 1.13 per bag or a total cost of \$22.60 for a box of twenty (20) bags. This may be increased annually according to the Cost of Living Adjustment described in Section IV.

(E) The Company shall direct bill the participating retail stores for such plastic bags at a rate of \$0.9305 per bag, or a total cost of \$18.61 per box of twenty (20) bags. The Company will send a monthly statement to the City which includes the invoices from the retail stores for the number of boxes of bags purchased by each retail store. The City will be charged a "Bag Differential" fee of \$0.1995 per bag, or a total cost of \$3.99 per box of twenty (20) bags sold to the retail stores. The City will pay the Company this fee on a monthly basis. These fees may be increased annually according to the Cost of Living Adjustment described in Section IV.

(F) The Company shall have the right to purchase plastic bags from vendors of its choice. All plastic bags shall be of at least 32 gallon capacity and a 2.5 mil thickness.

(G) The Company shall furnish the City with statistical data including volume and tonnage of residential solid waste collected by category during each preceding thirty-day period.

(H) At the end of any regular cycle, should the contract not be renewed, the Company agrees to purchase back from the City and all participating retail outlets the specialized plastic residential solid waste garbage bags at the same price for which the City and retail stores purchased the bags. The Company agrees to refund to the City the associated Bag Differential Fees for the bags the Company purchases back from the retail stores.

## 2. Equipment

The Company shall have ready at all times, in good working order, such personnel, materials, and equipment as shall permit the Company to adequately and efficiently perform the duties hereunder. All equipment shall be of the enclosed, load packer type and shall be kept clean and in a sanitary condition. The Company shall have available to it at all times duplicate equipment which can be put into service and operated in case of any mechanical breakdown.

## SECTION IV: OTHER

### 1. Insurance

(A) The Company shall at all times during the Agreement maintain in full force and effect Employer's Liability, Workmen's Compensation, Public Liability and Property Damage Insurance, including contractual liability coverage. All insurance shall be by insurers and for policy limits acceptable to the City and before commencement of work hereunder. The Company agrees to furnish the City certificates

or other evidence satisfactory to the City to the effect that such insurance has been procured and is in force at the beginning of this contract and annually thereafter.

(B) For the purpose of this Agreement, the Company shall carry the following types of insurance in at least the limits specified below:

| <u>Coverage</u>                                | <u>Limits of Liability</u>  |
|--|-----------------------------|
| Workmen's Compensation                         | Statutory                   |
| Employer's Liability                           | \$2,500,000                 |
| Bodily Injury Liability<br>Except Automobile   | \$2,500,000 each occurrence |
| Property Damage Liability<br>Except Automobile | \$3,500,000 each occurrence |
| Automobile Bodily Injury                       | \$5,000,000 each occurrence |
| Excess Umbrella Liability                      | \$7,500,000 each occurrence |

## 2. Title to Waste

Company shall accept title to Municipal Solid Waste as defined by the Environmental Protection Division of the Georgia Department of Natural Resources upon collection and placement into the Company's vehicle. Upon collection, all solid waste will become the Company's responsibility until it is deposited in the approved sanitary landfill or other approved disposal facilities.

## 3. Indemnity

Company shall defend, indemnify and save harmless City, its Mayor and Council, officers, agents and employees, from any and all suits, actions legal proceedings, claims, demands damages costs, expenses, and attorney's fees incident to any work done in the performance of this contract arising out of the willful or negligent act or omission of the Company, its officers, agents, servants and employees, or as a result of the implementation of this Contract/Franchise. Nothing herein contained shall be deemed to constitute shall be deemed to constitute a waiver by the City of its governmental immunity.

## 4. Disposal

All waste materials for disposal shall be hauled to a site or facility legally empowered to accept same for treatment or disposal as approved by the relevant governing authorities. The Company shall use a disposal site that has a minimum of five (5) years of disposal life.

#### 5. Time of Collection

The Company shall collect the Residential Refuse placed in the special bags at the curbside for collection once (1) per week per household (on Wednesdays). Collection shall not be made on the following days: December 25 or January 1. Collection which would normally occur on such holidays shall be collected on the day following the holiday. Should severe inclement weather cancel normal pick-up on Wednesday, the following day rule applies. If weather prohibits collection until the weekend, pick-up will be first workday following storm.

#### 6. Missed Pick-Up

In case of a missed pick-up reported by the City or a Resident, the Company shall collect the Refuse and Recyclable Materials from such Resident within twenty-four (24) hours of notification by the City or such Resident. All calls relating to missed pick-ups shall be logged by the Company, and such a log shall be provided to the City with other monthly data.

#### 7. Unusual Changes or Costs

The Company or the City may petition the other after January 1, 1998, for rate adjustments at reasonable times, but not more than once quarterly, on the basis of any unforeseen changes in the cost of doing business such as revised laws, ordinances or regulations, increased cost of plastic bags for residential service, changes in location or disposal sites or changes in disposal charges. If not granted, Contract remains in full force and effect.

#### 8. Cost of Living Adjustment

(A) Commencing January 1, 1998, and annually thereafter throughout the term, the fees or compensation payable to the Company may be adjusted upward or downward to reflect changes in the cost of doing business, as measured by fluctuations in the Consumer Price Index (CPI) by petition to the City or by the City. Commencing January 1, 1998, and each year thereafter, the fees or compensation for residential and commercial services hereunder may be increased or decreased by a percentage amount equal to the net percentage change in the CPI computed as follows:

(B) Beginning with January 1, 1998, the net change may be the difference between the CPI for the prior twelve month period of July 1, 1996 - June 30, 1997 preceding the effective date of such change. Subsequent years of the Agreement

may be adjusted annually based upon the net change for the same period from July to July. For purposes of this paragraph CPI shall mean the Consumer Price Index established by the Bureau of Labor Statistics of the United States Department of Labor which is entitled "Consumer Price Index for All Urban Consumers" Atlanta, Georgia, All Items, 1982/84 - 100, or any appropriate successor Index adopted by said Department.

(C) If not granted, Contract remains in full force and effect.

#### 9. Compliance with Laws

The Company shall conduct operations under this Agreement in compliance with all applicable ordinances, regulations and statutes.

#### 10. Illegal Provisions

If any part or provisions of this Agreement or any portion of the term of this Agreement shall be declared illegal, void or unenforceable, the remaining provisions and term shall not be affected, but shall remain in full force and effect.

#### 11. Single Contract

As part of the consideration to the Company for this Agreement, the City designates the Company as its exclusive contractor and agent to provide all residential, commercial and roll-off refuse collection and disposal services within the City boundaries, present and future. The City further grants to the Company the right to operate on and utilize all streets, roads, alleys, bridges, easements and other public places in the City in carrying out its duties under this Agreement.

#### 12. Governing Law

This Agreement shall be governed by the laws of the State Georgia both as to interpretation and performance.

#### 13. Modification

This Agreement constitutes the entire agreement and understanding between the parties hereto, and it shall not be considered modified, altered, changed or amended in any respect unless in writing and signed by the parties hereto.

### SECTION V: RECYCLING

#### 1. Recycling Collection Services ( Residential and Commercial )

The Recycling Collection Services described herein shall, unless otherwise mutually agreed upon in writing, continue throughout the initial term of this Agreement.

## 2. Definitions

For the purposes of the Agreement, the following definitions shall apply for all Residential Recycling Materials:

(A) RECYCLABLE MATERIALS: This includes all newspaper, glass food and beverage containers, plastic soda bottles and milk jugs, tin food cans, and aluminum beverage cans that are the subject of the City's collection contract.

(B) RESIDENTIAL RECYCLING COLLECTION SERVICES: Those services to be performed one (1) time weekly on Wednesdays by the Company are as follows:

(1) The curbside collection of Recyclable Materials from each single family residence.

(2) Processing of Recyclable Materials which include the sorting and preparation of recyclable materials at the Processing Center for marketing.

(C) RECYCLING CONTAINERS: A container made of rigid plastic construction will be provided for use by residents to set out their Recyclable Materials. Such containers will be of uniform color, and distinctively imprinted with "City of Duluth Emblem" or similar design or language. Such design or language will be approved in advance by City.

(1) Two (2) weeks prior to the start date of this Agreement and without any additional charge to the City, the Company shall be prepared to provide to the City, rigid plastic Recycling Containers at least 18-gallons in capacity. The Company upon request will provide the amount of Recycling Containers necessary for each single-family residence within the City limits of Duluth to be able to participate in the Recycling Program described in this Agreement.

(2) Company agrees that it will promptly replace Recycling Containers, without any charge to the City, when notified by the City that a Recycling Container is damaged or missing.

(3) A stock pile equivalent to not less than 5% of the served City population will be routinely stored at City facilities. All such containers shall become City property.

## 3. Commercial Recycling



(A) The Company shall collect from Commercial Customers all corrugated recyclable materials which are segregated and placed in a recycling container provided to such Commercial Customers by the Company. The frequency of collection shall be negotiated between Company and each Commercial Customer. The Company shall be responsible for processing and marketing such recycling services without additional charge to the Commercial Customers. Company, however, shall retain the proceeds from the sale of such recyclable materials.

(B) City and Company agree that Company may expand the scope of the recycling services specified herein as market conditions and the participation in recycling services by Commercial Customers improves.

#### 4. Protection of Recyclable Materials

City agrees to take such steps as may be reasonably necessary to protect the Company's exclusive franchise to all Recyclable Materials placed at the curbside for collection under the terms of this Agreement.

#### 5. Scope of Recycling Services

The Company shall collect and remove all Recyclable Materials which are segregated and placed in Recycling Containers at the curbside on public streets from all single-family homes, which are located within City limits, both present and future. The Recycling Collection Services performed shall be expanded to include all newly constructed single-family residential units as they become inhabited and the City shall notify the Company in writing of such expansions.

#### 6. Time of Collection

The Company shall collect the Recyclable Material placed at the curbside for collection once (1) per week per household (on Wednesdays). Collection shall not be made on the following days: December 25 or January 1. Collection which would normally occur on such holidays shall be collected on the day following the holiday. Should severe inclement weather cancel normal pick-up on Wednesday, the following day rule applies. If weather prohibits collection until the weekend, pick-up will be first workday following storm.

#### 7. Transportation and Ownership of Recyclable Materials

Company shall transport the collected Recyclable Materials in vehicles specialized for the collection of Recyclable Materials to its Processing Center, and be responsible for the sale or disposal of such Recyclable Materials, and shall retain ownership of Recyclable Materials and/or profits or loss there from.

#### 8. Labor and Costs

The Company shall, at its sole cost and expense, furnish all labor and vehicles required to perform curbside collection of Recyclable Materials pursuant to this Agreement.

#### 9. Refusal to Pick-Up

The Company shall not be obligated to make a pick-up if a Resident does not properly separate Recyclable Materials (as described in Appendix B) from other residential refuse. At the time of refusal to make the pick-up, the Company will issue a notice to the Resident which contains instructions for the proper segregation of Recyclable Materials. If a Resident receives two such notices within a period of thirty (30) days, the Company shall notify the City after which time if the matter is not resolved the Company may refuse further recyclable pick-ups from that Resident.

#### 10. Recycling Center

The Company shall utilize Processing Center(s) which shall accept, but are not limited to, the following: newspaper, magazines, glass food and beverage containers, plastic soda bottles and milk jugs, tin food cans, aluminum beverage cans, and corrugated cardboard. All Recyclable Materials collected from Residents shall be processed at the Processing Centers. Title to Recyclable Materials brought to the Processing Centers shall be with the Company and the Company shall have the responsibility for the sale and/or disposal of such Recyclable Materials. The Company shall inform the City of the location of such centers; and shall notify the City Representative in writing, no less than thirty (30) days prior to any relocation of any Processing Centers.

#### 11. Public Awareness Program

(A) The Company shall develop and implement a Public Recycling Awareness program that contains but is not limited to the activities described below:

(1) Presentations, using audio-visual aids, to local civic groups (i.e., Lions, Kiwanis, Rotary, Masons, Etc.), home-owners' associations, PTAs, women's clubs, and church groups, in order to educate "civic leaders" so they can, in turn, discuss and promote the program with others.

(2) Programs promoting recycling for elementary, middle and high school students, scout troops, and other youth organizations in the Duluth area.

(3) Program updates included in the City of Duluth Newsletter.

(4) Participation in local festivals, parades and events to demonstrate The Company's on-going commitment to the promotion of curbside recycling.

(5) A program to promote the recycling of telephone books on an annual basis. During those times designated for the annual recycling of telephone books, the Company will provide at "no charge" a dumpster located at a place designated by the City where residents can recycle their old telephone books. The Company will provide pulls for this dumpster at "no charge" to the City.

(B) Materials residents will receive from the Company will include:

(1) A letter from the City officials to all households announcing the scope of the City's curbside recycling program, endorsing the recycling ethic and asking for the full participation of the community. ( If the City leaders so desire.)

(2) Door hangers, mail-outs, and/or information cards shall be distributed two (2) to three (3) weeks prior to the beginning of this Agreement describing the residential solid waste collection and recycling programs.

(3) If necessary, collection bins will be provided to households one (1) to two (2) weeks prior to the first collection of recyclable materials under this Agreement. These bins will be personalized for the Duluth Recycling program.

(4) Pamphlets to inform the residents of the proper way to prepare the Recyclable Materials and the correct use of their recycling bins.

## 12. Compensation for Recycling Services

Company agrees to provide curbside recycling services for each single-family residence at no charge per definition of recyclable materials in Section V: Paragraph 2 (A). Corrugated cardboard and magazines may also be recycled if taken to the City Barn on Saturdays and placed for disposal in specifically provided dumpsters. This dumpster service will be provided by Company at no charge to the City. Corrugated Cardboard will also be collected as residential solid waste (not recyclable) at curbside if prepared by resident as described in Appendix A, Paragraph 6.

## SECTION VI: YARD CLIPPINGS

Residential Yard Clippings/Debris Collection: Residential Yard Debris as defined by Georgia State Law 12-8-40.2. The Company shall provide the City with one (1) forty (40) cubic yard container to be placed wherever City deems appropriate. The container shall be designated by the City exclusively every Saturday throughout the year

for the disposal of Residential Yard debris as defined by Georgia State law. The Company shall provide roll-off of this dumpster on Mondays following the Saturday collection at a price of \$275.00 per roll-off.

## SECTION VII: REPORTING

### 1. Records and Reports

The Company shall maintain its books and records of statistical data related to the performance of the solid waste collection, recycling collection and transportation services under this Agreement and provide monthly summaries to the City in accordance with the following minimum requirements:

#### (A) Monthly Status Reports

(1) Tonnage summaries of residential refuse within the boundaries, both present and future, and for projections for the City limits of Duluth.

(2) Tonnage summaries of commercial and roll-off refuse within the boundaries, both present and future, and for projections for the City limits of Duluth.

(3) Tonnage summaries of residential, commercial, and roll-off recyclable material collected and marketed within the boundaries, both present and future, and for projections for the City limits of Duluth.

(4) Weekly and monthly participation rates.

(5) Monthly invoice for services rendered.

(6) Description of program progress, including any problems encountered and how they were resolved (provided on an as needed basis).

#### (B) Yearly Status Reports

(1) Summary of material collected and marketed by above categories.

(2) Discussion of the Public Recycling Awareness program and its impact on participation.

(3) Discussion of program highlights, problems, and measures taken to resolve problems and increase efficiency and household participation.

(4) Summary of the percent reduction in waste stream flow generated by participation in a recycling program.

(5) Recommendations for program revisions.

## 2. Deadlines

The Monthly Status Reports shall be submitted to the City within twenty (20) days of the end each month and Yearly Status Reports shall be submitted to the City within sixty days (60) days of the end of each year of operations hereunder. City shall, with at least a thirty (30) day notice, have the right to examine, at its own expense, the books and records of the Company with respect to the services rendered hereunder.

## SECTION VIII: CONDITIONS

### 1. Force Majeure

The Company's performance hereunder may be suspended and its obligation hereunder excused in the event and during the period that such performance is prevented by a cause or causes beyond the reasonable control of the Company unless such cause or causes are the sole result of action or non-action by the Company. Such causes shall include, but are not limited to, acts of God, acts of war, riot, fire, explosion, accident, flood or sabotage; lack of adequate fuel, power or raw materials, judicial administrative or governmental laws, regulations, requirements, rules, orders or actions; injunctions or restraining orders; the failure of any governmental body to issue or grant, or the suspension or revocation or modification of any license, permit or other authorization necessary for the construction and/or operation envisioned by this Agreement; national defense requirements; labor strikes, lockout or injunction.

### 2. Termination of Franchise

In addition to all other rights and powers the City may have by virtue of this Agreement or otherwise, the City reserves the right to terminate this franchise and all rights and privileges of the Company hereunder in the event that the Company:

(A) Violates any provision of this Agreement or any rule, order, or determination of the City or the Governing Body made pursuant to this Agreement except where such violation, is cured as set forth below or, is without fault or through excusable neglect;

(B) Becomes insolvent, unable or unwilling to pay its debts, or is adjudged a bankrupt;

(C) Attempts to evade any of the provisions of this Agreement or practices any fraud or deceit upon the City;

(D) Has a change in the ownership of 50% or more of its stock, without the City's consent, or attempts to transfer this franchise to any other entity without the consent of the City.

Any termination of the franchise in accordance with the terms of this paragraph shall take place by an act of the Governing Body of the City after thirty (30) days written notice to the Company of the City's intent to consider such action. The foregoing notwithstanding any termination allegedly due to the failure of the Company to perform any obligation imposed by this Agreement shall only occur after written notice to the Company specifying the alleged default and the Company's failure to cure such default within fifteen (15) days after the date of such notice.

### 3. Cooperation Among the Parties

Whenever consent, action or inaction is required, such consent, action or inaction will not be unreasonably withheld or delayed by either party.

### 4. Severability

The invalidity of one or more of the phrases, sentences, clauses, or Sections contained in this Agreement shall not affect the validity of the remaining portion of the Agreement so long as the material purposes of this Agreement can be determined and effectuated.

### 5. City Services

(A) Company shall provide to the City the following dumpsters and service at no additional charge:

(1) One (1) eight cubic yard front end trash container at City Hall , which shall be serviced by Company two (2) times per week.

(2) One (1) six cubic yard front end trash container at W.P. Jones Park, which shall be serviced once per week.

(3) One (1) six cubic yard front end trash container at the City Maintenance Barn, which shall be serviced once per week

(4) Three (3) forty (40) cubic yard pull containers located at the City Maintenance Barn at all times. These containers shall be exclusively used for the disposal of bulky items and "white goods" weighing over fifty (50) pounds. Waste such as commercial building or remodeling debris, auto parts, tires or accessories, dead

animals, limbs, and hazardous waste shall not be disposed of in such containers. The containers shall be serviced on Monday of each week and returned to the City Maintenance Barn that same day.

(5) The Company shall provide a total of five free pulls each month for each of the forty (40) cubic yard containers for bulky items. The Company shall invoice the City for the pulls of the bulky item dumpsters. The invoices will reflect the five "no charge" pulls each month and any additional pulls for bulky item dumpsters requested by the City. Public Works will order the pulls as desired. The City may accrue the value of these "no-charge" pulls during slow months for later use.

(6) Two (2) eight cubic yard front end trash containers to be placed at the areas designated by the City. These containers will be placed at these designated locations for one week during the Fall and one week during the Spring for cleanup purposes. Upon the request of the City's Public Works Department, the Company will service the containers at "no charge" to the City.

(B) The Company will provide these additional services:

(1) The Company shall build a platform with steps that lead to each of the forty (40) cubic yard containers. The steps and platforms will be designed to provide easier access for placement of items in the containers. Upon final construction ownership of the platforms will be transferred to the City for \$10.00. At this time, the City will assume all liabilities in conjunction with use and maintenance of the platforms.

(2) In the event the City desires to add additional roll-off containers or increase the frequency of service of such containers, additional pulls shall be provided at the rate of \$275.00 per pull. This rate includes charges for the collection and disposal of the waste and shall be subject to the same adjustments as other rates in this Agreement for cost of living and disposal increases.

## **SECTION IX: SPECIAL WASTE**

### **1. Commercial Special Waste**

As an additional service to the City, Company shall collect and dispose of Special Waste generated by the Commercial and Industrial Customers existing within the City limits, both present and future. Company's rates and service requirements for collecting and disposing of Special Waste shall be negotiated independently with each Commercial and Industrial Customers. In order to ensure that the special waste is handled in an environmentally secure manner, Commercial and Industrial Customers shall be required to acknowledge the following definition of special waste and accurately represent the components of the waste.

2. Definition: "Special Waste" means Type A and Type B Special Wastes as defined below:

(A) "Type A Special Waste" means any waste from a commercial or industrial activity meeting any of the following descriptions:

(1) A containerized waste (e.g., a drum portable tank, lugger box, roll-off box, pail, bulk tanker, etc.) listed in (2) - (7) below:

(2) A waste containing free liquids.

(3) A sludge waste.

(4) A waste from an industrial process.

(5) A waste from any pollution control process.

(6) Residue and debris from the cleanup of a spill of a chemical substance or commercial product or a waste listed in (1) - (5) or (7).

(7) Contaminated residuals, or articles from the cleanup of a facility generating, storing, treating, recycling, or disposing of wastes listed in (1) - (7) herein.

(B) Incidental Amounts of Special Wastes

The Company recognizes that many customers will produce some "Type B Special Waste" as defined below. Incidental quantities of "Type B Special Waste" do not require a Generator's Type B Special Waste Profile Sheet to be signed by the customer. However, the customer must identify the type and amount of Type B Special Wastes which will be provided to the Company in incidental amounts.

(C) "Type B Special Waste:" Any waste from a commercial or industrial activity meeting the descriptions which follow:

(1) **Friable asbestos waste from building demolition or cleaning;** wall board, wall spray covering, pipe insulation, etc. non-friable asbestos is not a special waste unless it has been processed, handled or used in such a way that asbestos fibers may be freely release. Asbestos-bearing industrial process waste is a "Type A Special Waste."

(2) **Commercial products or chemicals which are off-specification, outdated, unused or banned.** Out-dated or off-specification, uncontaminated food or beverage products in original consumer containers are not included in this category, however, containers which once held commercial products or



chemicals are included unless the container is empty. A container is empty when: All wastes have been removed that can be removed using the practices commonly employed to remove material from the type of container, e.g., pouring, pumping or aspirating, and an end has been removed (for containers in excess of 25 gallons), and no more than 1 inch (2.54 centimeters) of residue remains on the bottom of the container or inner liner, or no more than 3% by weight of the total capacity of the container remains in the container (containers < 110 gallons), or no more than 0.3% by weight of the total capacity of the container remains in the container (containers > 110 gallons). Containers which once held **ACUTELY HAZARDOUS WASTES** must be triple rinsed with an appropriate solvent or cleaned by an equivalent method. Containers which once held substances regulated under the Federal Insecticide, Fungicide, and Rodenticide Act must be empty according to label instructions or triple rinsed.

(3) **Untreated bio-medical waste - Any waste capable of inducing infection due to contamination with infectious agents from a bio-medical including but not limited to a medical practitioner, hospital, medical clinic, nursing home, university medical laboratory, mortuary, taxidermist, veterinarian, veterinary hospital or animal testing laboratory.** Sharps from these sources must be rendered harmless or placed in needle puncture proof containers. Residue from incineration of infectious wastes is a "Type A Special."

(4) **Treated bio-medical wastes - Any wastes from a bio-medical source including but not limited to a hospital, medical clinic, nursing home, medical practitioner, mortuary, taxidermist, veterinarian hospital, animal testing laboratory, or university medical laboratory which has been autoclaved or otherwise heat treated or sterilized so that it is no longer capable of inducing infection.** Any sharps from these sources must be rendered harmless or placed in a needle puncture proof containers.

(5) **Liquids and sludges** from septic tanks, food service grease traps, or washwater and wastewaters from commercial laundries, laundromats and car washes unless these wastes are managed at commercial or public treatment works.

(6) **Chemical-containing equipment removed from service.** Example: filters, cathode ray tubes, lab equipment, acetylene tanks, fluorescent light tubes, etc.

(7) **Waste produced from the demolition or dismantling of industrial process equipment or facilities contaminated with chemicals from the industrial process.** Chemicals or wastes removed or drained from such equipment or facility are "Type A Special Wastes."

3. Residential Special Waste: For the Purpose of this Agreement, the following definition shall apply for all Residential Special Waste: All household paint, motor oil, pesticides, lead acid batteries, and other difficult to dispose of residential items.

(A) As an additional service to the City, the Company shall collect and dispose of certain types of “Special Waste” which the City will initially collect and store at the City Barn until a sufficient amount is accumulated (see Appendix C for Guidelines). Frequency of pick-up shall be semi-annual. The City will notify the Company who will pickup the “Special Waste,” and the Company will dispose of it in a proper and lawful manner. The Company agrees to pass along to the City the exact cost for disposal of the “Special Waste” on a semi-annual basis.

(B) Initially, the Company shall collect and properly dispose of all Special Waste currently stored at the City Maintenance Barn. This initial removal of the stored Special Waste will be done “free of charge” to the City except for that Special Waste such as lead based paint which must ultimately be destroyed. The City will cover the exact cost for disposal of those items which must be destroyed.

#### Appendices

- A. Residential Solid Waste “Bag”  
Collection Guidelines
- B. Recycling Collection Guidelines
- C. Special Waste Guidelines

## APPENDIX "A"

### RESIDENTIAL SOLID WASTE "BAG" COLLECTION GUIDELINES

1. All garbage must be placed inside a special marked and properly secured **Robertson Sanitation Bag**.

- **Robertson Sanitation** prefers that you **DO NOT** use cans, containers, or other units to hold bags. However, if you insist, use only **Robertson Sanitation Bags** placed inside the container. Leave the lid off so the bags may be clearly seen. **DO NOT** tie the bag to the container. If you do use a special container, the City of Duluth **CANNOT** guarantee that your garbage will be picked-up, since this is not part of the City's contract.

2. All solid waste (and recycling items) must be placed at curb-side by 7:00 AM on day of pick-up.

3. **Robertson Sanitation** will accept typical household garbage (in properly secured bags of less than 50 pounds). Please **DO NOT** place *over* 50 pounds of garbage into one bag -- it may break.

4. For items (still *less than* 50 pounds) which are too bulky to fit into a **Robertson Sanitation Bag**, you may attach a bag to the item to ensure pick-up. This does not include garbage cans.

5. Items *heavier than* 50 pounds and "white goods," i.e., refrigerators, stoves, washing machines, water heaters, etc., may be collected at curb-side by making special arrangements with **Robertson Sanitation**. Call (770) 921-7337. There will be a minimal charge for items containing hazardous waste (i.e. refrigerators and freezers) and a bag must be attached to the item. As a "no charge" alternative, these items may be delivered by the resident to the City Barn on any Saturday between 8:00 AM and 5:00 PM (except between 11:30 AM and 12:30 PM for attendants' lunch).

6. Corrugated Cardboard will be picked up at curb-side if flattened into small manageable bundles not to exceed 1' X 2' X 4'. **DO NOT** use the cardboard as a container for trash. Place bundle next to recycle bin. **Please Note:** If cardboard is flattened and placed at curbside, it will *not be recycled* but will enter the residential solid waste stream. Corrugated Cardboard and magazines may be recycled if taken to the City Barn during Saturday collection hours.

7. Yard trimmings (includes leaves, clipped grass, limbs, etc.) are no longer accepted in lined sanitary land fills. However, we have made provisions to accept them at the City Barn under the same schedule as in paragraph 5. above.

8. If you experience a problem with cats, dogs or other small animals breaking into the bags, try misting the bag with an ammonia mixture. This rarely occurs, but when it does, ammonia usually solves the problem.

**NEITHER** Robertson Sanitation or the City Barn will accept the following items:

Building or remodeling debris, automobile parts, tires or accessories, trees, dead animals, items that weigh more than 50 pounds (except white goods as defined above), or other items that cannot be safely compacted. The City Barn will accept hazardous wastes as separately defined in Appendix C.

#### APPENDIX "A"

## APPENDIX "B"

### RECYCLING COLLECTION GUIDELINES

All newspaper, glass food and beverage containers, plastic soda bottles and milk jugs, tin food cans, and aluminum beverage cans are considered acceptable. These materials need NOT be separated. They must, however, be placed *inside* the standard recycling container, and set at the curbside by resident prior to 7:00 AM on the designated day of pick-up. Such recycling containers, made in special color and of rigid plastic construction, will be provided free of charge to all *new* City residents by United (or the City on their behalf). Additional containers may be purchased from the City at a nominal cost.

(A) Corrugated cardboard of any color and/or texture may also be recycled. It should be flattened and taken to the City Barn on any Saturday between 8:00 AM and 5:00 PM (except between 11:30 AM and 12:30 PM for attendants' lunch).

(B) Magazines may also be recycled and should be taken to the City Barn during the times stated above.

IF YOUR GARBAGE IS MISSED PLEASE CALL UNITED WASTE AT:

(770) 921-7337 Residential  
(770) 867-4367 Commercial

APPENDIX "B"

## Appendix "C"

### RESIDENTIAL SPECIAL WASTE GUIDELINES

1. The City will generally collect the following types of Special Waste at the City Maintenance Barn: all household paints, motor oils, pesticides, lead acid batteries and other difficult to dispose of residential items.
2. These items are not safe to place in the regular stream of garbage, and can be safely disposed of if brought to the City Maintenance Barn on any Saturday between 8:00 AM and 5:00 PM (except between 11:30 AM and 12:30 PM for attendants' lunch).
3. Please **DO NOT** dispose of ammunition in regular household garbage. This can pose a very hazardous problem to sanitation workers. The Duluth Police Department may accept any old or unwanted ammunition. A resident should contact the police department at 476-4151 to arrange a time to drop off the ammunition.

IN WITNESS WHEREOF, the parties have hereunto set their hands and seals, the day and year first above written.

CITY OF DULUTH, GEORGIA

BY:

*Marilyn Lammert*  
Mayor, City of Duluth

ATTEST:

*Jean-Lynn City Clerk*

UNITED WASTE SERVICES, INC.

BY:

*Jan C. [Signature]*

ATTEST

*Jan Fulcher*

**APPENDIX M**

**Solid Waste Ordinances**





# Coweta County Environmental Management

22 East Broad Street Newnan, GA 30263 Phone (770) 254-3785 Fax (770) 254-2606

April 21, 2000

Karen Sabatini  
Department of Community Affairs  
60 Executive Park South, N.E.  
Atlanta, Ga. 30329

Dear Ms. Sabatini:

Enclosed is the information you requested.

If I can be of further assistance to you, please let me know.

Sincerely,

Eva J. Wagner  
Manager  
Coweta County Environmental Management

EJW:fh



Printed on Recycled Paper  
Printed to Be Recycled

## Chapter 62

### SOLID WASTE\*

#### Article I. In General

- Sec. 62-1. Containers.
- Sec. 62-2. Rules and regulations.
- Sec. 62-3. Private landfills and dumps prohibited.
- Sec. 62-4. Open burning.
- Sec. 62-5. Permission required for haulers outside of county.
- Sec. 62-6. Solid waste separation requirements.
- Sec. 62-7. Operating procedures for transfer station.
- Secs. 62-8—62-35. Reserved.

#### Article II. Collection and Disposal

##### Division 1. Generally

- Sec. 62-36. Definitions.
- Sec. 62-37. Generally.
- Sec. 62-38. Exemptions.
- Sec. 62-39. Enforcement.
- Sec. 62-40. Disposal of construction debris and waste.
- Secs. 62-41—62-55. Reserved.

##### Division 2. Franchises

- Sec. 62-56. Prohibited acts.
- Sec. 62-57. Granting of franchises.
- Sec. 62-58. Requirements for franchisees.
- Sec. 62-59. Franchise fees.
- Sec. 62-60. Collection services.
- Sec. 62-61. Elderly and disabled citizens.
- Sec. 62-62. Franchise transfers.
- Secs. 62-63—62-85. Reserved.

\*Cross references—Buildings and building regulations, ch. 14; businesses, ch. 18; environment, ch. 30; utilities, ch. 78.

State law references—Georgia Comprehensive Solid Waste Management Act, O.C.G.A. § 12-8-20 et seq.; local, multijurisdictional and regional solid waste plans, O.C.G.A. § 12-8-31.1; scrap tire disposal restrictions, O.C.G.A. § 12-8-40.1; yard trimmings disposal restrictions, O.C.G.A. § 12-8-40.2; authorization to provide garbage and solid waste collection and disposal, Ga. Const. art. IX, § II, ¶ III(a)(2); transporting garbage or waste across state or county boundaries without permission, O.C.G.A. § 36-1-16; transportation of biomedical waste, O.C.G.A. § 40-6-253.1; solid waste management education program; establishment of Georgia Clean and Beautiful Advisory Committee and Interagency Council on Solid Waste Management, O.C.G.A. § 50-8-7.3.

COWETA COUNTY CODE

Article III. Litter Control

|             |                            |
|-------------|----------------------------|
| Sec. 62-86. | Intent.                    |
| Sec. 62-87. | Definitions.               |
| Sec. 62-88. | Unlawful activities.       |
| Sec. 62-89. | Vehicles to be covered.    |
| Sec. 62-90. | Prima facie evidence.      |
| Sec. 62-91. | Notification of violation. |
| Sec. 62-92. | Penalties.                 |
| Sec. 62-93. | Abatement.                 |

## ARTICLE I. IN GENERAL

**Sec. 62-1. Containers.**

All containers used by any person, firm, corporation or other legal entity for the storage or collection of garbage, debris or trash must comply with all county regulations. All garbage, debris or trash not placed in containers shall be kept free of rodents and insects. Containers must be removed from the roadside within 12 hours after garbage pickup.

(Code 1985, § 17-41)

**Sec. 62-2. Rules and regulations.**

(a) Domestic household garbage from the county only shall be placed only in county-approved containers.

(b) Garbage shall only be placed in county-approved containers.

(c) It is unlawful for any person, firm, corporation or other legal entity to place appliances, automobile parts, farm implements, furniture, or parts thereof, dead animal carcasses or parts, trees or limbs, industrial, manufacturing or processing waste or any other solid waste that is not household garbage in or around compactors.

(d) It shall be unlawful to scavenge, sort, or remove the contents of compactors.

(e) It shall be unlawful to set afire the contents of compactors or to place burning or smoldering materials in containers or compactors.

(Code 1985, § 17-42)

**Sec. 62-3. Private landfills and dumps prohibited.**

(a) Any person, firm, corporation or other legal entity who receives solid waste from another for disposal upon property that it owns or operates shall be guilty of a violation of this Code.

(b) Any person, firm, corporation or other legal entity that provides solid waste to another for disposal upon property that the other owns or controls or who disposes of solid waste onto the property of another without the consent of the owner of the property shall be guilty of a violation of this Code.

(c) For purposes of this section, "owner" shall mean the actual holder of legal title of property.

(d) These provisions shall apply whether the disposal is for payment or is gratis.

(Code 1985, § 17-43)

**Sec. 62-4. Open burning.**

Open burning is prohibited at all disposal sites.

(Code 1985, § 17-44)

**Sec. 62-5. Permission required for haulers outside of county.**

No person, firm, corporation or employee shall transport garbage from some other county in this state or from any other state for the purpose of dumping same at the transfer station or C & D landfill without first receiving written permission from the board of commissioners. (Code 1985, § 17-45)

**Sec. 62-6. Solid waste separation requirements.**

(a) Any person, firm, corporation or other legal entity using county facilities for solid waste disposal shall be required to separate trash from recyclable materials.

(b) Any person, firm, corporation or other legal entity that fails to separate recyclable materials from trash will be refused the use of county facilities for disposal. (Code 1985, § 17-46)

**Sec. 62-7. Operating procedures for transfer station.**

(a) *Weight.* Each vehicle will be weighted empty as it leaves the transfer station so that a record will be established of the weight of the vehicle for record-keeping purposes.

(b) *Method of payment.* Any vehicle that does not have a county registration permit will pay its tipping fee cash. If a vehicle does have a registration sticker an account will be established for billing each month.

(c) *Composition of waste.* All vehicles entering the landfill must report to the scale operation the exact composition of the solid waste.

(d) *Hazardous waste.* Any waste determined to be of a hazardous nature will be refused at the gate.

(e) *Recyclables.* Any recyclable materials that have been separated from other garbage may be delivered to a county-designated waste recovery location.

(f) *Private disposal facilities.* No subdivision, individual resident, company or municipality may develop its own landfill or dump site without the approval of the county according to the solid waste plan as defined by state law.

(g) *Hours of operation.* The hours of operation for the transfer station shall be established from time to time by the solid waste director with the concurrence of the board of commissioners.

(h) *Cost.* The charges for solid waste disposal at the transfer station shall be as established from time to time by the county commission.

(i) *Acceptance of recyclables.* Recyclable items will be accepted free of charge from entities which use the transfer station for waste disposal according to the following: Recyclable items must be delivered separate from waste. Any entity which deposits recyclables in the transfer station contaminated with waste will be subject to a \$100.00 fine.

(j) *Yard trimmings, limbs and untreated lumber.*

(1) Yard trimmings, limbs and untreated lumber will be accepted for the established tipping fee provided that they are separated from other types of waste.

(2) Any entity which deposits yard trimmings, limbs and untreated lumber combined with waste will be subject to a \$100.00 fine.

(k) *Prohibited items.* The following items will not be accepted for disposal at the transfer station:

(1) All types of cooling units, including but not limited to refrigerators, freezers and air conditioners.

(2) Any items specifically prohibited from disposal at solid waste disposal facilities as provided for in the Rules of Georgia Department of Natural Resources, Environmental Protection Division, Chapter 391-3-4, solid waste management.

(3) Items listed in sections 2, 3 and 4 above, unless delivered in accordance with these sections.

**Editor's note**—It is unclear as to what "sections 2, 3 and 4 above" refers.

(l) *Dead animals.* Dead animals will be accepted in accordance with the county policy on the acceptance of animals at the transfer station for disposal.

(Code 1985, § 17-47)

**Secs. 62-8—62-35. Reserved.**

## ARTICLE II. COLLECTION AND DISPOSAL

### DIVISION 1. GENERALLY

#### Sec. 62-36. Definitions.

All words and phrases in this chapter shall have their customary dictionary meanings, except those words specifically defined below.

(1) The word "shall" is mandatory and the word "may" is permissive.

(2) The phrase "solid waste" shall include every refuse accumulation of animal, fruit, or vegetable matter, liquid or otherwise, that attends the preparation, use, cooking, dealing in, or storing of meat, fish, fowl, fruit, vegetables; all paper, cardboard, wood, plastic, petroleum, glass, or other synthetic or natural products used for building or road construction or other purposes; all motor vehicle or other machinery parts, including motor vehicle tires; all household refuse, including all paper, plastic, aluminum, tin or other containers; all human waste and fluids and devices used for their storage or collection; dead animals; all chemicals of every type and description; all nuclear wastes or products of every type and description, and every other item generally accepted to be waste, hazardous waste, garbage, refuse, trash, or debris.

(3) The word "owner" shall mean the owner who will occupy the property as their primary residence.

(Code 1985, § 17-1)

Cross reference—Definitions generally, § 1-2.

#### **Sec. 62-37. Generally.**

(a) No person shall engage in solid waste handling in a manner which will be conducive to insect and rodent infestation or the harboring and feeding of wild dogs or other animals; impair the air quality; impair the quality of the ground or surface waters; impair the quality of the environment; or likely create other hazards to the public health, safety, or well-being as may be determined by the solid waste management director or his/her designee.

(b) Provisions of this article apply to all persons presently engaged in solid waste handling as well as all persons proposing to engage in solid waste handling.

(Code 1985, § 17-2)

#### **Sec. 62-38. Exemptions.**

(a) Provisions of this article shall not apply to any individual disposing of solid wastes originating from his or her own residence onto land or facilities owned by him or her when disposal of such wastes does not thereby adversely affect the public health. This article shall not apply to any individual, corporation, partnership, or cooperative disposing of livestock feeding facility waste from facilities with a total capacity of up to 1,000 cattle or 5,000 swine. If such individual, corporation, partnership, or cooperative shall provide an approved waste disposal system which is capable of properly disposing of the runoff from a ten-year storm, such individual, corporation, partnership or cooperative shall be further exempt regardless of total per head capacity. Nothing in this article shall limit the right of any person to use poultry or other animal manure for fertilizer.

(b) Provisions of this article shall not apply to any individual, partnership, corporation or other entity not collecting and disposing of municipal solid waste, commercial solid waste, construction/demolition waste, or industrial waste for a fee, but who are holders of valid solid waste handling permits from the Director of the Environmental Protection Division of the Georgia Department of Natural Resources pursuant to Rules of Georgia Department of Natural Resources Environmental Protection Division 391-3-4-.02 and 391-3-4-.06 for disposal or on-site burial. Such disposal shall be governed by state environmental protection regulations and by the requirements of the current county development regulations.

(Code 1985, § 17-3)

#### **Sec. 62-39. Enforcement.**

The county law enforcement agencies and the board of health shall be enforcement officers of this article unless otherwise provided.

(Code 1985, § 17-4)

**Sec. 62-40. Disposal of construction debris and waste.**

(a) Disposal of construction clearing debris and solid waste shall be permitted only to the extent allowed by the Georgia Comprehensive Solid Waste Management Act, O.C.G.A. § 12-8-20 et seq.

(b) Enforcement shall be in accordance with the Georgia Comprehensive Solid Waste Management Act.

(c) Procedures.

(1) Upon application for a building permit, applicant shall sign a statement acknowledging that portion of the Georgia Comprehensive Solid Waste Management Act that pertains to the disposal of construction clearing debris and solid waste.

(2) Upon completion of a construction project and prior to receipt of a certificate of occupancy, applicant for the building permit shall certify that no construction clearing debris and/or solid waste has been disposed of on the property; or shall provide a certified statement from the owner approving the disposal of construction clearing debris and solid waste on the property with a description of the disposal location.

(d) For purposes of this section burial of the following waste is specifically prohibited:

(1) *Industrial waste* means solid waste generated by manufacturing or industrial processes that is not a hazardous waste regulated under the Georgia Hazardous Waste Management Act (O.C.G.A. § 12-8-60 et seq.) and regulations promulgated by the board of natural resources, Chapter 391-3-11.

(2) *Putrescible waste* means wastes that are capable of being quickly decomposed by microorganisms. Examples of putrescible wastes include but are not necessarily limited to kitchen wastes, animal manure, offal, hatchery and poultry processing plant wastes, dead animals, garbage and waste which is contaminated by such wastes.

(3) *Hazardous waste* means any solid waste which has been defined as a hazardous waste in regulations promulgated by the board of natural resources, Chapter 391-3-11.

(4) *Liquid waste* means any waste material that is determined to contain "free liquids" as defined by Method 9095 Paint Filter Liquid Test, as described in "Test Methods for the Evaluation of Solid Wastes, Physical/Chemical Methods" (EPA Pub. No. SW-846).

(Code 1985, § 17-15)

**Secs. 62-41—62-55. Reserved.**

**DIVISION 2. FRANCHISES****Sec. 62-56. Prohibited acts.**

(a) No individual, partnership, corporation, or other entity shall engage in solid waste handling except in such a manner as to conform to and comply with this chapter and all applicable state and federal legislation, rules, regulation and orders.



(b) No individual, partnership, corporation, or other entity shall collect and dispose of municipal solid waste for a fee without obtaining a franchise from the governing authority.

(c) No solid waste may be disposed of by any person in an open dump, nor may any person cause, suffer, allow or permit open dumping on his property as defined by the Rules of the Georgia Department of Natural Resources, EPD, Chapter 391-3-4-04.

(1) A person shall be presumed to have violated this provision if, upon written notification by the county marshal that litter or solid waste has been dumped on that person's property, not otherwise subject to the provisions of O.C.G.A. §§ 16-7-51—16-7-54, fails to provide the county marshal or his/her designee within 15 days of notification with written assurance that the accumulation of litter or solid waste will be properly disposed of within 30 days from the original date of notification.

(2) No person who first informs the county marshal in writing that illegal dumping has occurred on a particular parcel of that person's property shall be deemed to have violated this provision if such person provides written assurance that all accumulated litter or solid waste will be properly disposed of within 45 days of the date of such written notification and subsequently provides proof of such disposal.

(d) The owner or occupant of any premises, office, business establishment institution, industry of similar facility shall be responsible for the collection and transportation of all solid waste accumulated at the premises, office, business establishment institution, or similar facility to the county transfer station or any other state approved solid waste disposal facility.

(e) No owner or occupant shall allow the accumulation on his or her residential unit or commercial establishment of solid waste where such solid waste creates or may create a health hazard to neighbors or other citizens, or is unsightly, or emits foul or obnoxious odors which constitute either a public or private nuisance. Such conduct shall constitute a violation of this article. Each day the solid waste remains on the premises may constitute a separate violation of this article.

(Code 1985, § 17-21; Ord. of 12-20-94(2))

#### **Sec. 62-57. Granting of franchises.**

(a) Copies of this article shall be available for public inspection in the offices of the county clerk, and at other locations as designated by the clerk.

(b) Nonexclusive franchises for residential or commercial collection and disposal shall be granted upon application to the director of solid waste management or his/her designee provided franchises meet at least the minimum requirements set out in section 62-58. Franchises authorized in collection and disposal of solid waste shall be granted for a period of no more than three calendar years from January 1 to December 31.

(c) Franchisees must agree to provide collection services in residential areas and may pick up only between the hours of 7:00 a.m. and 7:00 p.m. The board of commissioners reserves the discretionary authority to revoke or rescind any such franchise in the interest of the health, safety, welfare of the citizens of the county.

(Code 1985, § 17-22)

**Sec. 62-58. Requirements for franchisees.**

All franchisees must meet the following minimum requirements:

- (1) **Permit:** Prior to engaging in solid waste handling in the county, a franchisee must have obtained a solid waste handling permit from the Director of the Environmental Protection Division of the Georgia Department of Natural Resources or any successor agency authorized to issue permits pursuant to O.C.G.A. § 12-8-24.
- (2) **Insurance:** At the time of submission of a signed franchise agreement and prior to engaging in solid waste handling in the county, and annually thereafter, each franchisee shall provide to the solid waste department, proof of insurance as follows:
  - a. At least the minimum statutory workers' compensation insurance as required by Georgia law.
  - b. Comprehensive general liability insurance in the amount of \$500,000.00.
  - c. Vehicle liability:
    1. \$500,000.00 limit per occurrence for bodily injury and property damage.
    2. Comprehensive covering all owned, non-owned and hired vehicles.
    3. All insurance contracts must specify vehicles for "solid waste collection."
  - d. All comprehensive general liability and vehicle liability shall show the board of commissioners as an additional insured and shall provide for 30 days' notice of cancellation to the board of commissioners.
- (3) **Indemnification:** The franchisee shall, at its sole cost and expense, fully indemnify, defend and hold harmless the county, its officers, boards, commissions, employees and agents, against any and all claims, suits, actions, liability and judgments from third parties for damages which may be the result of willful, negligent or tortious conduct arising out of the business of collection, transportation and disposal of solid waste, whether or not the action or omission complained of is authorized, allowed or prohibited by this chapter.
- (4) **Financial stability:** All franchisees must submit acceptable evidence as required by the county of the franchisee's financial stability and ability to perform the franchise. This may include but is not limited to a franchise applicant submitting to a credit check.
- (5) **Vehicles:**
  - a. All vehicles and containers used for collection operations shall comply with the requirements of Rule 391-3-4-.06 of Chapter 391-3-4 (Solid Waste Management) of the Rules of the Georgia Department of Natural Resources, Environmental Protection Division, and must be compactor-type trucks, covered or enclosed vehicles. All vehicles must be constructed to be substantially leakproof, constructed of durable metal, easily cleanable and designed to prevent litter from escaping during movement of the vehicle.

- b. Vehicles and containers shall meet all requirements of the Georgia Department of Transportation for highway safety and local ordinances governing weight and size for the streets which must be traveled for pickup. All vehicles shall be subject to unannounced inspection by county officials for compliance with environmental and highway safety standards.
  - c. All vehicles shall have, conspicuously placed in three places on the vehicle, the name and telephone number of the franchisee. The letters must be of sufficient size and contrast so that they are legible from a distance of at least 100 feet.
  - d. Franchisees shall provide an adequate number of vehicles for regular collection services. Nothing in this article shall prohibit franchisees from sharing back-up vehicles with other franchisees provided that such sharing is adequately covered by insurance.
- (6) *Reporting requirements:* Within 30 days following the close of each calendar quarter ending March 31, June 30, September 30, and December 31 of each year of operation, the franchisee shall submit to the department of solid waste or his/her designee reports of operation showing the following:
- a. Tonnage figures showing total waste tonnage collected by service type and origin by governmental jurisdiction.
  - b. Tonnage figures showing total recovered materials collected by type, and proof of recycling in the form of manifests, bills of sale, or other records showing adequate proof of movement of the material to a recognized recycling facility.

The franchisee shall maintain at its place of business books and records showing the names and addresses of all owners and tenants with whom the franchisee contracted for solid waste handling services, including the street address for the property served. The franchisee shall submit upon reasonable request of the county to a customer audit by the director of solid waste management or financial audit by a certified public accountant or auditor employed by the county. Except for the operating reports described in subsections (6)a. and b. above, the information provided in accordance with this section shall be confidential. The above information shall be compiled for state reporting and compliance purposes by the county.

- (7) *Disposal assurance:* ~~As a condition of the franchise and/or franchise renewal, all applicants shall deposit solid waste only at the transfer station.~~

(Code 1985, § 17-23)

#### Sec. 62-59. Franchise fees.

A franchise fee as determined from time to time by the board of commissioners and listed in the schedule of fees and charges shall be charged to each franchisee.

(Code 1985, § 17-24)

**Sec. 62-60. Collection services.**

All franchisees granted a franchise for solid waste collection and removal for any area(s) shall provide a minimum of the following services:

- (1) The franchisee shall provide at a minimum weekly collection of waste packaged in a sanitary manner. Each franchisee shall set uniform fees for collection; and charges for residential collection and removal services shall be charged to the owners of the real property served, except that by requesting services, any tenant may become jointly bound to pay same.
- (2) Collection and removal services for disabled persons and senior citizens 65 years old and older as defined in section 62-61 shall be made and billed as directed in that section.
- (3) Franchisees may bill customers for three months' service in advance of collection, or following monthly collection, at the franchisee's option. The county assumes no responsibility to franchisee for the failure of any customer to keep current solid waste collection payments. Franchisees shall cooperate fully in any legal action taken by the county for failure of any owner or resident to comply with the provisions of this chapter.
- (4) For all commercial and industrial customers expressing a desire to recycle, the franchisee shall provide recycling services at a cost negotiated between the customer and the franchisee. The franchisee shall collect items for recycling, at least once every week pursuant to a list of guidelines or as otherwise agreed between the customer and the franchisee.
  - a. The board of commissioners reserves the right to change the type and number of recovered items the county will accept.
  - b. For all residential customers expressing a desire to recycle, franchisees shall provide one recycling container per residence to customers and may charge only to recoup its costs for that recycling container.
  - c. Franchisees may dispose of recovered materials at the transfer station only if the solid waste from residents, businesses, commercial enterprises or others providing the recovered materials are also disposed of at that same transfer station.
  - d. No additional fee, over the amount charged for residential curbside collection of waste, shall be charged by the franchisee for residential collections of recovered materials at least every other week.
  - e. Franchisees may credit customers' accounts at their option for collection of recovered materials and yard trimmings.
- (5) At the time that recovered materials are placed in designated recycling containers for regular collection, they shall become the property of the franchisee collecting waste for that address. During the 24-hour period commencing at 6:00 p.m. on any day preceding any day designated by the franchisee for collection of recovered materials,

no person other than an employee or agent of franchisee shall remove recovered material from the designated recycling container which has been properly placed for collection.

Nothing herein shall be construed to limit the right of any individual, organization or other entity from donating, selling or otherwise disposing of recovered material, if such disposal does not violate any applicable statute, regulation or ordinance.

- (6) The county at all times reserves the right to direct and control the time, place and manner of solid waste handling. Nothing in this chapter is intended to abridge the county's right to ownership and control of the waste stream.

(Code 1985, § 17-25; Ord. of 12-20-94(2))

#### **Sec. 62-61. Elderly and disabled citizens.**

(a) Nothing in this article is intended to prohibit the franchisee from offering discounts to senior citizens or the disabled.

(b) Any person who is a full-time resident of a residential dwelling unit as described above and who is disabled to the extent that he or she is incapable of moving his or her refuse shall obtain a physician's certificate as to such disability. Disabled persons shall not be required to place the refuse at the curbside. This subsection shall not apply unless all of the adult persons in a residential unit are disabled and obtain such physician's certificates. Certificates must be mailed to the franchisee with a copy to the director of solid waste. This subsection also applies to temporary disability not to exceed 90 days. Franchisees may make reasonable rules for noncurbside collection for elderly and disabled persons.

(c) Franchisees shall provide recycling services to disabled and elderly persons to the same extent such services may be provided under section 62-60.

(Code 1985, § 17-26)

#### **Sec. 62-62. Franchise transfers.**

(a) *Approval of transfer—Requirements.* If a franchisee sells or transfers its franchise to another, the franchise shall be transferred as well. Approval of the transfer by the solid waste management director shall be granted provided:

- (1) All documents regarding the transfer are submitted to the solid waste management office for review at least seven days prior to transfer;
- (2) All outstanding accounts with the county are paid in full at the time of transfer; and
- (3) The individual, corporation or entity acquiring the franchise is found to be financially stable and the individual, or any partners or shareholders of the corporation or entity have not previously held a franchise and violated this chapter.

(b) *Denial of transfer—Appeal.* If a request for a franchise transfer is denied by the solid waste management director, such denial may be appealed to the board of commissioners

within ten days after the written notice of denial. The board of commissioners will review all evidence submitted to them and within 30 days grant, conditionally grant or deny the franchise transfer.

(Code 1985, § 17-27)

**Secs. 62-63—62-85. Reserved.**

### ARTICLE III LITTER CONTROL\*

#### Sec. 62-86. Intent.

It is the intention of the board of commissioners by this chapter to provide for the uniform prohibition throughout the county of any and all littering on public or private property, and to curb thereby the desecration of the beauty of the county, and to promote the health, safety and general welfare of all of the citizens of the county, and to assure that county residents properly dispose of garbage and refuse.

(Code 1985, § 10.5-1)

#### Sec. 62-87. Definitions.

As used in this chapter, unless the context clearly requires otherwise, the following words or phrases shall have the following meanings:

*Litter* shall include all waste material, rubbish, tin cans, bottles, sand, gravel, concrete, slag, refuse, trash, debris, dead animals or discarded materials of any and every kind and description.

*Nuisance* means any use of premises or of building exteriors which is detrimental to the property of others or which causes or tends to cause substantial diminution in the value of other property in the neighborhood in which such premises is located. This includes but is not limited to the keeping of the following: ashes, rubbish, garbage, lumber, bricks, cinder blocks, insulation materials, building debris, refuse, litter, or waste of any kind whether liquid or solid.

*Public or private property* shall be all-inclusive, such that no property shall be exempt from regulation by this article.

(Code 1985, § 10.5-2)

**Cross reference—Definitions generally, § 1-2.**

#### Sec. 62-88. Unlawful activities.

(a) It shall be unlawful for any person, in person or by his or her agent, employee or servant, to cast, throw, sweep, sift, deposit, accumulate, dump, place, leave, or to cause or permit the casting, throwing, sweeping, sifting, depositing, accumulating, dumping, placing,

\*State law references—Litter Control Law, O.C.G.A. § 16-7-40 et seq.; littering highways, O.C.G.A. § 40-6-249.

or leaving in any manner in or upon any public or private place in the county or any lake, river, stream, public body of water, drain, sewer or receiving basin within the jurisdiction of the county any kind of litter, waste article, thing or substance whatsoever, whether liquid or solid. Nor shall any person cast, throw, sweep, sift, deposit, accumulate, dump, place or leave any of the aforementioned items anywhere within the jurisdiction of the county in such manner that it may be carried or deposited in whole or in part, by the action of the wind, rain or other precipitation to any aforementioned place.

(b) This section shall not apply to the deposit of material under a permit authorized by any ordinance of the county; or to goods, wares or merchandise deposited upon any public way or other public place temporarily, in a necessary course of trade, and removed therefrom within two hours after being so deposited; or to articles or things deposited in or conducted into the county sewer system through lawful drains in accordance with the ordinances of the county relating thereto.

(c) This section shall not apply to litter which is placed into a litter receptacle or container installed on such property, and used for its designated purpose.  
(Code 1985, § 10.5-3)

**Sec. 62-89. Vehicles to be covered.**

(a) It shall be unlawful for any person, in person or by his or her agent, employee, or servant, to use any vehicle to haul any kind of dirt, rubbish, waste, articles or things or substance, whether liquid or solid, unless such vehicle is covered to prevent any part of its load from spilling or dropping at all times while such vehicle is in motion on any street or alley in the county.

(b) The requirements of this section for covering such vehicles shall not apply to vehicles carrying brush cuttings, tree trimmings, branches, logs and similar waste material if such matter is securely lashed to such vehicle to prevent spilling or dropping of the aforesaid.  
(Code 1985, § 10.5-4)

**Sec. 62-90. Prima facie evidence.**

(a) Whenever litter is thrown, placed, deposited, dropped, dumped or cast from any motor vehicle, boat, airplane, or other conveyance containing more than one person, it shall be prima facie evidence that the operator of the conveyance shall have violated this article.

(b) Whenever any litter which is thrown, deposited, dropped, dumped, cast or accumulated on public or private property in violation of this article is discovered to contain items which display the name of a person thereon in such a way as to indicate that the item belongs or belonged to such person, it shall be a rebuttable presumption that such person has violated this article.  
(Code 1985, § 10.5-5)

**Sec. 62-91. Notification of violation.**

Notice of a violation of this article shall be made by serving a citation by mail or in person by an officer, agent or official of the county empowered by this Code or by O.C.G.A. to issue citations on behalf of the county.

(Code 1985, § 10.5-6)

**Sec. 62-92. Penalties.****(a) Violation based on prima facie evidence:**

- (1) Any person charged with violating or charged with causing the violation of any of the provisions of this article based on prima facie evidence as set out in section 62-90 shall be fined \$25.00 for the first offense, shall be fined \$50.00 for the second offense, and shall be fined \$100.00 for the third offense. Any offense thereafter shall be considered to be of the high and aggravated nature and may be penalized following the procedure as set out below in subsection (b).
- (2) Any person charged with the violation of this section may answer the charge by:
  - a. Mailing the amount fined to the appropriate authority.
  - b. Paying the amount in person at the location specified on the citation.
  - c. Appearing in person within seven days at the location shown on the citation to request a court hearing.

**(b) Violation of a high and aggravated nature:**

- (1) Any person violating or causing the violation of any of the provisions of this article in such a manner to indicate disregard for the health and safety of the general public or the environment of the county shall be fined not less than \$100.00 or more than \$1,000.00 or 12 months imprisonment for such offense.
- (2) In sound discretion of the court in which a conviction is obtained, such persons may also be directed to pick up and remove from any public street or highway or public right-of-way for a distance not to exceed one mile per day, any litter deposited and any and all litter deposited thereon by anyone else prior to the date of execution and implementation of the sentence.
- (3) Said person, in the sound discretion of the court, may be directed to pick up and remove from any public park or any other public property or with the prior permission of the owner or tenant of any private property upon which it can be established by competent evidence that the convicted person has deposited litter, any and all litter deposited thereon by the convicted person or anyone prior to the date of the execution and implementation of the sentence.
- (4) The court may publish names of persons convicted of violating this article in the legal organ of the county.

(Code 1985, § 10.5-7)



**Sec. 62-93. Abatement.**

Whenever any person convicted of violating this article shall continue to maintain property in violation of this article, an appropriate designee of the board of commissioners may be empowered to enter upon the property and correct the unlawful condition, and to place a lien against the property for the cost of such litter removal and the cost of preparing and filing the lien, including legal expenses incurred.

(Code 1985, § 10.5-8)

Chapter 16

SOLID WASTE MANAGEMENT\*

- Art. I. In General, §§ 16-1—16-20  
Art. II. Litter, §§ 16-21—16-40  
Art. III. Trash, §§ 16-41—16-60  
Art. IV. Garbage, §§ 16-61—16-64

ARTICLE I. IN GENERAL

Sec. 16-1. Short title.

This chapter shall be known as the "West Point Solid Waste Management Ordinance."  
(Ord. of 6-13-94)

Sec. 16-2. Purpose.

The purpose of the adoption of this chapter is to define and regulate the management of all solid waste within the corporate limits of the city.  
(Ord. of 6-13-94)

Sec. 16-3. Definitions.

The following words, terms and phrases, when used in this chapter, shall have the meanings ascribed to them in this section, except where context clearly indicates a different meaning.

*Appliances* means residential and commercial refrigerators, stoves, washers, dryers, water heaters and similar items also referred to as "white goods."

*Approved receptacle* means a galvanized metal or durable plastic container of a capacity of not less than twenty (20) gallons and not to exceed forty-five (45) gallons, having two (2) handles on the side thereof or a bail by which it may be lifted, with a tight-fitting metal or plastic top with a handle and so constructed as to permit the free discharge of its contents; and shall have affixed to the body in a clearly visible location, a decal indicating the owner has paid

**\*Editor's note**—An ordinance adopted June 13, 1994, set out a new Ch. 16 and repealed the previous Ch. 16, §§ 16-1—16-10, which pertained to similar subject matter and derived from Code 1967, §§ 11-32—11-3—11-42.

**Cross references**—Nuisances, Ch. 11; sewerage, Ch. 13.

**State law references**—Authorization to provide garbage and solid waste collection and disposal, Ga. Const. art. 9, sec. 2, par. 3; Solid Waste Management Act, O.C.G.A. § 12-8-20 et seq.; hazardous waste disposal, O.C.G.A. § 12-8-61 et seq.; Litter Control Law, O.C.G.A. § 16-7-40; transporting garbage or waste across state or county boundaries pursuant to contract, O.C.G.A. § 36-1-16; Resource Recovery Development Authorities Law, O.C.G.A. § 36-63-1 et seq.; littering highways, O.C.G.A. § 40-6-249; wrecker driver required to remove glass and parts of vehicle being towed, O.C.G.A. § 40-6-277.

the monthly fee for garbage collection for that container as specified in the schedule of fees maintained in the office of the city clerk-treasurer. Containers shall be waterproof. Oil or grease drums, paint cans and similar salvaged containers shall not be acceptable.

*Asbestos* means any naturally occurring hydrated mineral silicates separable into commercially used fibers, specifically the asbestiform varieties of serpentine, chrysotile cummingtonite-grunerite, amosite, reiheckite, crocidolite, anthophyllite, tremolite, and actinolite.

*Baling* means a volume reduction technique whereby solid waste is compressed into bales.

*Biomedical waste* means and includes the following:

- (1) Pathological waste, which means all recognizable human tissue and body parts which are removed during surgery, obstetrical procedures, autopsy, and laboratory procedures.
- (2) Biological waste, which means bulk blood and blood products, exudates, secretions, suctionings, and other bulk body fluids which cannot or are not directly discarded into a municipal sewer system.
- (3) Cultures and stocks of infectious agents and associated biologicals including cultures from medical and pathological laboratories, cultures and stocks of infectious agents from research and industrial laboratories, wastes from the production of biologicals, discarded live vaccines, culture dishes, and devices used to transfer, inoculate, and mix cultures.
- (4) Contaminated animal carcasses, body parts, their bedding and other wastes from such animals which have been exposed to infectious agents, capable of causing disease in man, during research, production of biologicals, or testing of pharmaceuticals.
- (5) Sharps, which means any discarded article that may cause punctures or cuts. Such waste includes, but is not limited to, items such as needles, IV tubing and syringe needles attached, and scalpel blades.
- (6) Chemotherapy waste, which means any disposable material which has come in contact with cytotoxic/antineoplastic agents (agents toxic to cells) and/or antineoplastic agents (agents that inhibit or prevent the growth and spread of tumors or malignant cells) during the preparation, handling, and administration of such agents. Such waste includes, but is not limited to, masks, gloves, gowns, empty IV tubing bags and vials, and other contaminated materials. The above waste must first be classified as empty which means such quantity that it is not subject to other federal or state waste management regulations prior to being handled as biomedical waste.
- (7) Discarded medical equipment and parts, not including expendable supplies and materials which have not been decontaminated, that were in contact with infectious agents.

*Commercial establishment* means any hotel, motel, apartment house, roominghouse, business, professional, or medical office, public or semipublic establishment of any nature or kind whatsoever, other than a single dwelling or residential unit.

*Commercial hauler* means any person who collects and/or transports solid waste for a fee, as a business, or as an adjunct to a business.

*Commercial waste* means rubbish other than appliances, furniture, yard trash and tree and shrubbery trimmings which is normally produced attendant to routine office, institutional, and retail housekeeping and includes paper, glass, cans, wood, crockery, metals, packing, dust, sweepings, rags and similar materials but does not include garbage, dead animals, animal residue or manures, ashes, residue from incineration, construction/demolition waste, biomedical waste, hazardous waste, liquid waste, food processing waste, industrial waste, sludge or vehicles.

*Composting* means the controlled biological decomposition of organic solid waste.

*Construction/demolition waste* means the waste building materials and rubble resulting from construction, remodeling, repair, and demolition operations on pavements, houses, buildings and other structures. Such wastes include, but are not limited to, wood, bricks, metal, concrete, wall board, paper or cardboard.

*Contractor* means anyone engaged for hire to perform yard work, tree cutting, painting, roofing, carpentry, etc., or anyone arranging for subcontractors to perform such services.

*Disposal facility* means any facility or location where any treatment, utilization, processing, or deposition of solid waste occurs.

*Disposal site* means the location where the final deposition of solid waste occurs.

*Excess garbage bag* means a thirty-gallon heavy duty plastic bag with an appropriate tag affixed, as specified in the schedule of fees maintained in the office of the city clerk-treasurer, which may only be used at the rate of one (1) per week per premises for the purpose of collection by the city of excess garbage, household waste and/or business trash that has been otherwise handled in accordance with this chapter, additional to what has been deposited in appropriate garbage receptacles and recyclable containers on such commercial and residential premises.

*Garbage* means food waste, including waste accumulation of animal or vegetable matter used or intended for use as food, or that attends the preparation, use, cooking, dealing in or storing of meat, fish, fowl, fruit or vegetables.

*Handling* means the storage, collection, transportation, treatment, utilization, processing, or disposal of solid wastes, or any combination thereof.

*Handling facility* means any location where any storage, collection, transportation, treatment, utilization, processing, or disposal of solid waste, or any combination thereof, occurs.

*Hazardous waste* means any solid or liquid waste material which has been defined as a hazardous waste in rules or regulations promulgated by the state department of natural resources and/or environmental protection division and also specifically includes explosives, offal, fecal matter, acids, chemicals, caustics, asbestos, poisons, paint products, tires, petro-

leum products, products resulting from the manufacture or use of pesticides and drugs (other than normal household use); pathological wastes; highly flammable or explosive wastes; toxic wastes and sewage sludges.

*Industrial waste* means waste material from industrial processes, manufacturing, canneries, slaughterhouses, packing plants, poultry processing plants, or similar industries, and large quantities of condemned foods. Industrial refuse shall also include waste material from construction, remodeling and repair operations on houses, commercial buildings, and other structures, such as concrete, bricks, plaster, stone, earth, lumber, shavings and sawdust.

*Landfill* means a method of disposing of solid wastes, other than putrescible wastes or hazardous wastes, on land by placing an earth cover thereon.

*Litter* means garbage, trash, refuse, rubbish, and all other waste material that, if thrown or deposited contrary to the provisions of this chapter, would tend to create a danger to public health, safety and welfare.

*Multiple dwelling* means a building designed for and containing two (2) or more dwelling units.

*Multiple residential unit* means any apartment, group of apartments, condominium or similar multiple family unit used for dwelling places of more than two (2) family units.

*Owner* means any person owning, leasing, renting, occupying or managing any premises in the city.

*Private premises* means any dwelling, house, building or other structure designed or used wholly or in part for private residential purposes, whether inhabited or temporarily or continuously uninhabited, and shall include any yard, grounds, vacant lot, walk, driveway, parking areas, porch, steps, vestibule or mailbox belonging or appurtenant to such dwelling, house, building or other structure.

*Public place* means any street, sidewalk, boulevard, alley or other public way, and any public park, square, space, building or grounds.

*Putrescible wastes* means wastes that are capable of being decomposed by microorganisms. Examples of putrescible wastes include but are not necessarily limited to kitchen wastes, animal manure, offal, hatchery and poultry processing plant wastes, and garbage.

*Recycling* means any process by which reclaimed materials or other materials which would otherwise become solid waste are collected, separated, or processed and reused or returned to use in the form of raw materials or products.

*Refuse* means all putrescible and nonputrescible solid waste, except body waste, including garbage, trash, rubbish, ashes, street cleaning, dead animals, abandoned motor vehicles, tires, and solid wastes from markets and industrial uses.

*Residential unit* means any freestanding structure or shelter or any part thereof used or constructed for use as a residence for one (1) family.

*Rubbish* means waste paper, cartons, boxes, wood, tree branches, yard trimmings, furniture, appliances, metals, cans, glass crockery, packing and/or similar materials.

*Sanitary landfill* means a method of disposing of putrescible waste and/or hazardous waste on land by placing an earth cover thereon.

*Scavenge* means uncontrolled picking from discarded solid waste materials.

*Scavenger* means any person who salvages or collects for resale or use, any garbage, paper, cardboard, boxes, crates or other wastes which are being or are to be disposed of from any residence or establishment where people reside, congregate, or are employed.

*Solid waste* means putrescible and nonputrescible wastes (except water-carried body waste) and shall include garbage, rubbish (paper, cartons, boxes, wood, tree and shrubbery trimmings, yard waste, furniture and appliances, metal, tin cans, glass crockery, or packing), ashes, street refuse, dead animals, sewage sludges, animal manures, industrial wastes (waste materials generated in industrial operations), residue from incineration, food processing wastes, demolition wastes, vehicle waste, incineration, dredging wastes, construction wastes, and any other waste material in a solid or semi-solid state not otherwise defined in these definitions.

*Stump* means the lower portion of the trunk of a tree or shrub eight (8) inches in diameter, or larger, and including portions of the root system.

*Tire or tires* means any tires or recognizable portion of a tire or tires.

*Transfer station* means a facility used to transfer solid waste from one (1) transportation vehicle to another for transportation to a disposal site or processing operation.

*Trash* means nonputrescible solid wastes including both combustible and noncombustible wastes, such as paper, wrappings, cigarettes, cardboard, tin cans, wood, glass, bedding, crockery, plastic and similar materials, tree branches, twigs, grass, shrub and yard clippings, weeds, leaves, and street sweepings.

(Ord. of 6-13-94; Ord. of 3-11-96)

#### **Sec. 16-4. Violation; penalty.**

Any person violating any section of this chapter shall be punished as provided by section 1-14 of this Code.

(Ord. of 6-13-94)

**Secs. 16-5—16-20. Reserved.**

## **ARTICLE II. LITTER**

#### **Sec. 16-21. Generally.**

(a) No person shall throw or deposit litter in or upon any street, sidewalk or other public place within the city except in public receptacles or in authorized receptacles for collection.

(b) Persons placing litter in public receptacles or in authorized private receptacles shall do so in such a manner as to prevent it from being carried or deposited by the elements upon any street, sidewalk or other public place or upon private property.

(Ord. of 6-13-94)

**Sec. 16-22. Removal of litter by city.**

In cases where litter has remained on private property for a period of at least seven (7) days following the giving of written notice to remove litter to the owner of the property by the city clerk-treasurer or his designee, the city clerk-treasurer or his designee is authorized to have the litter removed by city crews and to bill the owner for the cost of the removal service. If charges for cleanup service are not paid within thirty (30) days from date of billing, execution may be issued by the city clerk against the property upon which such service was rendered for the amount of such cleanup service charge and after the recording of such executions on the execution docket in the office of the clerk of the superior court of the county, the executions shall constitute a lien on the property upon which the service was rendered until the same have been fully paid and satisfied. Executions may be enforced in the same manner and with the addition of interest and costs as provided by law for enforcement of executions for ad valorem taxes of the city.

(Ord. of 6-13-94)

**Sec. 16-23. Sweeping litter into gutters; cleanliness of sidewalk.**

No person shall sweep into or deposit in any gutter, street or other public place within the city the accumulation of litter from any building or lot or from any private or public sidewalk or driveway, service alley or parking area. Persons owning or occupying residential or commercial property shall keep the sidewalk, service alleys, parking areas, and all premises free of litter.

(Ord. of 6-13-94)

**Sec. 16-24. Littering from vehicles.**

No person, while a driver or passenger in a vehicle, shall throw or deposit litter upon any street or other public place within the city, or upon private property.

(Ord. of 6-13-94)

**Sec. 16-25. Motor vehicle litter.**

It shall be unlawful for any person to operate any vehicle upon any public street, lane, alley, park, or reserve in the city unless the cargo is in containers or covered by a tarpaulin in such a manner as to prevent any part of its contents from falling or being scattered upon any public street, lane, alley, park or reserve in the city. Concrete mixers shall be loaded in such a manner as to prevent any spillage. No person shall drive or move any vehicle or truck within the city, the wheels or tires of which carry onto or deposit in any street, alley or other public place mud, dirt, sticky substances, litter or foreign matter of any kind.

(Ord. of 6-13-94)

**Sec. 16-26. Littering in parks.**

No person shall throw or deposit litter in any park within the city except in public receptacles and in such a manner that the litter will be prevented from being carried or deposited by the elements upon any part of the park or upon any street or other public place. Where public receptacles are not provided, all such litter shall be carried away from the park by the person responsible for its presence and properly disposed of elsewhere as provided herein.

(Ord. of 6-13-94)

**Sec. 16-27. Littering in water.**

No person shall throw or deposit litter in any river, fountain, pond, lake, stream, ditch, canal, or any other body of water, in a park, or elsewhere within the city.

(Ord. of 6-13-94)

**Sec. 16-28. Littering on private property.**

(a) No person shall throw or deposit litter on any occupied or unoccupied private property, including vacant lots, within the city, whether owned by that person or not, except that the owner or person in control of private property may maintain authorized private receptacles for collection in such a manner that litter will be prevented from being carried or deposited by the elements upon any street, sidewalk or other public place, or upon any private property.

(b) The owner or person in control of any private property shall at all times maintain the premises free of litter on any open or vacant private property including open or vacant lots within the city whether owned by that person or not.

(Ord. of 6-13-94)

**Sec. 16-29. Construction site cleanliness.**

The property owners and the primary contractor in charge of a construction site are required to furnish litter containers for construction and workmen's litter. All such litter shall be picked up and placed in containers at the end of each work day. The contractor or owner of the property is responsible for removal of all materials from the premises.

(Ord. of 6-13-94)

**Secs. 16-30—16-40. Reserved.****ARTICLE III. TRASH****Sec. 16-41. Trash collections.**

(a) Trash collections shall be at a time and in a manner prescribed by the city clerk-treasurer, provided that at no time shall trash be placed in such a manner to obstruct gutters, drains, sidewalks, or streets.



- (b) Trash, when placed in containers or bundles, must not be over fifty (50) pounds.
- (c) Leaves, straw, grass clippings, and similar items must be placed for collection in neat piles separate from all other trash immediately behind the curbs on curbed streets and immediately adjacent to the roadway on uncurbed streets. In no event shall they be placed in the gutters, drainage ditches, or streets.
- (d) Tree limbs, trunks, branches, or cuttings shall not exceed five (5) feet in length or six (6) inches in diameter and shall be stacked separately from other trash.
- (e) Furniture, not including appliances, will be collected provided it is stacked separately from other trash.
- (f) Residences or businesses are limited to not more than five (5) cubic yards of trash in total, excluding leaves, that may be collected at one (1) time.
- (g) Upon request, and when available, a mass collection unit will be provided to residents who wish to dispose of quantities of trash larger than five (5) cubic yards, such as associated with cutting large amounts of shrubbery or brush. Units may not be available unless they are requested at least twenty-four (24) hours in advance of when they are needed. Units will be collected on the day following the date of placement, except that units placed on Friday will be collected the following Monday. An additional fee will be charged for use of these units as specified in the schedule of fees maintained in the office of the city clerk-treasurer.
- (h) Cardboard boxes may be collected provided they are collapsed and tied or otherwise bundled.
- (i) It shall be unlawful for any person to scatter or to allow to be scattered any trash placed by the street for collection.  
(Ord. of 6-13-94)

**Sec. 16-42. Refuse not acceptable for collection.**

- (a) Rocks, dirt, concrete blocks, bricks, and similar materials are not considered trash and shall not be collected.
- (b) Materials resulting from the construction, remodeling, or demolition of buildings or fixtures, or containing building materials, including floor coverings, carpets, or scraps of these materials shall not be collected; the primary contractor, or if there is no contractor, the owner of the property upon which the work was done shall be responsible for removing all such waste materials and disposing of same in a lawful manner.
- (c) No debris from burned houses or their contents shall be collected.
- (d) No leaves, limbs or other trash placed by a property owner or any other person on a vacant lot within the city shall be collected.
- (e) No motor vehicles, machinery, or parts thereof shall be collected, including tires.
- (f) No hazardous waste or biomedical waste, as defined by this chapter, shall be collected.

(g) No trees larger than six (6) inches in diameter or longer than five (5) feet shall be collected.

(h) No stumps, as defined in this chapter, shall be collected.

(i) No appliances shall be collected.

(Ord. of 6-13-94)

**Sec. 16-43. Private landscape or yard maintenance contractors required to remove all debris.**

(a) All persons engaged in the business of trimming or removing trees, shrubbery or similar growth shall remove from the property where the work is being done all sawdust, branches, stumps, and all portions of the byproducts of the trimming or removal service.

(b) All persons engaged in the business of yard maintenance, landscaping, or nurseryman shall remove from the property all rubbish, including rocks, dirt, grass, trimmings and other byproducts of that service.

(c) It shall be unlawful for any person to trim trees or bushes or do landscaping or yard work for compensation within the city unless the byproducts from those services are immediately removed from the premises and placed or deposited by the contractor in a disposal site. Such materials shall not be destroyed or removed by burning, except with a written permit from the fire department. "Compensation" shall be interpreted to include receiving as compensation the wood, limbs or other residue from such trimming and cutting. Any form of compensation shall place the burden of disposal directly upon the person performing the task.

(d) Any owner of property within the city on which trees larger than six (6) inches in diameter are cut down, whether by the owner or by another, is required to promptly remove or have removed all materials resulting from the cutting of such trees from such property at his own expense when such materials are clearly visible from any public street, alley, sidewalk or other public place, or from the property of another that adjoins the property on which the trees were cut down.

(Ord. of 6-13-94)

**Secs. 16-44—16-60. Reserved.**

#### ARTICLE IV. GARBAGE

**Sec. 16-61. Unlawful acts.**

(a) It shall be unlawful for any person to place garbage for collection in a box, tub, crate, or any other container except one meeting the definition of an approved garbage receptacle or excess garbage bag as defined in this chapter.

(b) It shall be unlawful for any person to permit stacks or piles of commercial or residential solid wastes to obstruct drains, sidewalks, alleys, or streets.

(c) It shall be unlawful for any person to cause or permit to spill, or permit to remain spilled, any garbage upon any street, sidewalk, yard, or vacant lot within the city.

(d) It shall be unlawful for any person to cause or permit to accumulate any dust, ashes, trash, garbage, litter, or other materials in such a manner that it can be blown away by the wind or other force, when confinement in a container would have prevented the blowing of such materials.

(e) It shall be unlawful for any person to place garbage, trash, litter, or other refuse for collection in a container owned by another person without the express consent or authorization of the owner.

(f) It shall be unlawful for any person to place any<sup>as</sup> biomedical waste as defined in this chapter in an approved garbage receptacle or bag for collection by the city. Such biomedical waste shall be bagged or placed in a container separately and properly disposed of by the owner or person in control of the property on which such waste was generated, and shall not be collected by the city.

(g) It shall be unlawful for any person to place any hazardous waste, as defined by this chapter, in an approved garbage receptacle or bag for collection by the city.  
(Ord. of 6-13-94)

**Sec. 16-62. Residential garbage collection.**

(a) Residential garbage placed in approved receptacles or excess garbage bags as defined in this chapter and placed so as to be easily accessible from the street shall be collected at least once a week, provided, however, that no garbage will be collected if any of the following conditions exist:

- (1) Receptacles are within a fenced-in area with gates locked, wired or tied shut; or
- (2) Dogs are loose in yard; or
- (3) Receptacles are inside of a carport or garage, utility building; or
- (4) Hypodermic needles are in receptacles, unless such needles are placed inside a closed, nonpermeable plastic bottle and placed inside the receptacles.

(b) Fees for residential garbage collection shall be listed in the schedule of fees and charges maintained in the clerk-treasurer's office.  
(Ord. of 6-13-94)

**Sec. 16-63. Commercial garbage collection.**

(a) Garbage and rubbish accumulated by retail and wholesale merchants, restaurants, cafeterias and other business institutions shall, when possible and when placed in approved garbage receptacles or excess garbage bags as defined in this chapter, be collected at least once per week.

(b) Cardboard boxes may be collected provided they are collapsed and tied or otherwise bundled.

(c) Approved garbage receptacles, excess garbage bags and cardboard should be placed outside a commercial establishment not more than twenty-four (24) hours in advance of the next scheduled collection date. Such items should be placed in front of the business where possible, near the curb or edge of sidewalk. In no instance shall garbage be placed so as to block any sidewalk, driveway, alley or street.

(d) The proprietor or person in charge of every business and commercial establishment in the city is hereby required to keep the sidewalks, driveways, yards and parking areas abutting such business clean at all times with sweepings placed in a container.

(e) All schools, colleges, churches, hospitals, fraternal, charitable, recreational, and similar institutions operated for charitable or nonprofit purposes, public housing projects, and government functions, will be picked up by the city, except those businesses and institutions described in section (f) below.

(f) The city will not collect any garbage from those businesses, institutions, and other organizations who contract with commercial haulers for solid waste disposal services.

(g) Any business, institution, or other commercial location in the city contracting with a private waste disposal firm for placement on a permanent or semi-permanent basis of a mass collection unit commonly referred to as a "dumpster," shall comply with the following conditions:

- (1) Whenever a dumpster is placed at any location in the city and such location is in a residential district or abuts any area used for residential purposes, the dumpster shall be enclosed by an eight-foot-high visual screen. Such visual screen shall be constructed of masonry, solid wood or chain link fence, provided that chain link fence shall be modified to fully screen the dumpster. Such screen or wall shall be constructed so as to provide sufficient space between it and the dumpster to allow for cleaning and maintenance.
- (2) Failure of the owner or proprietor of the commercial establishment where such dumpster is located to maintain such screens in good condition and keep surrounding areas free of litter, trash and garbage shall be unlawful.

(h) Fees for commercial garbage collection shall be listed in the schedule of fees and charges maintained in the clerk-treasurer's office.

(Ord. of 6-13-94)

#### **Sec. 16-64. Industrial waste.**

Industrial waste, garbage and trash resulting from manufacturing, assembling, processing, and other industrial operations of any kind shall not be collected by the city. Such garbage and waste materials shall be disposed of by the owner at their own expense in a lawful manner.

(Ord. of 6-13-94)

[The next page is 1095]

SOLID WASTE AND SCRAP TIRE  
MANAGEMENT ORDINANCE  
OF OCONEE COUNTY

Title

An ordinance defining litter, and public or private property, blue bag, scrap tires and scrap tire generators and carriers; regulating the disposal of litter and scrap tires, the transportation of litter and scrap tires, the use of garbage or litter containers or receptacles and the use of Sanitary Landfills, Inert Landfills, and Construction and Demolition Landfills; prescribing penalties for the violation of said Ordinance; and for other purposes related thereto.

Enactment Clause

For the purpose of promoting the health, safety and general welfare of the present and future inhabitants of Oconee County and to provide an orderly and safe disposal of waste, the Board of Commissioners of Oconee county does hereby ordain and enact into law the following:

SECTION 1 - DEFINITION

The term "litter" and "public or private property" shall mean the same as said terms are defined in O.C.G.A. Section 16-7-42(1) and (2).

The term "blue bag" shall mean a plastic bag designed and sold by the County for the authorized and specific purpose of disposing of garbage at a County solid waste collection and recycling center.

The term "scrap tire" means a tire that is no longer suitable for its original intended purpose because of wear, damage, or defect.

The term "scrap tire generator" means any person who generates scrap tires as is defined in O.C.G.A Section 391-3-4-.19.(2.i).

The term "scrap tire generator" means any person who transports scrap tires as is defined in O.C.G.A Section 391-3-4-.19.(2.h).

SECTION 2 - WASTE DISPOSAL - GENERAL

(A) The owner or occupant of any premises shall be responsible for the sanitary handling and disposition of all litter, scrap tires, garbage and refuse on the premises used or occupied by such person.

(B) It shall be unlawful to dump, deposit, throw or leave or to cause or permit the dumping, depositing, placing, throwing or leaving of litter or scrap tires at any place in Oconee County including, without limitations, any public or private property in the County or any waters in this County unless such litter originates in this County and:

(1) The property is designated by the Board of Commissioners or its duly designated agent for disposal of litter and scrap tires and the person is authorized to use such property;

(2) The litter or scrap tire is placed into a receptacle or container installed specifically for litter or scrap tires on such property; or

(3) The person is the owner or tenant in lawful possession of such property or has first obtained consent of the owner or tenant in lawful possession or unless the act is done under the personal direction of the owner or tenant, all in a manner consistent with the public welfare and not otherwise in violation of law.

(C) All persons defined as scrap tire generators shall be subject to rules as defined in O.C.G.A Section 391-3-4-.19 and handle scrap tires in accordance with the provisions of O.C.G.A. 12-8-20, et seq., and the Rules for Solid Waste Management, Chapter 391-3-4, applicable to solid waste.

### **SECTION 3 - TRANSPORTING LITTER AND SCRAP TIRES**

(A) It shall be unlawful to drive or operate a vehicle in Oconee County hauling wet or moist waste that leaks, flows freely or spills from said vehicle.

(B) Any litter or waste hauled on a moving vehicle shall be covered or secured in such a manner that litter will not blow or escape from said vehicle while moving or parked on public streets or roadways in Oconee County.

(C) Any scrap tire carrier shall have a proper manifest document for a load of scrap tires traveling through Oconee County.

### **SECTION 4 - REGULATION OF GARBAGE OR LITTER CONTAINERS OR RECEPTACLES**

(A) All garbage or litter containers or receptacles shall be maintained in as sanitary a manner as is reasonably possible consistent with its use for garbage and litter disposal.

(B) Persons using garbage or litter containers or receptacles shall deposit all authorized garbage and refuse in the container or receptacle;

(C) No person shall deposit a scrap tire in any container or receptacle unless authorized by the owner of the receptacle or oconee County;

(D) No person shall deposit any burning or smoldering material in any such container or receptacle;

(E) No person shall set fire to the contents of any such container or receptacle;

(F) No person shall deposit large non-compatible articles in such containers or receptacles such as stoves, refrigerators, bed springs or large tree limbs, air conditioning units, or similar items;

(G) No one shall deposit any flammable or explosive materials in any such container or receptacle;

(H) No dead animals shall be deposited in any such container or receptacle;

(I) No person shall disturb or scatter litter in and around such containers or receptacles;

(J) No person shall willfully damage or alter the location of any such container or receptacle without the express consent of the Board of Commissioners.

(K) No salvage or scavenging operations shall be conducted in or around such containers or receptacles except by expressly authorized County personnel.

(L) No person shall deposit garbage at a County solid waste collection center unless the garbage is contained in an authorized County "Blue Bag".

(M) No person shall deposit garbage or litter of any kind at a County solid waste collection center or into County owned receptacle or container designated for the collection of recyclable materials. Only authorized materials such as glass, aluminum, newspaper cardboard and plastic or other accepted material may deposited in the appropriate container designated for said material.

### **SECTION 5 - REGULATION OF SANITARY LANDFILLS, INERT LANDFILLS, CONSTRUCTION AND DEMOLITION LANDFILLS, AND SOLID WASTE COLLECTION AND RECYCLING CENTERS**

(A) No landfill shall be operated in Oconee County, Georgia, other than a landfill designated by the Board of Commissioners as the County landfill, and no private sanitary landfill, private inert landfill, or private construction and demolition landfill shall be operated in Oconee County, Georgia, without zoning compliance approval and the review and

written approval by the Board of Commissioners.

(B) All garbage and litter shall be deposited in an area designated by the attendant on duty;

(C) No person shall set fire to refuse or litter at the landfill;

(D) No smoldering or burning material shall be delivered or deposited at the landfill;

(E) No person shall move, remove, or cross any fence, gate, barrier, or signs at the landfill;

(F) Compatible and non-compatible materials such as appliances, tree limbs, and lumber shall not be mixed together;

(G) Trees, stumps, quantities of old building materials, rocks and large quantities of other non-compatible material shall be deposited apart from the trenched area at locations designated by the attendant;

(H) No salvage or scavenging operation shall be allowed at the landfill except when expressly authorized by the Board of Commissioners or the attendant in charge;

(I) No one shall deposit any litter outside of the gate of a landfill;

(J) All rules above shall also apply to Oconee County Solid Waste Collection and Recycling Centers.

**SECTION 6 - VIOLATION**

(A) Any person violating any portion of this Ordinance shall be punished by a fine of not less than \$100.00 and no more than \$300.00 or within the sound discretion of the Court and may be directed to pick up and remove litter from public streets or other public or private areas as provided in O.C.G.A. Section 16-7-43(b).

**SECTION 7 - SEVERABILITY**

Should any sentence, section, subsection or provision of this Ordinance or application of a provision of this Ordinance be declared invalid or unconstitutional by any court of competent jurisdiction, such declaration shall not affect the validity of the Ordinance as a whole nor any part thereof that is not specifically declared to be invalid or unconstitutional.

**SECTION 8 - REPEAL OF CONFLICTING RESOLUTIONS OR ORDINANCES**

All resolutions or ordinances and parts or sections of resolutions or ordinances in conflict with this Ordinance are hereby repealed.

**SECTION 9 - EFFECTIVE DATE**

This ordinance shall take effect and shall be enforced from and after the date of its adoption, the public welfare demanding it.

Adopted and approved by the Board of Commissioners of Oconee County, Georgia, this \_\_\_\_\_ day of \_\_\_\_\_, 199\_\_\_\_\_.

OCONEE COUNTY BOARD OF COMMISSIONERS

BY:

\_\_\_\_\_  
Chairman

\_\_\_\_\_  
Member

\_\_\_\_\_  
Member

\_\_\_\_\_  
Member

\_\_\_\_\_  
Member

ATTEST

\_\_\_\_\_  
County Clerk

1-4-94

GEORGIA, OCONEE COUNTY.

SOLID WASTE COLLECTION AND DISPOSAL SERVICES ORDINANCE

TITLE

An Ordinance providing for the orderly disposal of solid waste; the licensing of residential and commercial collection and disposal of waste; the prescribing of penalties for the violation of the Ordinance and for other purposes related thereto.

ENACTMENT CLAUSE

For the purpose of promoting the health, safety and general welfare of the present and future inhabitation of Oconee County and to provide an orderly and safe disposal of waste, the Board of Commissioners of Oconee County does hereby ordain and enact into law the following:

Section One. Definitions. All terms used herein shall have the definitions ascribed to them in O.C.G.A. Chapter 8, Article 12, as it is in effect on January 1, 1994.

(a) Commercial Establishment. Any hotel, motel, apartment dwelling, rooming house, business, industrial, public or semi-public establishment of any nature or kind whatsoever other than a one or two family dwelling unit or condominium.

(b) Construction/Demolition waste. Waste building materials and rubble resulting from construction, remodeling, repair and demolition operations of pavement, houses, commercial buildings and other structures. Such wastes include, but are not limited to, asbestos, container waste, wood, bricks, metal, concrete, wall board, paper, cardboard, inert waste, landfill material and other nonputrescible wastes which have a low potential for groundwater contamination.

(c) Licensee. A person granted a license by Oconee County who, under written agreements for compensation by those receiving services, does the work of collecting and transporting solid waste from industries, offices, retail outlets, businesses, institutions and similar locations or from residential dwellings; provided however, this definition shall not include an individual collecting and transporting waste from his own single family dwelling unit.

(d) Oconee County. When used in this Ordinance, Oconee County shall refer to the Oconee County Board of Commissioners or its designees.

(e) Open Dump. A disposal facility at which solid waste from one or more sources is consolidated and left to decompose, burn or to otherwise create a threat to human health or the environment.



to otherwise create a threat to human health or the environment.

(f) Owner. Any person, owning, leasing, renting, occupying or managing any premises in the jurisdiction of Oconee County.

(g) Person. The State of Georgia or any other state agency or institution thereof, and any municipality, county, political subdivision, public or private corporation, limited liability company, solid waste authority, special district empowered to engage in solid waste management activities, individual, partnership, association or other entity in Georgia or any other state. This term also includes any officer or governing or managing body of any municipality, political subdivision, solid waste authority, special district empowered to engage in solid waste activities, or public or private corporation in Georgia or any other state. This term also includes employees, departments and agencies of the federal government.

(h) Plastic Bag. A polyethylene or other heavy duty plastic bag meeting the National Sanitation Foundation Standard of at least 1.5 mills and not exceeding a thirty-gallon capacity, with securing twist ties.

(i) Putrescible Waste. Wastes that are capable of being decomposed by microorganisms. Examples of putrescible waste include, but are not necessarily limited to, kitchen wastes, animal manure, offal, hatchery and poultry processing plant wastes and garbage.

(j) Reclamation. A controlled method of sorting and storing material from solid wastes for future use.

(k) Refuse. Garbage, rubbish or commercial solid waste.

(l) Rubbish. Discarded waste paper, cartons, boxes, wood, tree branches, yard trimmings, furniture, appliances, metals, cans, glass crockery, dunnage or similar materials.

(m) Sanitary Landfill. A disposal site where putrescible solid wastes are disposed of by means of placing an earth cover thereon and which is approved by state and federal authorities for such purpose.

(n) Waste Stream. The total flow of solid waste from residential units, commercial establishments, condominiums, apartments, institutions and the like to its ultimate disposal site or facility.

## Section Two. General.

(a) No person shall engage in solid waste handling in a manner which will: be conducive to insect and rodent infestation or the harboring and feeding of wild dogs or other animals; impair the air quality; impair the quality of the ground or surface waters; impair the quality of the environment; or create other hazards to the public health, safety or well-being.

(b) Provisions of this Ordinance apply to all persons presently engaged in solid waste handling as well as all persons proposing to engage in solid waste handling.

## Section Three. Exemptions.

(a) Provisions of this Ordinance shall not apply to any individual disposing of solid wastes originating from his own residence onto land or facilities owned by him when disposal of such wastes does not adversely affect the public health. Nothing in this Ordinance shall limit the right of any person to use poultry or other animal manure for fertilizer.

(b) Provisions of this Ordinance shall not apply to owners of record of all one and two family dwelling, condominiums or multifamily dwelling units who dispose of solid waste by self-hauling such waste to a state approved landfill or to a collection center operated by Oconee County. Failure to provide evidence of proper disposal upon request by county officials (receipts, cancelled checks or other proof of payment) shall be a violation of this Ordinance, punishable as set forth in Section Fourteen.

(c) Provisions of this Ordinance shall not apply to any person collecting and disposing of municipal solid waste, commercial solid waste, construction/demolition waste or industrial waste, but not charging a fee, and who is a holder of a valid solid waste handling permits from the Director of the Environmental Protection Division of the Georgia Department of Natural Resources pursuant to Rules of Georgia Department of Natural Resources Environmental Protection Division 391-3-4-.02 and 391-3-4-.06 for disposal or on-site burial. Such disposal shall be governed by State Environmental Protection Division regulations.

(d) No provision of this Ordinance shall be deemed to require Oconee County to secure a license or to otherwise engage in any acts not required by provisions of either state or federal law.

## Section Four. Prohibited Acts.

(a) No person shall engage in solid waste handling except in such a manner as to conform to and comply with this Ordinance and

all applicable state and federal legislation, rules, regulation and orders.

(b) No person shall collect and dispose of municipal solid waste for a fee without obtaining a license from Oconee County.

(c) No solid waste may be disposed of by any person in an open dump, nor may any person cause, suffer, allow or permit open dumping on his property as defined by the Rules of the Georgia Department of Natural Resources, EPD, Chapter 391-3-4-04.

1. A person shall be presumed to have violated this provision if, upon written notification that litter or solid waste has been dumped on that person's property, not otherwise subject to the provisions of O.C.G.A. Section 16-7-51, through 16-7-54, that person fails to provide Oconee County, within fifteen days of notification, with written assurance that the accumulation of litter or solid waste will be properly disposed of within thirty days from the original date of notification.

2. No person who first informs Oconee County in writing that illegal dumping has occurred on a particular parcel of that person's property shall be deemed to have violated this provision, if such person provides written assurance all accumulated litter or solid waste will be properly disposed of within forty-five days of the date of such written notification and subsequently provides proof of such disposal.

(d) The owner or occupant of any premises, office, business establishment, institution, industry or similar facility shall be responsible for the collection and transportation of all solid waste accumulated at the premises, office, business establishment, institution or similar facility to a solid waste handling facility operating in compliance with the Georgia Environmental Protection Division Rules and Regulations unless arrangements have been made for such services with a collector operating in compliance with this Ordinance.

(e) No owner or occupant shall allow the accumulation on his or her residential unit or commercial establishment of solid waste where such solid waste creates or may create a health hazard to neighbors or other citizens, or is unsightly, or emits foul or obnoxious odors which constitute either a public or private nuisance. Such conduct shall constitute a violation of this Ordinance.

#### Section Five. Licenses.

(a) Non-exclusive licenses for residential or commercial

collection and disposal shall be granted upon application to Oconee County provided licenses meet at least the minimum requirements set out in Section Six. Licenses for the collection and disposal of solid waste shall be granted for a period of one calendar year from January 1 to December 31.

(b) Licensees must agree to provide collection services in residential areas only between the hours of 7:00 a.m. and 7:00 p.m. Oconee County reserves the discretionary authority to revoke or rescind any such license in the interest of the health, safety, and welfare of the citizens of Oconee County.

#### Section Six. Requirements for Licensees.

All licensees must meet the following minimum requirements:

(a) Permit. Prior to engaging in solid waste handling in Oconee County, a licensee must have obtained a solid waste handling permit from the Director of the Environmental Protection Division of the Georgia Department of Natural Resources or any successor agency authorized to issue permits pursuant to O.C.G.A. §12-8-24.

(b) Insurance. At the time of submission of a license application and prior to engaging in solid waste handling in Oconee County, and, annually thereafter, each licensee shall provide to Oconee County, proof of insurance as follows:

- (1) Statutory workers' compensation insurance.
  - a) Employer's liability for bodily injury by accident - \$100,000.00 each accident.
  - b) Employer's liability for bodily injury by disease - \$500,000.00 policy limit, \$100,000.00 each employee.
- (2) Comprehensive general liability insurance - \$1,000,000.00.
- (3) Vehicle liability.
  - a) \$500,000.00 limit per occurrence for bodily injury and property damage.
  - b) Comprehensive coverage on all owned, non-owned and hired vehicles.
  - c) All insurance contracts must specify vehicles for "solid waste collection."
- (4) Umbrella liability insurance coverage at least as broad as primary coverage in an amount of \$100,000.00.

- (5) All comprehensive general liability, vehicle liability, and umbrella liability policies shall show the Oconee County Board of Commissioners as an additional insured and shall provide for thirty (30) days notice of cancellation to the Board of Commissioners.
- (c) Indemnification. Each Licensee shall, at its sole cost and expense, fully indemnify, defend and hold harmless the County, its officers, boards, commissions, employees and agents against any and all claims, suits, actions, liability and judgments from third parties for damages which may be the result of willful, negligent or tortious conduct or operations arising out of the business of collection, transportation and disposal of solid waste, whether or not the action or omission complained of is authorized, allowed or prohibited by this Ordinance.
- (d) Financial Stability.
- (1) All licensees shall, prior to engaging in solid waste handling in Oconee County, give fidelity bond, payable to Oconee County Board of Commissioners in an amount equal to the average revenue anticipated from three (3) months collections not to exceed \$500,000.00, but in no event less than \$25,000.00. Such bonds shall be adjusted yearly based on the quarterly average of the previous year's actual revenue. Alternately, licensees may provide an irrevocable letter of credit in lieu of bond.
- (2) All licensees shall, prior to engaging in solid waste handling in Oconee County, post a performance bond in an amount of \$50,000.00. Alternatively, licensees may provide an irrevocable letter of credit in lieu of bond.
- (3) In lieu of separate bonds or letters of credit described in (1) and (2) above, licensees may provide an equivalent license bond at the time of application which encompasses both fidelity and performance. The amount of such bond must be acceptable to Oconee County, but in no event may be less than \$75,000.00.
- (e) Vehicles.
- (1) All vehicles and containers used for collection operations shall comply with the requirements of Rule 391-3-4-.06 of Chapter 391-3-4 (Solid Waste

Management) of the Rules of the Georgia Department of Natural Resources, Environmental Protection Division, and must be compactor-type trucks, covered or enclosed vehicles. All vehicles must be constructed to be substantially leak-proof, constructed of durable metal, easily cleanable and able to prevent litter from escaping during movement of the vehicle.

- (2) Vehicles and containers shall meet all requirements of the Georgia Department of Transportation for highway safety and local ordinances governing weight and size for the streets which must be traveled for pick-up. All vehicles shall be subject to unannounced inspection by County officials for compliance with environmental and highway safety standards.
- (3) All vehicles shall have, in letters at least six (6) inches high and conspicuously placed in three places on the vehicle, the name and telephone number of the licensee.
- (4) Licensees shall provide an adequate number of vehicles for regular collection services. Nothing in this article shall prohibit licensees from sharing back-up vehicles with other licensees provided that such sharing is adequately covered by insurance.
- (5) Vehicles used exclusively for collecting and transporting recovered materials shall be exempt from this entire article except that an adequate cover shall be used to prevent litter from escaping during movement.

(f) Reporting Requirements. Within thirty (30) days following the close of each calendar quarter ending March 31, June 30, September 30, and December 31 of each year of operation, licensee shall submit to Oconee County reports of operation showing the following:

- (1) Gross collection revenues and average number of customers during quarter by service type.
- (2) Tonnage figures showing total waste tonnage collected by service type.
- (3) Tonnage figures showing total recovered materials collected by type and proof of recycling in the form of manifests, bills

of sale or other records showing adequate proof of movement of the material to a recognized recycling facility.

- (4) Proof of disposal of non-recovered materials at state approved disposal facilities and name of each such facility.
- (5) Licensee shall maintain at its place of business books and records showing the names and addresses of all owners and tenants with whom licensee contracted for solid waste handling services, including the street address for the property served. Licensee shall submit upon reasonable request of Oconee County to a financial audit by a certified public accountant or auditor employed by Oconee County. Except for the operating reports described in subparagraphs 1-4 above, the information provided in accordance with this section shall be confidential.

The above information shall be compiled for state reporting purposes.

#### Section Seven. License Fees.

(a) An annual license fee of \$500.00 shall be paid by each licensee to Oconee County.

(b) A surcharge fee equivalent to the true cost of providing solid waste management services on a per ton or volume equivalent determined as provided in O.C.G.A. § 12-8-39, on solid waste received, collected, handled or disposed of at any private landfill or other private disposal facility, except inert landfills, presently located within the unincorporated area Oconee County is hereby imposed upon the operator(s) of said facilities in accordance with Section 12-8-39 (d), Official Code of Georgia.

#### Section Eight. Residential Services.

All licensees granted a license for solid waste collection and removal shall provide a minimum of the following services:

(a) Licensee shall provide, at a minimum, weekly curb service collection of residential waste packaged as approved pursuant to of this Ordinance, except as otherwise set out herein. Each licensee shall set uniform fees for collection, and charges for residential

collection and removal services shall be charged to the owners of the real property served, except that by requesting services, any tenant may become jointly bound to pay same. Rates for a licensee's services shall be uniform within Oconee County.

(b) Licensees shall bill customers for service based on the volume of residential waste generated. Oconee County assumes no responsibility to licensee for the failure of any customer to make payments. Licensee will quarterly provide Oconee County with a list of residential customers whose service has been discontinued for non-payment. Licensees shall cooperate fully in any legal action taken by Oconee County for failure of any owner or resident to comply with the provisions of this Ordinance.

(c) For all residential customers desiring to voluntarily participate in recycling, licensee shall collect at least once per week, pursuant to a county-provided list of guidelines, glass bottles and jars, newspaper, plastic (PET and HDPE), aluminum cans and bi-metal/steel cans.

- (1) Oconee County reserves the right to change the type and number of recovered items and to redetermine collection and disposal of yard trimmings as viable alternatives are developed.
- (2) Licensees shall provide recycling containers to customers.
- (3) Licensees shall not dispose of recovered materials in landfills.
- (4) No additional fee, over the amount charged for curbside collection of residential waste, shall be charged by the licensee for regular collections of recovered materials every week.
- (5) All licensees must agree to participate fully in recycling.

(e) Upon recovered materials being placed in designated recycling containers for regular curbside collection, it shall become the property of Oconee County. During the twenty-four (24) hour period commencing at 6:00 p.m. on any day preceding any day designated by the licensee for collection of recovered materials, no person other than an employee or agent of licensee shall remove recovered material from the designated recycling container which has been properly placed for collection.

- (1) Each collection in violation of this section during that period shall constitute a



violation of this Ordinance and shall be punishable as provided herein.

- (2) Nothing herein shall be construed to limit the right of any individual, organization or other entity to donate, sell or otherwise dispose of recovered material, if such disposal does not violate any applicable statute, regulation or ordinance.

(f) Oconee County, at all times, reserves the right to direct and control the time, place and manner of solid waste handling and disposal. Nothing in this Ordinance is intended to abridge Oconee County's right to ownership and control of the waste stream.

#### Section Nine. Elderly and disabled.

(a) Nothing in this Ordinance is intended to prohibit the licensee from offering discounts to senior citizens or the disabled.

(b) Any person who is a full-time resident of a residential dwelling unit as described above and who is disabled to the extent that he is incapable of moving his refuse shall obtain a physician's certificate as to such disability. Disabled persons shall not be required to place the refuse at the curbside. This subsection shall not apply unless all of the adult persons in a residential unit are disabled and obtain such physician's certificates. Certificates must be mailed to the franchisee with a copy to Oconee County. This subsection also applies to temporary disability not to exceed ninety (90) days. Licensees may make reasonable rules for noncurbside collection for elderly and disabled persons.

(c) Licensees shall provide recycling services to disabled persons to the same extent such services may be provided under Section Seven.

#### Section Ten. General Conditions of Residential Collection.

(a) Occupants of one and two family dwelling units, condominiums or multi-family dwelling units not served by commercial container, shall place refuse receptacles, rubbish and bundles on assigned collection days, at roadside locations in such a manner as not to obstruct passage. Occupants shall place such refuse at appropriate locations prior to the arrival of the collection vehicles. This placement shall not be made before dusk on the day prior to collection day. Refuse placed after departure of the pickup crew of the licensee shall subject the licensee's customer to prosecution for violation of this Ordinance.

(b) Occupants shall remove containers from such locations to storage locations, which shall be nearer to the residential unit located on the premises than to any street abutting the premises; removal should be accomplished within a reasonable time following collection on the day the contents are emptied and collected.

(c) Occupants shall prevent the continued, excessive and unsightly accumulation of refuse upon their property or the public thoroughfares bounding upon occupant's property.

(d) It shall be a violation of this Ordinance to place or cause to be placed for collection any hazardous waste.

(e) Solid waste generated from the conduct of customary home occupations carried on from residential dwelling units will be collected on a residential fee basis.

(f) All trash and refuse will be collected by the licensee if placed in receptacles. No open containers or untied plastic bags shall be permitted.

(g) Recovered materials consisting of aluminum cans, bimetal/steel cans, glass bottles and jars, newspaper, plastic (PET and HDPE) bottles and containers will be collected by the licensee at least weekly if placed in designated containers properly placed for collection at the curbside.

(h) During any week in which there is a legal holiday or extremely harsh weather conditions, such as snow or ice, licensees shall be required to collect residential solid waste once during such week.

(i) Nothing in this Ordinance shall prevent customers from contracting with licensees for additional services at additional costs.

(j) A list of all current licensees will be available for public inspection in the Office of the Clerk of the Board of Commissioners.

(k) Property owners shall not be responsible for the cost of solid waste collection during any period when the property is vacant for thirty days or more and they have notified the licensee providing service to them in writing in advance of that period.

#### Section Eleven. Commercial Services.

(a) Applicants for commercial licenses are subject to the same requirements for a solid waste handling permit as are residential licensees under this Ordinance.

Section Twelve. General Conditions of Commercial Collection.

(a) The owner or occupant of any premises, office, business establishment, institution or industry or similar commercial establishment shall be responsible for the collection and transportation of all solid waste accumulated at such premises, establishment or facility to either a solid waste handling facility operating in compliance with state regulation with service by an approved licensee or to a collection center operated by Oconee County; however, Oconee County may direct such owner or occupant to not use the collection center based on the volume generated.

- (1) Holders of a valid Solid Waste Handling Permit from the Georgia Department of Natural Resources shall be exempt from such contracting but shall comply with the requirements of Section Six (d), (e), (f), (2), (3) and (4).

(b) Oconee County reserves the right at all times to direct and control the time, place and manner of commercial solid waste handling and disposal. Nothing in this Ordinance is intended to abridge Oconee County's right to ownership and control of the waste stream.

Section Thirteen. Termination of Licenses.

(a) Licenses may be terminated by mutual agreement of Oconee County and licensee at any time. Licensees may terminate licenses by giving sixty (60) days notice to Oconee County that all advance payments have been used by providing a service or have been refunded.

(b) Oconee County shall notify any licensee of violations by the licensee of this Ordinance. Upon notification of the alleged violation, a licensee shall have seven (7) calendar days to comply with any directive to correct any such violation. If licensee shall fail to comply within seven (7) days of notification, or shall have received five (5) notices of alleged violations in a license area during any quarter, or at the discretion of the Oconee County, a hearing shall be held before the Board of Commissioners with the licensee being notified in writing of the time and place of the hearing and the violation of this Ordinance which has not been corrected. Licensee will be given the opportunity to appear by representative or counsel to answer any such charge by Oconee County. Should the Board of Commissioners determine any of the provisions of this Ordinance have been violated by licensee, the governing authority shall have in its discretion, the absolute right to suspend or revoke the license or provide for probation for the licensee.

(c) Licenses are non-transferable.

#### Section Fourteen. Penalties.

(a) Any person or any employee or agent violating any provision of this Ordinance may be fined up to \$500.00 per violation. Each full day a violation continues may constitute a separate violation.

(b) Any licensee who is found to have violated any of the provisions of this Ordinance by a court of law following the appeal procedures outlined in Section Thirteen (b) shall be subject to the same penalty and may also be restrained from operating as a licensee and a civil action may be filed by Oconee County.

#### Section Fifteen. Enforcement.

Violations of any provisions of this Ordinance shall be reported initially to the Sanitation Department, which office is charged with administration of all sections herein.

The provisions of this Ordinance regarding applications for and termination of licenses shall be enforced by the Board of Commissioners.

The provisions of this Ordinance regarding the disposal or burial on site of solid waste shall be enforced by the Georgia Department of Natural Resources, Environmental Protection Division.

#### Section Sixteen. Exceptions.

Oconee County may grant exceptions to these rules provided licensees make written application showing the following:

1. The method proposed utilizes a new, experimental, cost effective or innovative technology, concept or theory of solid waste storage, collection, transportation or disposal;
2. The method proposed does not create a health hazard to the public; and
3. Any exception granted does not violate the requirements of Sections Six or Seven of this Ordinance or other State or Federal law.

Any exception granted shall be for a one (1) year term and shall be non-renewable. At the end of six (6) months of operation of the excepted method, the licensee shall submit data sufficient to enable a determination of success of the method. If found to be acceptable to Oconee County, this Ordinance may be amended to allow such method without exception.

Section Seventeen. Severability.

In the event any section, subsection, sentence, clause or phrase of this Ordinance is declared or adjudged invalid or unconstitutional, such adjudication shall in no manner affect any other section, subsection, sentence, clause or phrase, which shall remain in full force and effect as if the section, subsection, sentence, clause or phrase so declared or adjudged invalid or unconstitutional were not originally a part hereof.

Section Eighteen. Repeal of Conflicting Ordinances.

All ordinances, resolutions and parts of ordinances or resolutions in conflict with this Ordinance are hereby repealed.

Section Nineteen. Effective date.

This ordinance shall take effect and shall be enforced from and after the date of this adoption, the public welfare demanding it.

Adopted and approved by the Board of Commissioners of Oconee County, Georgia, this 4th day of January, 1994.

OCONEE COUNTY BOARD OF COMMISSIONERS

BY: Absent  
Chairman

Donald H. Norris  
Member

[Signature]  
Member

[Signature]  
Member

William J. Wilkes V-Charm  
Member *presiding*

Attest: Gina M. Lindsey  
Gina Lindsey, County Clerk

(COUNTY SEAL)

PERMIT NO. \_\_\_\_\_

SOLID WASTE COLLECTION AND DISPOSAL SERVICES  
LICENSE APPLICATION

Oconee County Board of Commissioners  
Post Office Box 145  
Watkinsville, GA 30677  
706-769-5120

Application is hereby made by \_\_\_\_\_  
(Name of Applicant) (Business Name)

\_\_\_\_\_  
(Business phone number) (P.O. Address) (City, State) (Zip Code)

I am applying for a license to provide a service for the orderly collection and disposal of municipal solid waste originating in Oconee County.

1) TYPE OF SOLID WASTE COLLECTION AND DISPOSAL SERVICE:  
(check all that apply)

- a)  Residential Service
- b)  Commercial Service
- c)  Construction and Demolition Service

2) I have a valid Georgia Department of Natural Resources Environmental Protection Division Solid Waste Resources Handling Permit.

YES \_\_\_\_\_  
NO \_\_\_\_\_

3) I have obtained and read a copy of the Solid Waste Collection and Disposal Services Ordinance and agree to comply with all provisions therein, including the indemnification of Oconee County.

YES \_\_\_\_\_  
NO \_\_\_\_\_

4) Required Insurance Certificate provided.

YES \_\_\_\_\_  
NO \_\_\_\_\_

5) Fidelity Bond, and Performance Bond or Letters of Credit provided.

YES \_\_\_\_\_  
NO \_\_\_\_\_

Permit requested this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_.  
(Renewable in 12 months)

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_  
(If agent or official for applicant)

FORM TO BE COMPLETED BELOW THIS LINE BY COUNTY OFFICIALS

PERMIT

License Fee \$500.00 \_\_\_\_\_

Specifications:

EPD PERMIT NO. \_\_\_\_\_ VALID INSURANCE CERTIFICATE PROVIDED \_\_\_\_\_

PERFORMANCE BOND AMOUNT \_\_\_\_\_

FIDELITY BOND AMOUNT \_\_\_\_\_

LETTER OF CREDIT \_\_\_\_\_

The above application is approved/disapproved this \_\_\_\_\_ day of \_\_\_\_\_,  
19\_\_\_\_, subject to:

- 1) Fidelity Performance yes \_\_\_\_\_ no \_\_\_\_\_
- 2) Amount of Bond \$ \_\_\_\_\_
- 3) Insurance Certificate Requirement yes \_\_\_\_\_ no \_\_\_\_\_

BY: \_\_\_\_\_ Chairman  
Oconee County Board of Commissioners

NOTE: This permit is to be strictly construed and no work other than specifically authorized herein is authorized. This permit must be renewed every twelve (12) months.

Released: \_\_\_\_\_

Date: \_\_\_\_\_

**APPENDIX N**

Pay As You Throw Information



## Pay as You Throw

- [Introduction](#)
- [Benefits](#)
- [Comparisons](#)
- [Successes](#)
- [More info](#)

### Introduction

The idea of "pay as you throw" or "unit pricing" has been around a long time. We face it every day for almost everything we buy: dollars per gallon of gasoline, per loaf of bread, per overnight video rental, per kilowatt hour of electricity, or per cubic foot of water. In fact, prices that are not set by the unit are the exception, rather than the rule: all-you-can-eat pizza buffets, copier service agreements, and government services such as police and fire protection.

Municipal solid waste (household garbage disposal) has traditionally been funded through taxes or flat rate billing. This pricing scheme creates the same incentive as the all-you-can-eat pizza buffet: the smart economic move is to eat--or throw away--all you can, because the more you get for a fixed price, the better deal you're getting. All-you-can-dump solid waste pricing has played a significant part in creating the national solid waste crisis, exemplified by disappearing landfill capacity, rising disposal costs, limited use of recycling programs, and the attitude that unlimited waste service is a right.

Therefore, unit pricing for solid waste disposal means charging a fee for each unit disposed. The unit may be measured by the bag, by the can, or by the pound.

### Benefits of unit pricing

Although the transition to a unit pricing system can be difficult for agencies accustomed to flat rate billing, unit pricing can make a profound change that leads to a variety of benefits. Most importantly, it creates the connection between each customer's cost and disposal habits, and provides an incentive for customers to make smarter choices in how they handle their waste.

All unit pricing systems offer important advantages for both the solid waste agencies and their customers:

- **Increased awareness of solid waste costs.** Traditionally, true solid waste operational costs have been obscured from the consumer by being lumped into one general tax bill that covers many public services. Unit pricing makes customers aware of the cost of the waste services they use, and reinforces that awareness

every time a customer pays a garbage bill or buys a pre-paid garbage bag or tag/sticker.

- **Incentive to reduce waste.** When customers have to pay more for each can or bag disposed, they are likely to think twice before purchasing excessively packaged products at the store, or throwing old lettuce into the trash instead of the compost pile.
- **Incentive to recycle.** If throwing away is more expensive because the true costs of disposal are accounted for, recycling becomes a more economically beneficial option. This financial incentive can help increase use of recycling programs, and can reduce total waste management system costs.
- **Reduced dependence on landfills or incinerators.** Unit pricing will reduce tonnage going to landfills or incinerators. Therefore, the need for expansion of landfills is postponed.
- **Stabilized system costs.** Final disposal is often the most unstable, and sometimes the most expensive, component of solid waste system cost. The incentives created by unit pricing by reducing the impact of landfill costs can help stabilize system costs.
- **Equity among customers.** Flat-rate billings and taxes make no distinction between high- and low-level disposers. With unit pricing, customers are charged according to the amount of waste they dispose.
- **Help in meeting legislated diversion goals.** The State of California, as well as other states and counties across the country, has mandated recycling or disposal reduction goals for communities within its jurisdiction. Unit pricing systems can create incentives that encourage customers to change their disposal habits to help meet these goals.

### **Waste Prevention World Home**

Last updated: August 22, 2000

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Waste Prevention Information Exchange <http://www.ciwmb.ca.gov/WPIE/>  
Information: [wpinfoex@ciwmb.ca.gov](mailto:wpinfoex@ciwmb.ca.gov) (916) 255-INFO  
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## Weighing in on Unit Pricing Systems

- [How they work](#)
- [Weight-based](#)
- [Variable can](#)
- [Tag/Sticker](#)
- [Hybrid](#)
- [Bag](#)



### How do unit pricing systems work?

The term "unit pricing" does not refer to a particular pricing system, but rather describes any funding system that charges customers according to the amount of waste disposed. Virtually all current unit pricing systems can be classified by one of the five types described below. Additionally, minor design elements within each system can be tailored to meet a community's unique solid waste goals.

Below are the strengths and weaknesses of each system. Note: some incentives to reduce waste and recycle (a strength), as well as potential risk of illegal dumping (a weakness), are common to all.

[Weight-based](#) | [Variable can](#) | [Tag/Sticker](#) | [Hybrid](#) | [Bag](#)

### Weight-based

Each can of refuse is weighed as it is dumped into the truck. Computer records bill customers according to the weight of the refuse disposed.

#### Strengths

- Offers flexible billing system options.
- Pound-by-pound charging system creates a clear waste reduction and recycling incentive at all disposal levels.
- Requires no collector judgment at the curb.
- Generates excellent data to target waste diversion and management program modifications.

#### Weaknesses

- Currently implemented on a pilot basis only.
- New approach with minimal data available--may be tough political sell.
- Is potentially expensive to set up, including computer systems, cans, and scales.
- Results in slower work for collectors under some system designs.

[Weight-based](#) | [Variable can](#) | [Tag/Sticker](#) | [Hybrid](#) | [Bag](#)

## Variable Can

Customers "subscribe" to a set number and/or varying sizes of cans per collection week. Alternatively, waste collectors can record weekly setouts in a route book and bill the customer accordingly. Service is purchased on a per-can basis.

### Strengths

- System rewards consistent waste reduction.
- Compatible with automatic collection systems.
- Fairly stable revenue stream.
- Waste agency has many options in the design of rate structures.

### Weaknesses

- Most expensive system currently in operation, because of billing, inventory, and customer service costs.
- Fixed subscription level removes week-to-week incentive to reduce waste below that level.
- Collectors must insure that refuse is in approved containers that are not overweight.

**Weight-based | Variable can | Tag/Sticker | Hybrid | Bag**

## Tag/Sticker

Each container (bag or can) of refuse set out for collection must have an official tag/sticker on it (possibly marked with the city logo). Tags/stickers are sold at a price that includes some or all of the cost of providing refuse collection and management service. Service is purchased on a per-tag/sticker basis.

### Strengths

- Easy to implement and operate.
- Can be implemented rapidly; no billing system needed.
- Compatible with franchise or contract system.
- Allows customers flexibility in their disposal level, while providing an incentive to reduce even below one unit of refuse.
- Improves collector efficiency.
- Limits need for customer service representatives (CSR) and enforcement.
- Low purchase and distribution costs.

### Weaknesses

- May be incompatible with automated or semi-automated collection systems.
- Provides uncertain revenues.
- Difficult to enforce container size limits at the curb.
- Has potential for animals scattering garbage when used with bags.
- May encourage customers to keep excess refuse for later collection.
- Confusion regarding assigned value of tag/sticker can cause customer service problems.
- Tags/stickers can fall off in cold weather.

**Weight-based | Variable can | Tag/Sticker | Hybrid | Bag****Hybrid**

A set level of service (one can or bag per week, for example) is funded through taxes or flat-rate billing. Additional refuse must be set out in a city logo-marked bag, or in a bag or can accompanied by a city tag/sticker (priced to contribute revenue for solid waste service).

**Strengths**

- Fairly stable revenue stream.
- Low implementation cost.
- Politically easier to implement than other systems.
- Natural transition step to other systems.
- Discourages illegal dumping.

**Weaknesses**

- No incentive to minimize waste below base level.
- Requires two-part revenue recovery system (fixed and variable recovery).
- Total costs may not be apparent to customers.

**Weight-based | Variable can | Tag/Sticker | Hybrid | Bag****Bag**

All refuse set out for collection must be contained in specially marked garbage bags (usually marked with the city logo). Bags are sold at a price that includes some or all of the cost of providing refuse collection and management service. Service is purchased on a per-bag basis.

**Strengths**

- Easy to implement and operate.
- Can be implemented rapidly.
- No billing system needed.
- Compatible with franchise or contract haulers.
- Allows customers flexibility in their disposal level, while providing an incentive to reduce even below one bag of refuse.
- Improves collector efficiency.
- Gives neighborhoods a tidy appearance, with no empty cans on the street.
- Limits need for customer service representatives (CSR) and enforcement.

**Weaknesses**

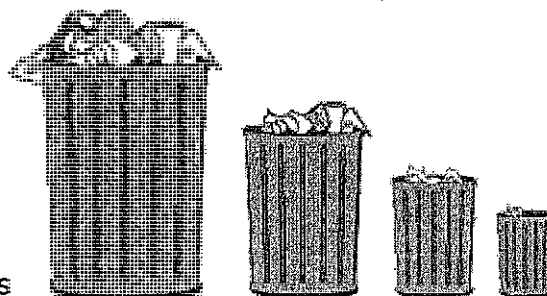
- Less compatible with automatic or semi-automatic collection systems.
- Provides unstable revenue stream, has potential for problems with animals scattering garbage from damaged bags.
- May encourage customers to keep excess garbage for following collection.

Last updated: August 22, 2000

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Waste Prevention Information Exchange <http://www.ciwmb.ca.gov/WPIE/>  
Information: [wpinfoex@ciwmb.ca.gov](mailto:wpinfoex@ciwmb.ca.gov) (916) 255-INFO  
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## Unit Pricing Success Stories



In the 1980s, only a small number of unit pricing systems were operating in places like Olympia, Washington; Plantation, Florida; and Santa Clara, California. As of January 1993, unit pricing systems had spread to more than 1,000 communities with the potential to expand to 1,800 communities by early 1994.

As of November 1993, more than 20 unit pricing systems are in operation in California.

The current surge of unit pricing systems can be attributed to their proven success records in various communities. For example:

- **Lodi, California**, population 55,000, started a variable can system in 1993, with a 38-gallon trash cart, 65-gallon recycling cart, and a 95-gallon yard waste cart. Lodi reports 30.5 percent diversion in 1995. Diversion was at 10 percent in 1990.
- **Santa Monica, California**, population 88,000, implemented a variable can garbage rate system in April 1992. Santa Monica reports a 32 percent decrease in residential tonnage disposal and a 13 percent increase in tons recycled.
- **Quincy, Illinois**, population 40,000, requires customers to place a payment tag/sticker on each unit of refuse set at the curb. Quincy reports a 20 percent decrease in disposal tonnage (200 fewer tons per month), and a 50 percent increase in recycling program tonnage.
- **Capital Regional District, British Columbia (Victoria)**, includes four "core" municipalities (total population 200,000), each of which limits collection of refuse funded through property taxes to 100 liters per week. Additional refuse must be accompanied by a separate pre-paid garbage tag/sticker. The Regional District currently diverts 34 percent of its waste stream and is approaching its goal of 50 percent diversion by the year 2000.
- **Seattle, Washington**, population 500,000, has a variable can billing system for refuse. Thirty percent of Seattle's waste stream was diverted in 1988, and 40 percent was recycled by 1991. Even before Seattle's curbside recycling program began in 1987, variable rates helped inspire residents to recycle 24 percent of the city's residential waste stream.

### For more information...

The U.S. EPA has a variety of resources available on how to implement unit pricing or pay-as-you-throw programs. These include a video, guidebook, and workshops. Call toll free (888) EPA-PAYT for assistance. For information about workshops in EPA Region 9 (includes California), contact Jessica Gaylord, (415) 744-2122.

Last updated: August 22, 2000

Waste Prevention Information Exchange <http://www.ciwmb.ca.gov/WPIE/>  
Information: [wpinfoex@ciwmb.ca.gov](mailto:wpinfoex@ciwmb.ca.gov) (916) 255-INFO  
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## **APPENDIX O**

### Computer Recycle Data

|                          |                      |                                  |                              |                         |                                |                        |
|--------------------------|----------------------|----------------------------------|------------------------------|-------------------------|--------------------------------|------------------------|
| <a href="#">About Us</a> | <a href="#">Shop</a> | <a href="#">Internet Service</a> | <a href="#">Fund-Raisers</a> | <a href="#">Support</a> | <a href="#">Free Downloads</a> | <a href="#">Search</a> |
|--------------------------|----------------------|----------------------------------|------------------------------|-------------------------|--------------------------------|------------------------|



# TORNRC

The Oak Ridge National Recycle Center



The Oak Ridge National Recycle Center (TORNRC) was established in July 1999 to provide electronic recycling services to government and private generators. TORNRC specializes in providing full service materials processing and electronic recycling services.

TORNRC feels the need for recycling computers is great because the electronic recycling industry has changed significantly over the last five (5) years. In most cases, the value of materials has decreased by 80%. This means that there is a backlog of electronics filling up our landfills. It is TORNRC's intention to Re-engineer, Recover, Recycle, Reclaim, and Remediate electronic equipment to protect our environment by Reusing these hazardous materials.

Our facilities are located at the East Tennessee Technology Park in Building K-1036, where we have approximately 24,000 square feet of fabrication, warehouse, and office space. Building K-1036 at the ETTP was constructed in 1945, and is considered one of the ETTP's Historical landmarks.

**Contact Information**

**Telephone:** (865) 241-3525  
**FAX:** (865) 241-3524  
**Sales:** (865) 241-6247  
**Support:** (865) 241-5263

**Mailing address:**

East Tennessee Technology Park  
 2010 Hwy. 58, Suite 2111  
 Building K-1036  
 Oak Ridge Tennessee 37830-2111

**Contact Us Now:**

**Name:**

**Phone Number:**

**E-Mail:**

**E-mail:**

Request Info: [info@oakridgerecycle.com](mailto:info@oakridgerecycle.com)  
 Contact Sales: [sales@oakridgerecycle.com](mailto:sales@oakridgerecycle.com)  
 Corporate Partners:  
[partners@oakridgerecycle.com](mailto:partners@oakridgerecycle.com)

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[About Us](#)[Shop](#)[Internet Service](#)[Fund-Raisers](#)[Support](#)[Free Downloads](#)[Search](#)

# TORNRC

The Oak Ridge National Recycle Center

We Buy, Recycle, Refurbish, and Resale used electronics.

**New** We now Provide unlimited Internet Access [Click Here to Learn More](#)

[Go to the Store](#)
[In the News](#)
[What we will Buy](#)
[Dealer Access](#)
[Become a Dealer](#)
[Company Info](#)
[Our SOQ \(PDF\)](#)
[Our Power Point](#)
[Presentation](#)
[Cleanplanet.net](#)
[Signup](#)
[Cleanplanet.net Portal](#)
[Site](#)

## Our Company Profile

Our current services include recovery and disposal of computer and electronic equipment and components, sub-assemblies, parts and finished goods, disassembly of finished goods for sub-assembly reclamation; recovery of integrated circuits from printed circuit boards; integration of components into finished goods; and the marketing of the products resulting from these services.

We currently offer our customers of "everything under the roof" for their refurbishing, re-marketing, and end-of-life services. With TORNRC, customers can be confident that they will receive maximum return on their assets and certified, environmentally responsible, end-of-life processing services when needed.

The benefits we provide are convenient for our customers, maximum value returned to our customers, protection from environmental contamination liability, and sound corporate citizenship.

### Contact Information

Telephone: (865) 241-3525

FAX: (865) 241-3524

Sales: (865) 241-6247

Support: (865) 241-5263

### Mailing address:

East Tennessee Technology Park  
2010 Hwy. 58, Suite 2111  
Building K-1036  
Oak Ridge Tennessee 37830-2111

### Contact Us Now:

Name:

Phone Number:

E-Mail:

### E-mail:

Request Info: [info@oakridgerecycle.com](mailto:info@oakridgerecycle.com)

Contact Sales: [sales@oakridgerecycle.com](mailto:sales@oakridgerecycle.com)

<http://www.oakridgerecycle.com/>

- |                          |                      |                                  |                              |                         |                                |                        |
|--------------------------|----------------------|----------------------------------|------------------------------|-------------------------|--------------------------------|------------------------|
| <a href="#">About Us</a> | <a href="#">Shop</a> | <a href="#">Internet Service</a> | <a href="#">Fund-Raisers</a> | <a href="#">Support</a> | <a href="#">Free Downloads</a> | <a href="#">Search</a> |
|--------------------------|----------------------|----------------------------------|------------------------------|-------------------------|--------------------------------|------------------------|



# TORNRC

The Oak Ridge National Recycle Center

## Our List of Acceptable Goods

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• Monitors</li> <li>• CPUs</li> <li>• Laptops</li> <li>• Printers</li> <li>• Wire</li> <li>• Cables</li> <li>• Aluminum</li> <li>• Copper</li> <li>• Brass</li> <li>• Stainless</li> <li>• Transformers</li> <li>• Boards</li> <li>• PC cards</li> <li>• Motors</li> <li>• Power Supplies</li> <li>• Fans (200/240v, 115v, 12v 24/48v)</li> <li>• Casters</li> <li>• Drives(hard drives, floppy)</li> <li>• Any Gold Bearing Product</li> </ul> | <ul style="list-style-type: none"> <li>• Computer Chips</li> <li>• Modems</li> <li>• Keyboards</li> <li>• Mainframe Equipment</li> <li>• Fax Machines</li> <li>• Copy Machines</li> <li>• CD ROMS</li> <li>• Scales</li> <li>• Communication Equipment</li> <li>• Barcode Equipment</li> <li>• Controllers</li> <li>• Disk Storage Products</li> <li>• Expansion Products</li> <li>• Circuit Boards</li> <li>• Customized Dispositions</li> <li>• Test Equipment</li> <li>• Diagnostic Equipment</li> <li>• Telephones</li> </ul> |
|--|---|

### Contact Information

**Telephone:** (865) 241-3525

**FAX:** (865) 241-3524

**Sales:** (865) 241-6247

**Support:** (865) 241-5263

### Mailing address:

East Tennessee Technology Park  
 2010 Hwy. 58, Suite 2111  
 Building K-1036

### Contact Us Now:

**Name:**

**Phone Number:**

**E-Mail:**



**Central Tennessee Solid Waste Planning Region**  
**REGION NAME**

**To the best of my knowledge, the foregoing information is accurate as of the date of submission of this report.**

Thea Prince  
Typed Name of the Chairman of the Solid Waste Planning Region

*Thea Prince*  
Signature of the Chairman of the Solid Waste Planning Region

\_\_\_\_\_  
Date

**To the best of my knowledge, the foregoing information is accurate as of the date of submission of this report.**

Dale Bush – Cannon County  
Typed Name of the County Executive(s)

*Dale Bush*  
Signature of the County Executive(s)

\_\_\_\_\_  
Date

**Central Tennessee Solid Waste Planning Region**  
**REGION NAME**

**To the best of my knowledge, the foregoing information is accurate as of the date of submission of this report.**

Thea Prince  
Typed Name of the Chairman of the Solid Waste Planning Region

Thea Prince  
Signature of the Chairman of the Solid Waste Planning Region

          
Date

**To the best of my knowledge, the foregoing information is accurate as of the date of submission of this report.**

James Wilhelm – Coffee County  
Typed Name of the County Executive(s)

James R. Wilhelm  
Signature of the County Executive(s)

2-17-2001  
Date

RUTHERFORD

---

**REGION NAME**

**To the best of my knowledge, the foregoing information is accurate as of the date of submission of this report:**

---

Typed Name of the Chairman of the Solid Waste Planning Region

*Shea Prince*

---

Signature of the Chairman of the Solid Waste Planning Region

---

Date

**To the best of my knowledge, the foregoing information is accurate as of the date of submission of this report:**

NANCY R. ALLEN

---

Typed Name of the County Executive(s)

*Nancy R. Allen*

---

Signature of the County Executive(s)

*January 14, 2000*

---

Date

**Central Tennessee Solid Waste Planning Region**  
**REGION NAME**

**To the best of my knowledge, the foregoing information is accurate as of the date of  
submission of this report.**

Thea Prince  
Typed Name of the Chairman of the Solid Waste Planning Region

*Thea Prince*

Signature of the Chairman of the Solid Waste Planning Region

Date

**To the best of my knowledge, the foregoing information is accurate as of the date of  
submission of this report.**

Carol Hamblen – Warren County  
Typed Name of the County Executive(s)

*Carol Lee Hamblen*

Signature of the County Executive(s)

1-22-01  
Date



08  
**CENTRAL TENNESSEE SOLID WASTE PLANNING REGION**  
C/o Rural Coffee County Solid Waste  
1110 Madison Street  
Manchester, TN 37355



January 30, 2001

Mr. Ron Graham  
Director  
Tennessee Department of Environment and Conservation  
Division of Community Assistance  
8<sup>th</sup> Floor L & C Tower  
401 Church Street  
Nashville, TN

RE: Five-Year Update for Regional Solid Waste Plan  
Central Tennessee Solid Waste Planning Region

Dear Mr. Graham:

Please find enclosed two copies of the Five-Year Update. As you will note in Appendices W and X, some of the county commission resolutions and planning commission reviews are missing. Finally, the signature pages are included at the end of Chapter 10 of the report.

Should you have any questions regarding this report, please call me at (615) 563-4443 or Ms. Ilia Jefferson of Southern Consulting at (615) 740-8777.

Sincerely,

A handwritten signature in black ink, appearing to read "Thea Prince", written over a horizontal line.

Thea Prince  
Chairwoman  
Central Tennessee Solid Waste Planning Region

Cc: Members, Central Tennessee Solid Waste Planning Region

Enclosure

**Westchester County, New York  
Recycling Trash-to-Energy Facility**



**Wheelabrator Environmental Systems inc.**

A Wheelabrator Technologies Company



# Peekskill, New York

This Wheelabrator Environmental Systems Inc. recycling trash-to-energy facility in Peekskill, New York, represents the culmination of an exhaustive, ten-year search of the best possible long-term solution to Westchester County's critical solid-waste-disposal problem. The plant provides dependable, environmentally safe disposal of 2,250 tons of municipal solid waste daily and generates enough electricity for 40,000 homes.

The process is a form of recycling and is simple. Incoming trucks deliver trash to an enclosed reception area. Overhead cranes transfer the trash directly into the feed hopper of each combustion unit. The trash is combusted on licensed Von Roll grates in the furnace, where temperatures exceed 2,500° F. Air from the reception area is blown in above and below the grates to fuel a complete combustion process and maintain a negative pressure over the reception area, eliminating odors and preventing the escape of dust. A waterwall boiler above the grate area produces superheated steam. The steam drives a turbine-generator, which produces electricity. The production of electricity is enhanced by a high-efficiency, once-through cooling system using water from the Hudson River. An electrostatic precipitator for each furnace thoroughly cleans emissions to meet all local, state and federal environmental standards.

The Westchester facility was financed by a combination of \$28 million in New York State Environmental Quality Bond Act funds, \$58 million of owner equity and the sale of \$157 million in industrial revenue bonds. It provides an excellent example of how public and private sectors can work together in long-term partnership to achieve a major government goal.

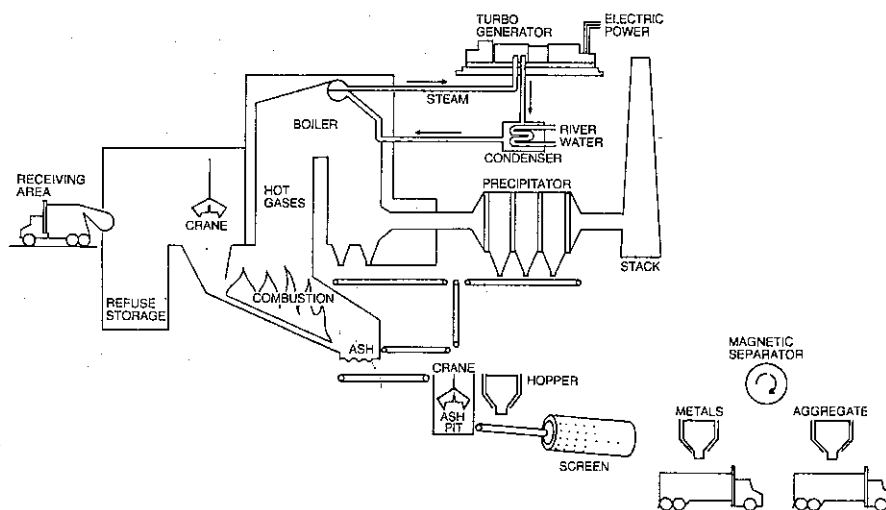
The Von Roll trash-to-energy system is used in hundreds of other facilities worldwide, including the original RESCO facility in Saugus, Massachusetts, which opened for business in 1975. Wheelabrator's facilities provide reliable long-term trash disposal for over 400 communities in the U.S.

With outstanding financial, technical and operating strengths, Wheelabrator has firmly established its leadership role in conserving our nation's resources, preserving the environment and making available new recycling and energy sources.

Wheelabrator Environmental Systems Inc. is a unit of Wheelabrator Technologies Inc., one of the nation's foremost developers of high technology energy and recycling technologies.

## Facility Highlights

| GENERAL                 |   |
|-------------------------|---|
| Area served             | Westchester County/850,000 people   |
| Type of contract        | Full service/Own and operate  |
| Ownership               | Westchester RESCO Co., L.P. (Wheelabrator Environmental Systems Inc./John Hancock Mutual Life Ins. Co.) |
| Financing               | Revenue bonds/N.Y. State EQBA Funds/<br>Private equity  |
| Start-up                | 1984  |
| REFUSE COMBUSTION       |   |
| Type of system          | Reciprocating grates with waterwall boilers   |
| Operation               | 24 hours per day, 7 days per week   |
| Process lines           | 3 @ 750 tons per day  |
| Plant daily capacity    | 2,250 tons  |
| Average throughput      | 1,800 tons per day (365 days)   |
| Feed system             | 2 overhead refuse cranes and ram feeder   |
| Grate design            | Von Roll reciprocating  |
| Combustion temperature  | 2,500° F+   |
| Auxiliary fuel          | Natural gas   |
| Waste volume reduction  | 95%   |
| Ash handling system     | Semi-dry, vibrating pan conveyor  |
| Materials recovery      | Ferrous, aggregate  |
| AIR QUALITY CONTROL     |   |
| Type of equipment       | Electrostatic precipitators/3 fields each   |
| Number of units         | 3   |
| ENERGY PRODUCTION       |   |
| Type of energy          | Electric power  |
| Steam flow to turbine   | 510,000 pounds per hour @ 850 psig/825° F   |
| Electric power capacity | 60 megawatts  |
| Cooling system          | One-through cooling   |
| Customer                | Consolidated Edison Co.   |



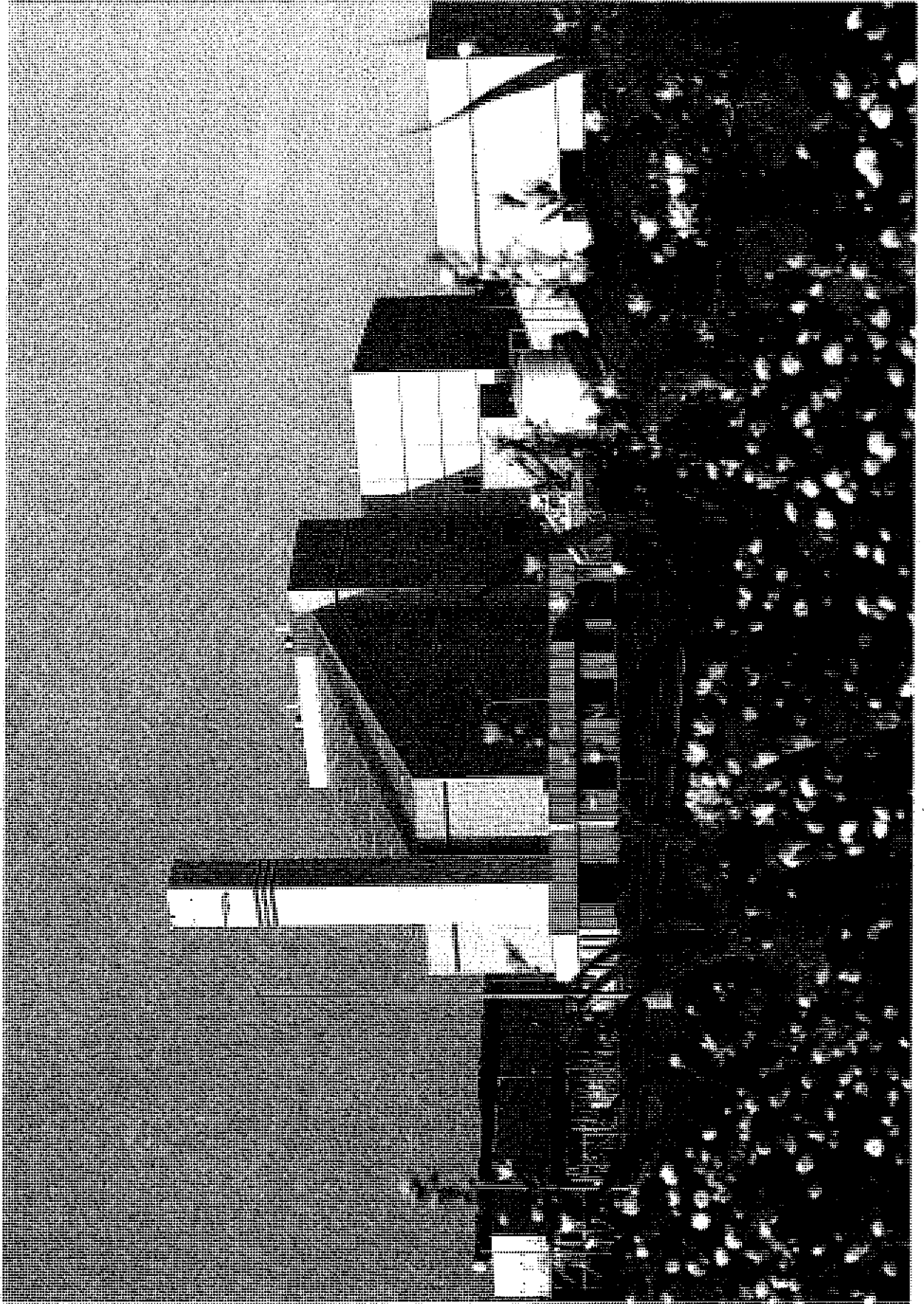
**Wheelabrator Environmental Systems Inc.**  
Liberty Lane  
Hampton, NH 03842  
1-800-682-0026

**Spokane, Washington  
Recycling Trash-to-Energy Facility**



**Wheelabrator Environmental Systems Inc.**

A Wheelabrator Technologies Company



# Spokane, Washington

Designed and operated by Wheelabrator Environmental Systems Inc., the Spokane Recycling Trash-to-Energy facility provides dependable, environmentally safe disposal of up to 800 tons per day of municipal solid waste from both unincorporated and incorporated towns and cities of the County of Spokane.

The licensed trash-to-energy process used in the Spokane plant is a form of recycling and is simple. Incoming trucks deliver trash to an enclosed reception area. Trash is transferred by overhead cranes from the reception area to the feed hopper of each heat recovery unit. The trash is moved on reciprocating grates, where combustion temperatures exceed 2500° Fahrenheit. Air from the reception area is blown in above and below the grates to fuel a complete combustion process and to maintain negative pressure over the reception area, preventing the escape of dust and odor. A waterwall boiler above the grate area produces superheated steam. The steam drives a turbine-generator, which produces electricity for Puget Sound Power and Light Inc. A dry scrubber—fabric filter system for each furnace, enhanced by a sophisticated deNO<sub>x</sub> system, thoroughly cleans emissions to meet all environmental standards.

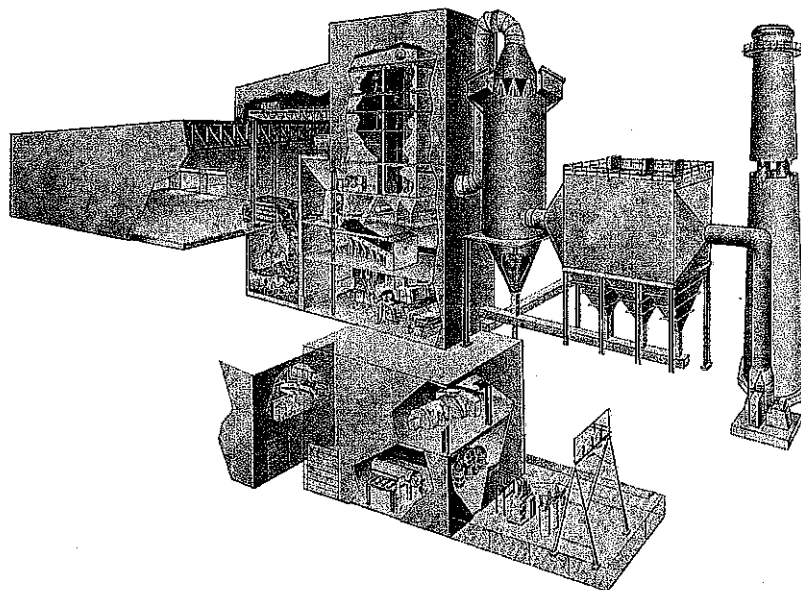
The Spokane facility was financed by a combination of tax-exempt revenue bonds and a \$60 million Washington State Department of Ecology Grant.

Wheelabrator's experience in the trash-to-energy field is extensive. Operating projects have collectively processed millions of tons of municipal solid waste into billions of kilowatt hours of usable electricity. Our first plant, located in Saugus, Massachusetts, serves 750,000 people north of Boston. It has operated continuously since its start-up in 1975. Our other operating facilities, located all across the country, are testimony to our leadership, expertise and financial commitment to conserving the nation's resources and preserving the environment in cooperation with the communities we serve.

Wheelabrator Environmental Systems Inc. is the nation's foremost developer and operator of recycling/trash-to-energy facilities.

## Facility Highlights

| GENERAL                       |  |
|-------------------------------|--|
| Area served .....             | Greater Spokane Area/350,000 people            |
| Type of contract .....        | Full service/Operate                           |
| Ownership .....               | City of Spokane                                |
| Financing .....               | Revenue Bonds/Department of Ecology Grant      |
| Start-up .....                | 1991   |
| REFUSE COMBUSTION             |  |
| Type of system .....          | Waterwall boilers                              |
| Operation .....               | 24 hours per day, 7 days per week              |
| Process lines .....           | 2 @ 400 tons-per-day                           |
| Plant daily capacity .....    | 800 tons                                       |
| Average throughput .....      | 680 tons per day (365 days)                    |
| Feed system .....             | 2 overhead refuse cranes with ram feeder       |
| Grate design .....            | Von Roll reciprocating                         |
| Combustion temperature .....  | 2500° F+                                       |
| Auxiliary fuel .....          | Natural gas                                    |
| Waste volume reduction .....  | 95%  |
| Ash handling system .....     | Semi-dry, vibrating pan conveyor               |
| Materials recovery .....      | +10" metals, aggregate, ferrous                |
| AIR QUALITY CONTROL           |  |
| Type of equipment .....       | Dry scrubbers—Fabric filters—deNO <sub>x</sub> |
| Number of units .....         | 2  |
| ENERGY PRODUCTION             |  |
| Type of energy .....          | Electric power                                 |
| Steam flow to turbine .....   | 188,000 pounds per hour @ 830 psig/825° F      |
| Electric power capacity ..... | 26 megawatts                                   |
| Cooling system .....          | Air cooled condenser                           |
| Customer .....                | Puget Sound Power and Light Inc.               |



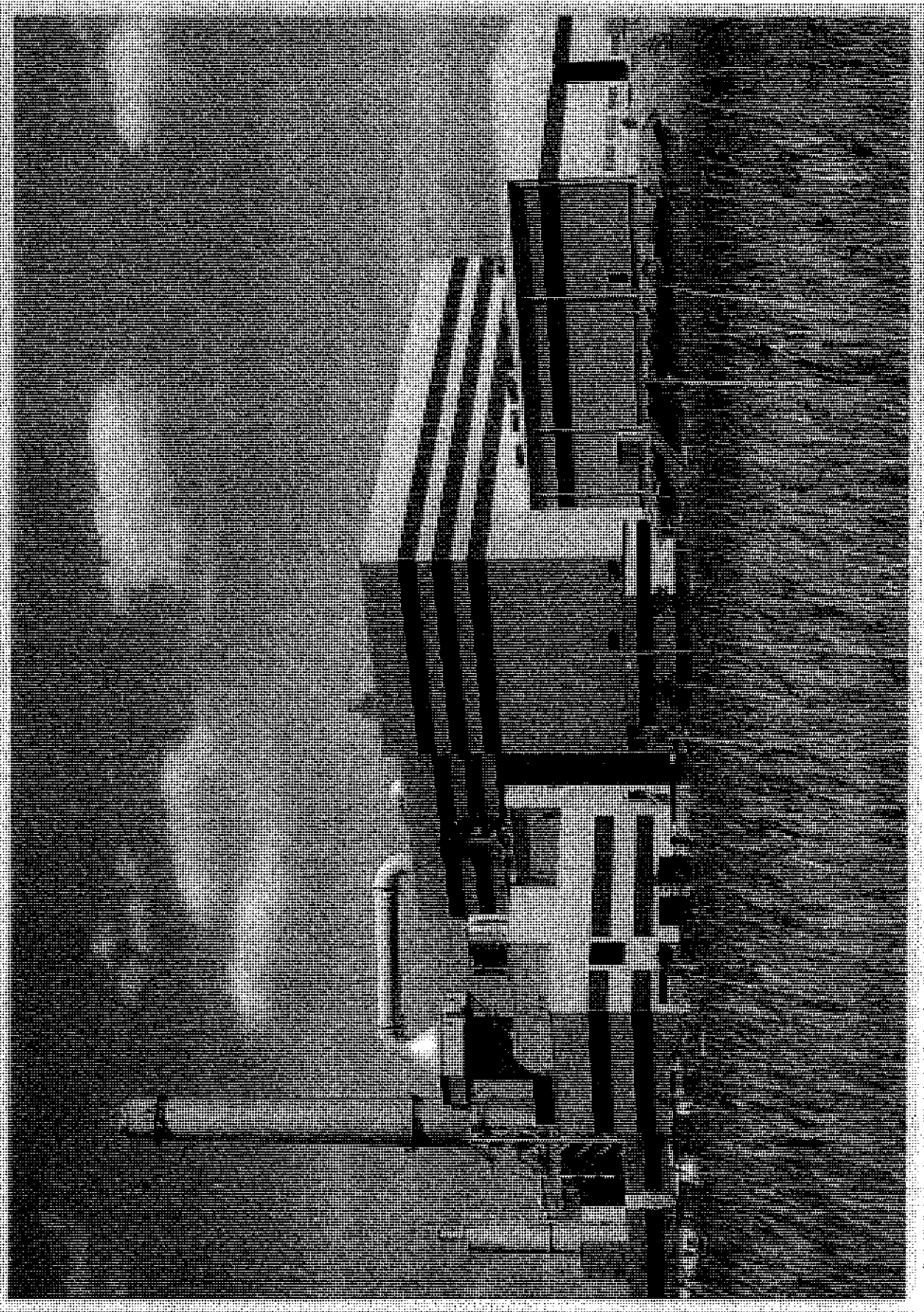
**Wheelabrator Environmental Systems Inc.**  
Liberty Lane  
Hampton, NH 03842

**Saugus, Massachusetts  
Recycling Trash-to-Energy Facility**



**Wheelabrator Environmental Systems, Inc.**

*Environmental Technology*



# Saugus, Massachusetts

Operating since 1975, this landmark facility in Saugus, Massachusetts, is the United States' first commercially successful trash-to-energy facility.

RESCO (Refuse Energy Systems Company) is owned and operated by Wheelabrator Environmental Systems Inc. It was developed to provide nine communities on the North Shore of Massachusetts with a cleaner alternative to disposing of solid waste in a landfill and as an alternative energy source for General Electric Company's Lynn River Works from 1975 to 1985. To meet these needs, RESCO adapted the Von Roll trash-to-energy system, a Swiss technology, to the special requirements of high-volume trash disposal in the United States. This clean and reliable system has been successfully employed in hundreds of plants throughout the world since 1954.

Currently, RESCO serves more than 750,000 people, primarily in northeastern Massachusetts. Indicative of the dependability of RESCO's operating team is the company's record of never having turned away a truck delivering solid waste from a contracting municipality.

RESCO processes up to 1500 tons of trash per day on a seven-day-per week basis. The refuse is fed to two Von Roll waterwall-combustion units, which produce turbine-quality superheated steam. Since 1985, the steam has been converted to electricity and sold to New England Power Company, a Massachusetts utility, to supply enough electricity for over 38,000 homes.

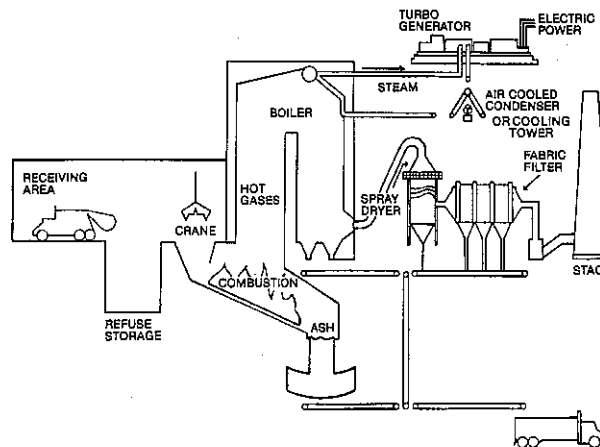
The financing of RESCO was unique in that nearly twenty-five percent of the total project cost was private equity. This successful financing process, used in several subsequent Wheelabrator Environmental Systems Inc. facilities, models the company's long-term commitment to the recycling trash-to-energy industry.

As the industry leader, Wheelabrator Environmental Systems Inc.'s experience is extensive. Since the successful development of Saugus RESCO in 1975, Wheelabrator has continued to provide tangible evidence of our expertise and commitment to conserving the nation's most precious resources by continuing to work with communities to develop their own solid waste disposal programs. Such programs are committed to an integrated approach which includes three major components: recycling, trash-to-energy and modern landfilling. Currently, Wheelabrator's facilities provide reliable, long-term trash disposal for hundreds of communities in the U.S.

Wheelabrator Environmental Systems Inc. is the nation's foremost developer and operator of recycling/trash-to-energy facilities.

## Facility Highlights

| GENERAL                       |  |
|-------------------------------|--|
| Area served .....             | 14 Boston North Shore Communities/<br>750,000 people |
| Type of contract .....        | Full service/Own and Operate                         |
| Ownership .....               | RESCO (Wheelabrator Technologies<br>Inc.)            |
| Financing .....               | Revenue Bonds/Private Equity                         |
| Start-up .....                | October 1975   |
| REFUSE COMBUSTION             |  |
| Type of system .....          | Waterwall boilers                                    |
| Operation .....               | 24 hours per day, 7 days per week                    |
| Number of process lines ..... | 2 @ 750 tons per day                                 |
| Plant daily capacity .....    | 1500 tons  |
| Average throughput .....      | 1350 tons per day (365 days)                         |
| Feed system .....             | 2 overhead refuse cranes                             |
| Grate design .....            | Von Roll reciprocating                               |
| Combustion temperature .....  | 2500°F+  |
| Auxiliary fuel .....          | #2 oil   |
| Waste volume reduction .....  | 95%  |
| Ash handling system .....     | Water quench, drag conveyor                          |
| Materials recovery .....      | Ferrous, aggregate                                   |
| AIR QUALITY CONTROL           |  |
| Type of equipment .....       | Dry scrubbers - Fabric filters                       |
| Number of units .....         | 2  |
| ENERGY PRODUCTION             |  |
| Type of energy .....          | Electric power                                       |
| Steam flow to turbine .....   | 370,000 pounds per hour @ 650 psig/850° F            |
| Electric power capacity ..... | 40 megawatts   |
| Cooling system .....          | Once-through cooling                                 |
| Customer .....                | New England Power Company                            |



**Wheelabrator Environmental Systems Inc.**  
Liberty Lane  
Hampton, NH 03842  
1-800-682-0026

Pine Hills County, Florida  
Recycling Trash-to-Energy Facility

Wheelabrator Environmental Systems, Inc.





# St. Petersburg, Florida

Designed, constructed and operated by Wheelabrator Environmental Systems Inc., this recycling trash-to-energy plant provides clean, environmentally sound disposal of municipal solid waste from Pinellas County, Florida. The facility is financed by \$160 million in tax-exempt revenue bonds.

The Pinellas County facility is capable of converting up to 3,000 tons of municipal solid waste per day into electric power. A unique design feature of this 75 megawatt power plant is the use of treated municipal wastewater as the cooling tower water supply. Florida Power Corporation buys the electricity, which is enough power to serve 56,000 homes.

The technology used at the Pinellas facility produces a residue, which is further processed by a materials-recovery system. This system recovers salable metals for recycling and produces a sterile aggregate for use in roads, roadbeds and landfill cover.

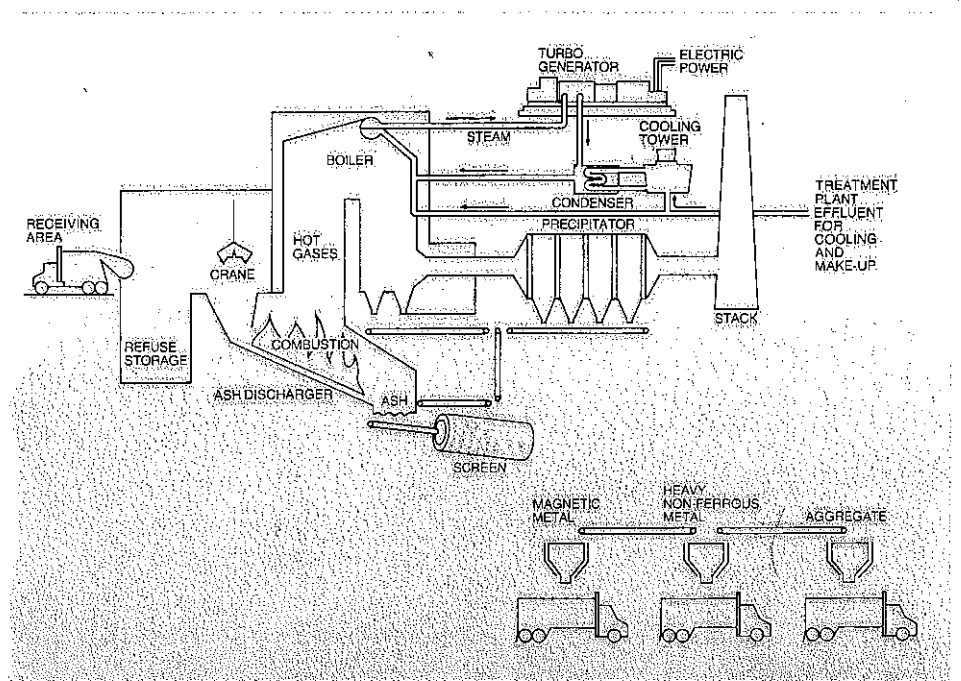
Wheelabrator Environmental Systems is committed to operating and maintaining the Pinellas County plant for at least twenty years. Other operating Wheelabrator facilities are located in New York, Maryland, Massachusetts, New Hampshire, New Jersey, Connecticut, Washington, Pennsylvania and Florida. Wheelabrator's first trash-to-energy plant in Saugus, Massachusetts, has been in continuous operation since 1975.

With outstanding financial, technical and operating strengths, Wheelabrator has firmly established its leadership role in conserving our nation's resources, preserving the environment and making available new sources of energy. Wheelabrator's facilities provide reliable, long-term trash disposal for hundreds of communities in the U.S.

Wheelabrator Environmental Systems Inc. is a unit of Wheelabrator Technologies Inc., one of the nation's foremost developers of high-technology energy and recycling technologies.

## Facility Highlights

| GENERAL                 |   |
|-------------------------|---|
| Area served             | Pinellas County/1,000,000 people                |
| Type of contract        | Design, construct and operate                   |
| Ownership               | Pinellas County                                 |
| Financing               | Solid waste revenue bonds                       |
| Start-up                | May 1983  |
| REFUSE COMBUSTION       |   |
| Type of system          | Reciprocating grates with waterwall boilers     |
| Operation               | 24 hours per day, 7 days per week               |
| Process lines           | 3 @ 1,000 tons per day                          |
| Plant daily capacity    | 3,000 tons                                      |
| Average throughput      | 2,550 tons per day (365 days)                   |
| Feed system             | 2 overhead refuse cranes and ram feeder         |
| Grate design            | Martin reciprocating                            |
| Combustion temperature  | 2,500° F+                                       |
| Waste volume reduction  | 95%   |
| Ash handling system     | Ram de-asher and transfer conveyors             |
| Materials recovery      | Aluminum, ferrous, heavy non-ferrous, aggregate |
| AIR QUALITY CONTROL     |   |
| Type of equipment       | Electrostatic precipitators/3 fields each       |
| Number of units         | 3   |
| ENERGY PRODUCTION       |   |
| Type of energy          | Electric power                                  |
| Steam flow to turbine   | 702,000 pounds per hour @ 600 psig/750° F       |
| Electric power capacity | 75 megawatts                                    |
| Cooling system          | Wet cooling tower                               |
| Customer                | Florida Power Co.                               |



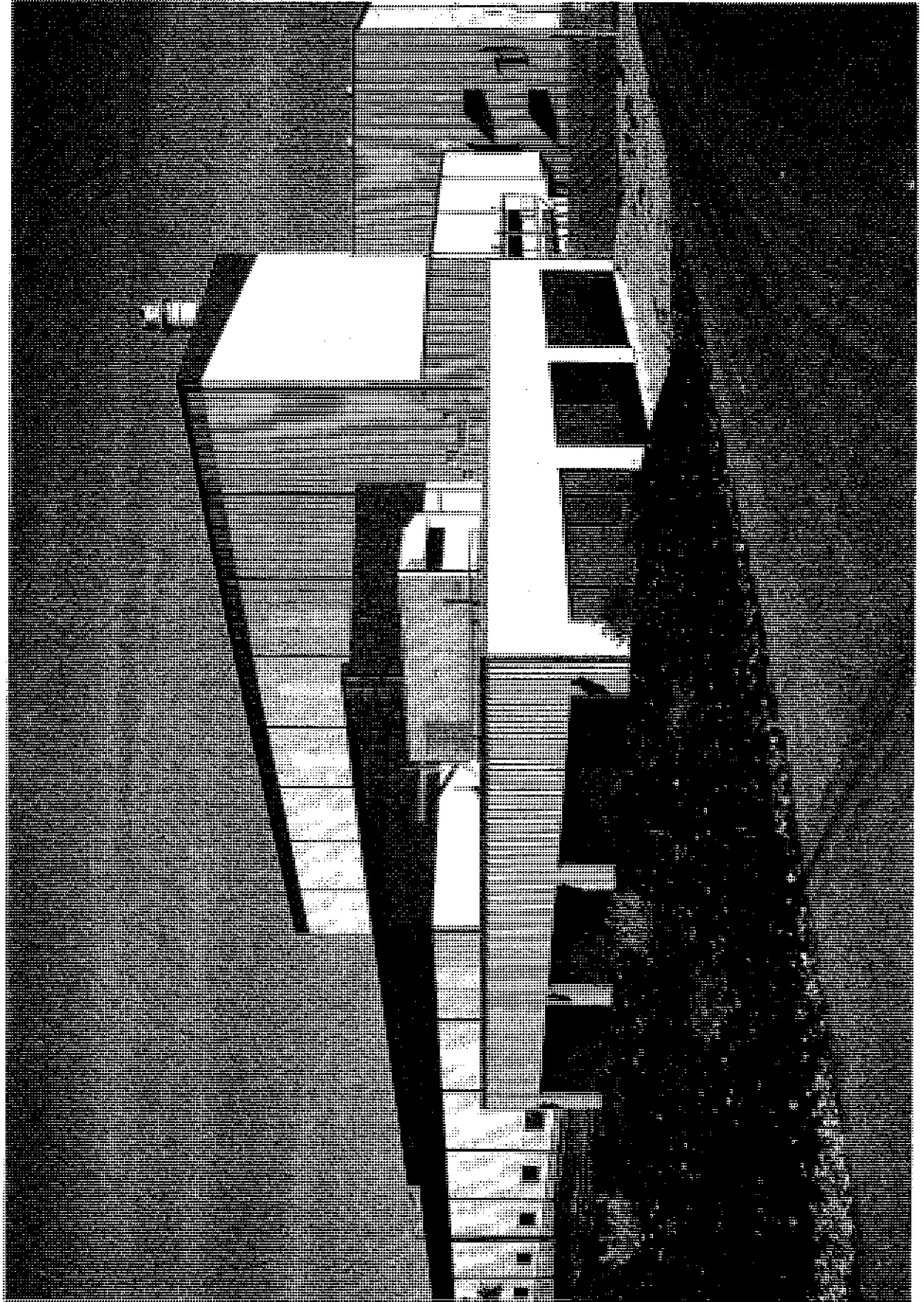
**Wheelabrator Environmental Systems Inc.**  
 Liberty Lane  
 Hampton, NH 03842  
 1-800-682-0026

**North Andover, Massachusetts  
Recycling Trash-to-Energy Facility**



**Wheelabrator Environmental Systems Inc.**

A Wheelabrator Technologies Company



# North Andover, Massachusetts

Wheelabrator Environmental Systems Inc.'s North Andover, Massachusetts recycling trash-to-energy facility is designed to provide more than twenty communities with dependable, long-term, environmentally safe disposal of municipal solid waste.

The facility, financed by approximately \$160 million in tax-exempt industrial revenue bonds and \$37 million in taxable debt, was designed and constructed between the years of 1983 and 1985. It utilizes proven technology to convert up to 1500 tons of solid waste per day into electric power. This technology is a form of recycling and is simple. Incoming trucks deliver trash to an enclosed reception area. Overhead cranes transfer the trash into the feed hoppers of each combustion unit. The fuel is moved on reciprocating grates where combustion temperatures exceed 2500° Fahrenheit. Air from the reception area is blown in above and below the grates to fuel a complete combustion process and create negative pressure, preventing the escape of dust and eliminating odors. A sophisticated waterwall boiler above the grate area produces superheated steam. The steam drives a turbine-generator, which produces electricity. An electrostatic precipitator thoroughly cleans emissions, meeting all local, state and federal environmental standards.

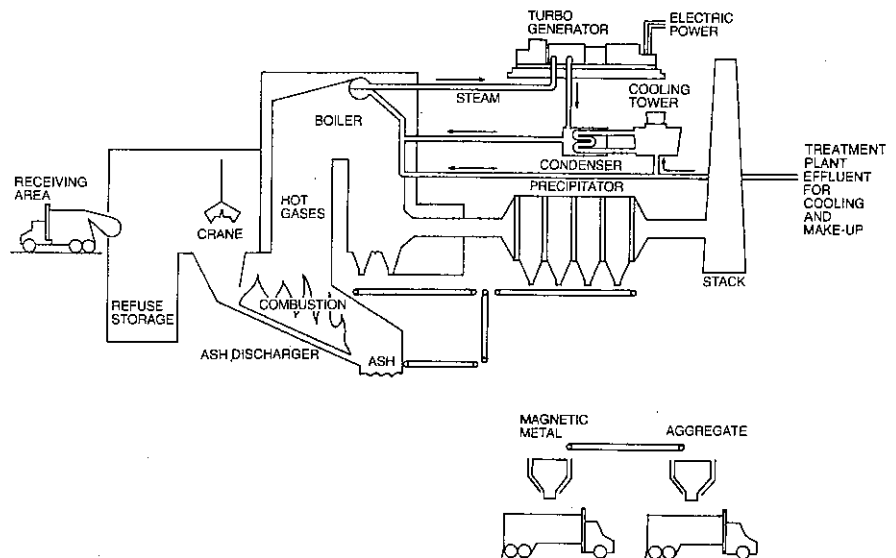
The 40 megawatt power plant is designed to produce and sell enough converted electric power to New England Power Company to supply 28,000 homes with electricity.

The first Wheelabrator trash-to-energy facility, located in Saugus, Massachusetts, has been in continuous operation since 1975 and is the most successful recycling trash-to-energy facility in the nation. Through this facility and similar ones in New York, Maryland, Connecticut, New Hampshire, New Jersey and Florida, Wheelabrator is helping hundreds of communities solve their waste-disposal problems safely and economically.

Wheelabrator Environmental Systems Inc. is a unit of Wheelabrator Technologies Inc., one of the nation's foremost developers of high-technology energy and recycling technologies.

## Facility Highlights

| GENERAL                       |  |
|-------------------------------|--|
| Area served .....             | Northeastern Massachusetts/750,000 people                                |
| Type of contract .....        | Full service/Own and Operate   |
| Ownership .....               | Wheelabrator Environmental Systems Inc. (Massachusetts Refusetech, Inc.) |
| Financing .....               | Revenue Bonds/Taxable debt   |
| Start-up .....                | 1985   |
| REFUSE COMBUSTION             |  |
| Type of system .....          | Reciprocating grates with waterwall boilers                              |
| Operation .....               | 24 hours per day, 7 days per week  |
| Process lines .....           | 2 @ 750 tons per day   |
| Plant daily capacity .....    | 1500 tons  |
| Average throughput .....      | 1200 tons per day (365 days)   |
| Feed system .....             | Overhead refuse cranes with ram feeder                                   |
| Grate design .....            | Martin reciprocating   |
| Combustion temperature .....  | 2500° F+   |
| Waste volume reduction .....  | 95%  |
| Ash handling system .....     | Ram de-asher and transfer conveyors                                      |
| Materials recovery .....      | Ferrous, aggregate   |
| AIR QUALITY CONTROL           |  |
| Type of equipment .....       | Electrostatic precipitators/3 fields each                                |
| Number of units .....         | 2  |
| ENERGY PRODUCTION             |  |
| Type of energy .....          | Electric power   |
| Steam Flow to Turbine .....   | 396,000 pounds per hour @ 600 psig/750° F                                |
| Electric power capacity ..... | 40 megawatts   |
| Cooling system .....          | Wet cooling tower  |
| Customer .....                | New England Power Company  |

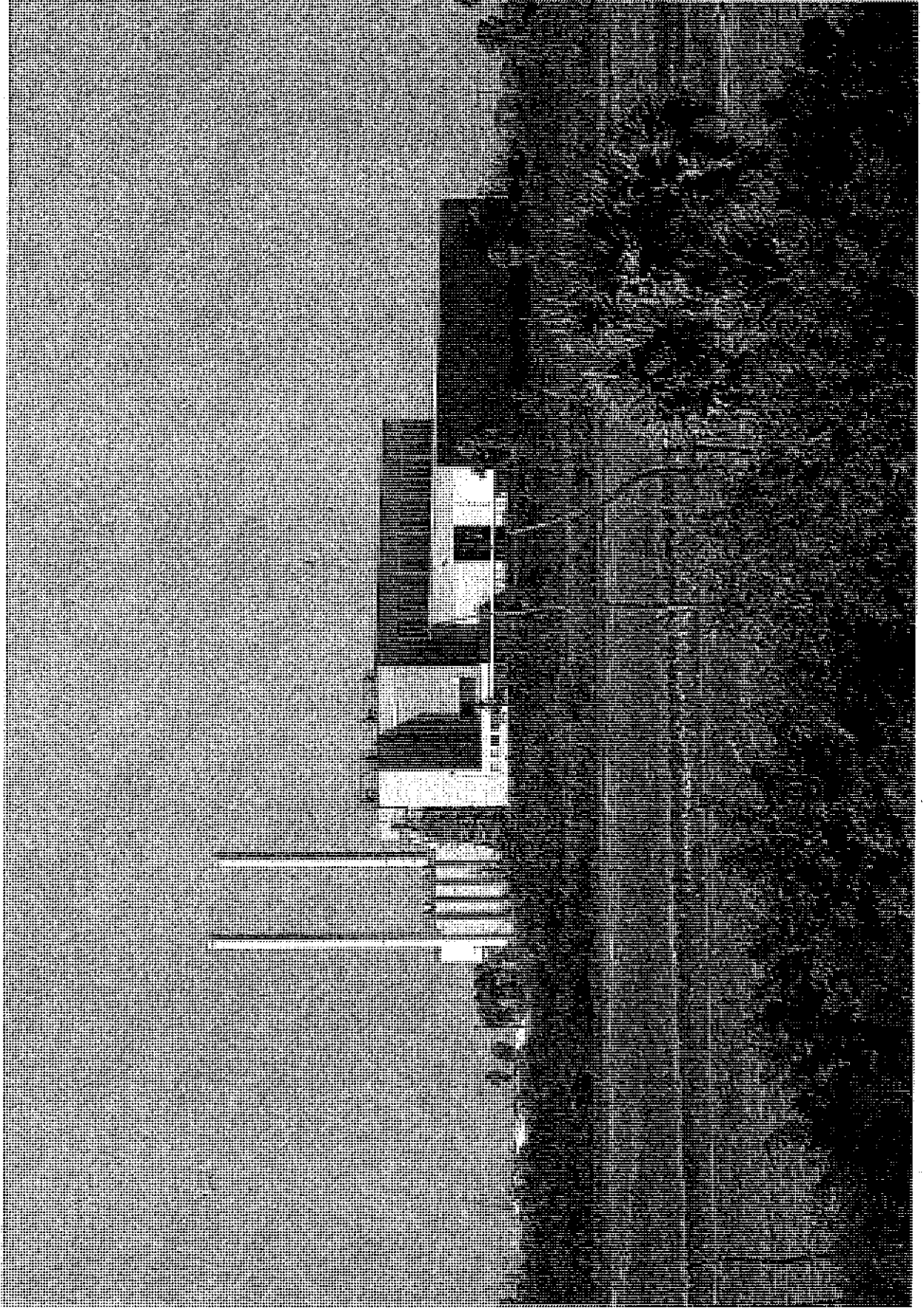


**Wheelabrator Environmental Systems Inc.**  
 Liberty Lane  
 Hampton, NH 03842  
 1-800-682-0026

**McKibben  
Tampa, Florida  
Trash-to-Energy Facility**

**Wheelabrator Environmental Systems inc.**

A Wheelabrator Technologies Company



# Tampa, Florida (McKay Bay)

This Wheelabrator recycling trash-to-energy facility in Tampa, Florida is a 1,000 ton-per-day facility, which serves the long-term needs for disposal of municipal solid waste for the City of Tampa.

The McKay Bay's technical approach to processing municipal solid waste is relatively simple. Municipal solid waste is deposited into the enclosed storage pit upon delivery to the plant. From there it is transferred by overhead crane to the feed chutes of one of the four separate processing lines. Each line can operate independently, providing flexibility in adjusting to changing refuse volumes and maintenance requirements. The refuse is moved by a series of three reciprocating grates through the refractory-lined furnace. From the grates, refuse is fed to a rotary kiln to complete the combustion process. The McKay Bay trash-to-energy facility incorporates the Volund mass burn technology.

The flue gases from the furnace and rotary kiln flow through the boiler where the gases are cooled and steam is generated. Steam is expanded in the turbine generator to produce electricity. Approximately ten percent of the electricity produced is used within the plant, with the remainder exported for sale to Tampa Electric Company. The cooled gases from the boiler flow to the electrostatic precipitator for removal of particulates before exiting through the stack.

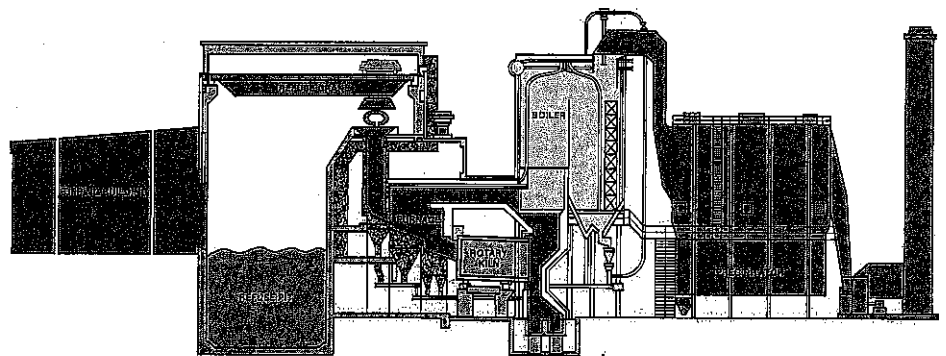
One of the advantages of the trash-to-energy process is the recovery of valuable energy. The plant is capable of producing for sale in excess of 450 kilowatt hours of electricity per ton of refuse processed after satisfying in-plant power needs. Ferrous scrap from the residue stream is sold to a local scrap processor for resale to a steel company. The screened residue is a uniform material that has potential as road sub-base.

Wheelabrator has processed millions of tons of U.S. municipal trash into energy in its trash-to-energy plants since 1975. Our other operating facilities, located elsewhere in Florida and in New York, Connecticut, Maryland, Massachusetts, New Jersey, New Hampshire and Washington, are testimony to our leadership, expertise and financial commitment to conserving the nation's resources and preserving the environment in cooperation with the communities we serve.

Wheelabrator Environmental Systems Inc. is a unit of Wheelabrator Technologies Inc., one of the nations foremost developers of the high-technology energy and recycling technologies.

## Facility Highlights

| GENERAL                       |   |
|-------------------------------|---|
| Area Served .....             | City of Tampa                           |
| Type of Contract .....        | Design, Construction, Operation         |
| Ownership .....               | City of Tampa                           |
| Financing .....               | Solid Waste Revenue Bonds               |
| Start-Up .....                | 1985                                    |
| REFUSE COMBUSTION             |   |
| Type of System .....          | Rotary Kiln with Water Wall Boilers     |
| Operation .....               | 24 hours per day, 7 days per week       |
| Process Lines .....           | Four @ 250 tons per day                 |
| Plant Daily Capacity .....    | 1000 tons per day                       |
| Average Throughput .....      | 822 TPD                                 |
| Feed System .....             | Overhead refuse crane                   |
| Rotary Kiln Design .....      | Volund                                  |
| Combustion Temperature .....  | 2100° F+                                |
| Waste Volume Reduction .....  | 90%                                     |
| Ash Handling System .....     | Water quench, ash conveyor              |
| AIR QUALITY CONTROL           |   |
| Type of Equipment .....       | Electrostatic Precipitations/Two fields |
| Number of Units .....         | Four                                    |
| ENERGY PRODUCTION             |   |
| Type of Energy .....          | Electric power                          |
| Steam Flow to Turbine .....   | 210,000 lbs./hour @ 650 psig/700° F     |
| Electric Power Capacity ..... | 22 MW                                   |
| Cooling System .....          | Cooling Tower                           |
| Customer .....                | Tampa Electric Company                  |



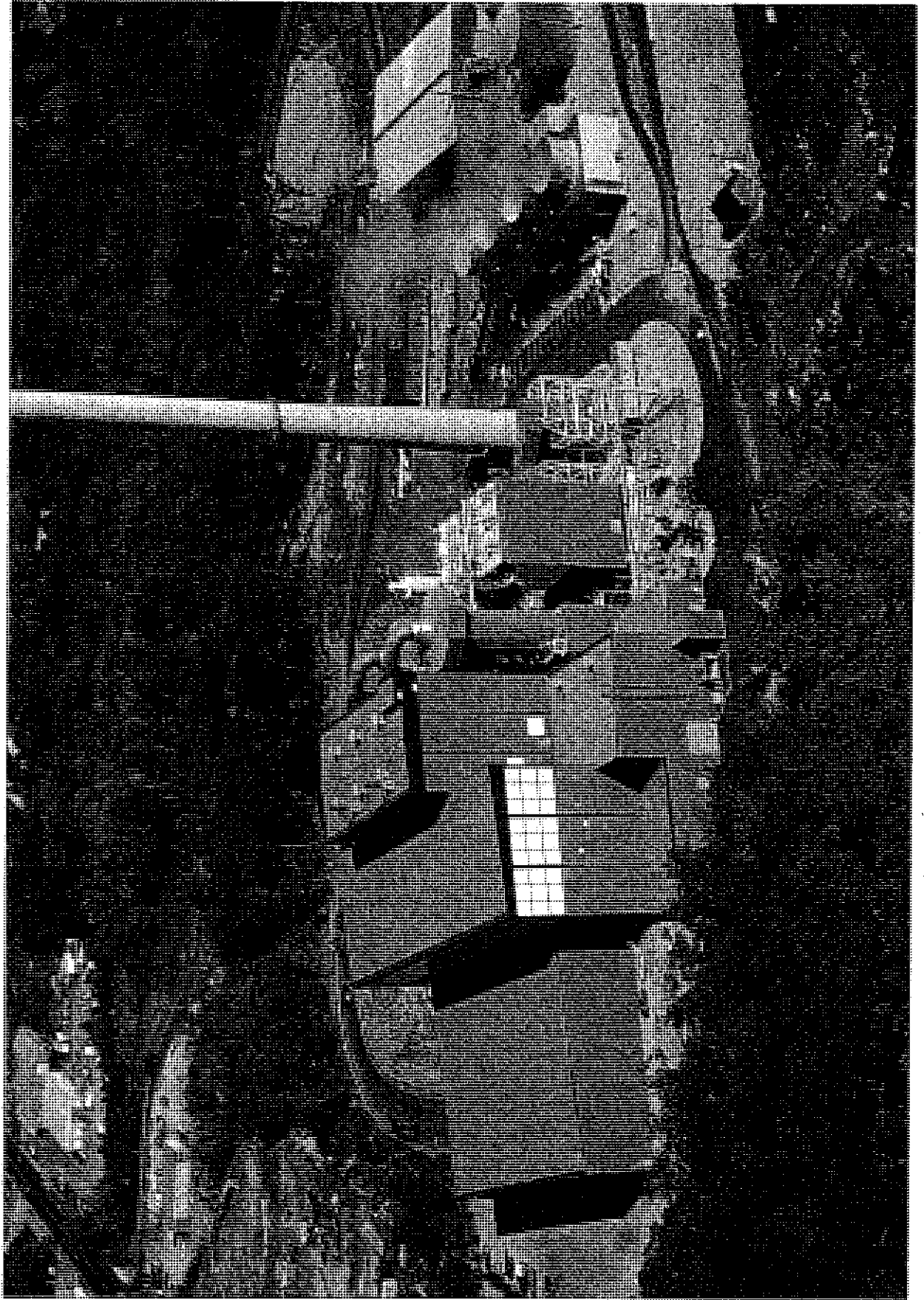
**Wheelabrator Environmental Systems Inc.**  
Liberty Lane  
Hampton, NH 03842  
1-800-682-0026

**Milbury, Massachusetts  
Recycling Trash-to-Energy Facility**



**Wheelabrator Environmental Systems Inc.**

A Wheelabrator Technologies Company



# Millbury, Massachusetts

Designed, constructed and operated by Wheelabrator Environmental Systems Inc., the Millbury Recycling Trash-to-Energy facility provides dependable, environmentally safe disposal of up to 1500 tons per day of solid waste from central Massachusetts.

The Millbury facility was developed as an important solution to the solid waste crisis in central Massachusetts. The plant now provides reliable disposal service to 36 area communities.

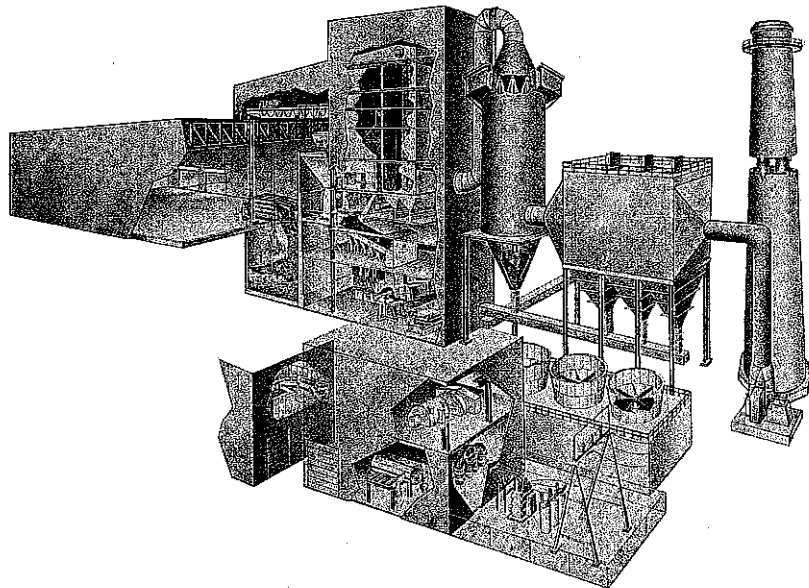
The licensed process used in Millbury is simple and a form of recycling. Incoming trucks deliver trash to an enclosed reception area. Trash is transferred by overhead cranes from the area to the feed hopper of each heat recovery unit. The trash is moved on reciprocating grates where combustion temperatures exceed 2500° Fahrenheit. Air from the reception area is blown in above and below the grates to fuel a complete combustion process in the furnace and to maintain negative pressure over the reception area, preventing the escape of dust and odors. A waterwall boiler above the grate area produces superheated steam. This steam is used to drive a turbine-generator, which produces electricity for New England Power Company. A spray dryer absorber in combination with an electrostatic precipitator for each furnace thoroughly clean emissions to meet all local, state and federal environmental standards.

Wheelabrator's experience in the trash-to-energy field is extensive. Our first plant, located in Saugus, Massachusetts, serves 750,000 people north of Boston. It has operated continuously since its start-up in 1975. Our other projects in Maryland, New York, Massachusetts, Florida, New Jersey, Connecticut and New Hampshire are testimony to our leadership, expertise and financial commitment to conserving the nation's resources and preserving the environment in cooperation with the communities we serve.

Wheelabrator Environmental Systems Inc. is a unit of Wheelabrator Technologies Inc., one of the nation's foremost developers of high-technology energy and recycling technologies.

## Facility Highlights

| GENERAL                 |   |
|-------------------------|---|
| Area served             | Central Massachusetts                       |
| Type of contract        | Design, Construct and Operate               |
| Start-up                | 1987  |
| REFUSE COMBUSTION       |   |
| Type of system          | Reciprocating grates with waterwall boilers |
| Operation               | 24 hours per day, 7 days per week           |
| Process lines           | 2 @ 750 tons per day                        |
| Plant daily capacity    | 1500 tons                                   |
| Average throughput      | 1200 tons per day (365 days)                |
| Feed system             | 2 overhead refuse cranes with ram feeder    |
| Grate design            | Von Roll reciprocating                      |
| Combustion temperature  | 2500° F+                                    |
| Auxiliary fuel          | Natural gas                                 |
| Waste volume reduction  | 95%   |
| Ash handling system     | Wet ram discharger, conveyer system         |
| Materials recovery      | Aggregate                                   |
| AIR QUALITY CONTROL     |   |
| Type of equipment       | Dry scrubbers—Electrostatic precipitators   |
| Number of units         | 2   |
| ENERGY PRODUCTION       |   |
| Type of energy          | Electric power                              |
| Electric power capacity | 40 megawatts                                |
| Cooling system          | Wet cooling tower                           |
| Customers               | New England Power Company                   |



**Wheelabrator Environmental Systems Inc.**

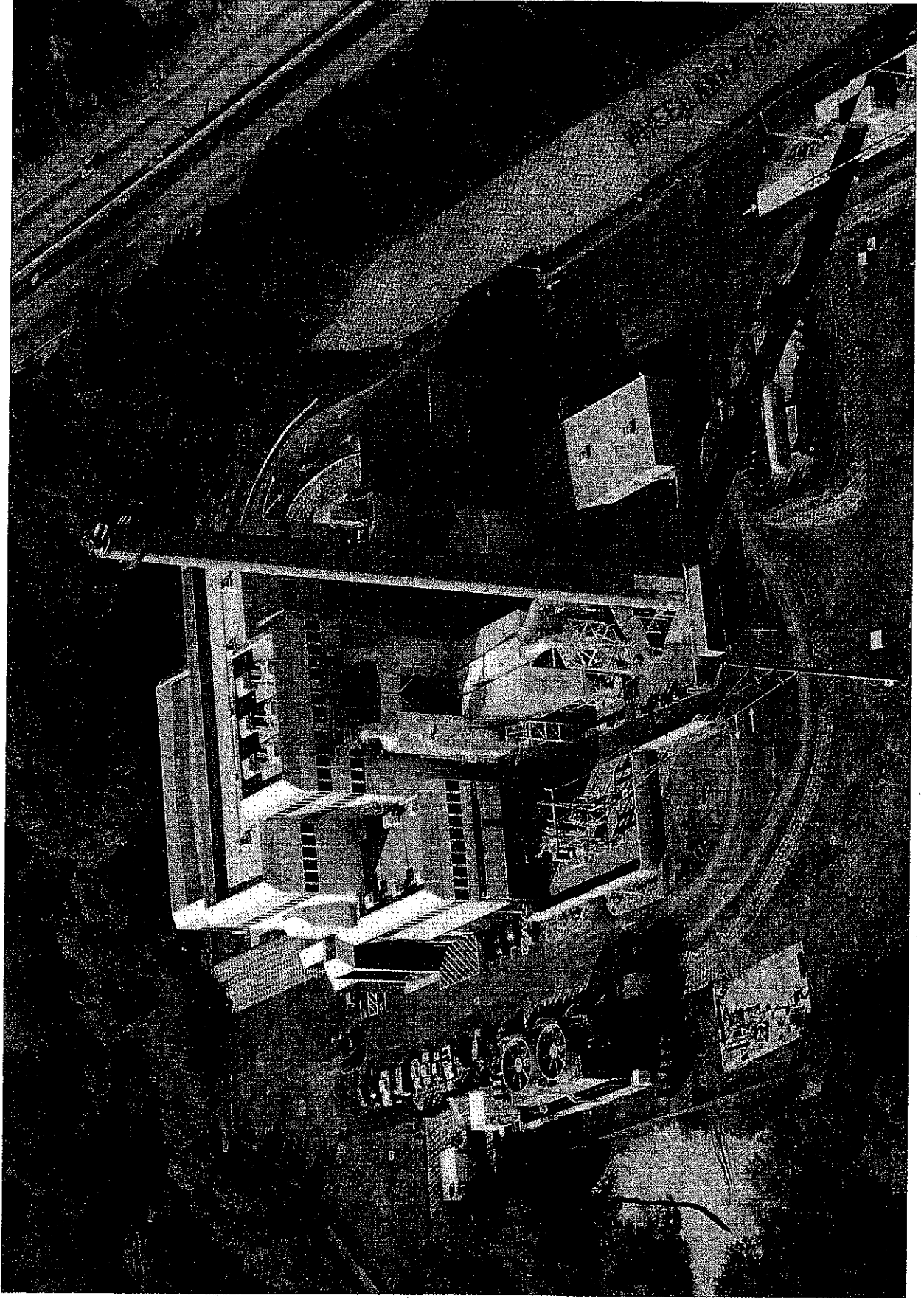
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Hampton, NH 03842  
1-800-682-0026

**Lisb Recycling and  
Energy Recovery Facility**



**Wheelabrator Environmental Systems, Inc.**

A WWHX Technologies Company





# Lisbon, Connecticut

Designed and operated by Wheelabrator Environmental Systems Inc., the Lisbon Recycling Trash-to-Energy facility provides dependable, environmentally safe disposal of up to 500 tons per day of municipal solid waste from both unincorporated and incorporated towns and cities in Connecticut.

The licensed trash-to-energy process used in the Lisbon plant is a form of recycling and is simple. Incoming trucks deliver trash to an enclosed reception area. Trash is transferred by overhead cranes from the reception area to the feed hopper of each heat recovery unit. The trash is moved on reciprocating grates, where combustion temperatures exceed 2500° Fahrenheit. Air from the reception area is blown in above and below the grates to fuel a complete combustion process and to maintain negative pressure over the reception area, preventing the escape of dust and odor. A waterwall boiler above the grate area produces superheated steam. The steam drives a turbine-generator, which produces electricity for Connecticut Light & Power. A dry scrubber—fabric filter system for each furnace, enhanced by a sophisticated deNOx system, thoroughly cleans emissions to meet all environmental standards.

Wheelabrator's experience in the trash-to-energy field is extensive. Operating projects have collectively processed millions of tons of municipal solid waste into billions of kilowatt hours of usable electricity. Our first plant, located in Saugus, Massachusetts, serves 750,000 people north of Boston. It has operated continuously since its start-up in 1975. Our other operating facilities, located all across the country, are testimony to our leadership, expertise and financial commitment to conserving the nation's resources and preserving the environment in cooperation with the communities we serve.

Wheelabrator Environmental Systems Inc. is the nation's foremost developer and operator of recycling/trash-to-energy facilities.

## Facility Highlights

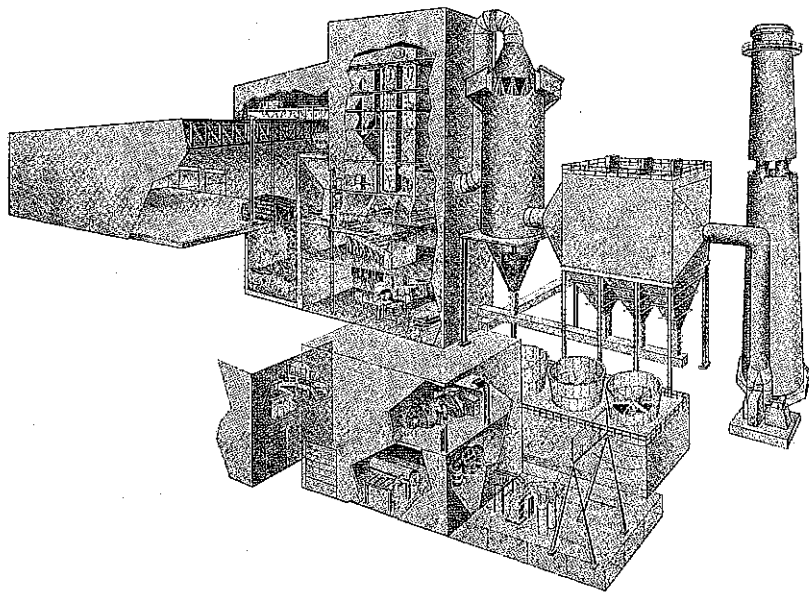
### GENERAL

### REFUSE COMBUSTION

### AIR QUALITY CONTROL

|                   |  |
|-------------------|--|
| Type of equipment | Dry scrubbers—Fabric filters—deNO <sub>x</sub> |
| Number of units   | 2  |

### ENERGY PRODUCTION

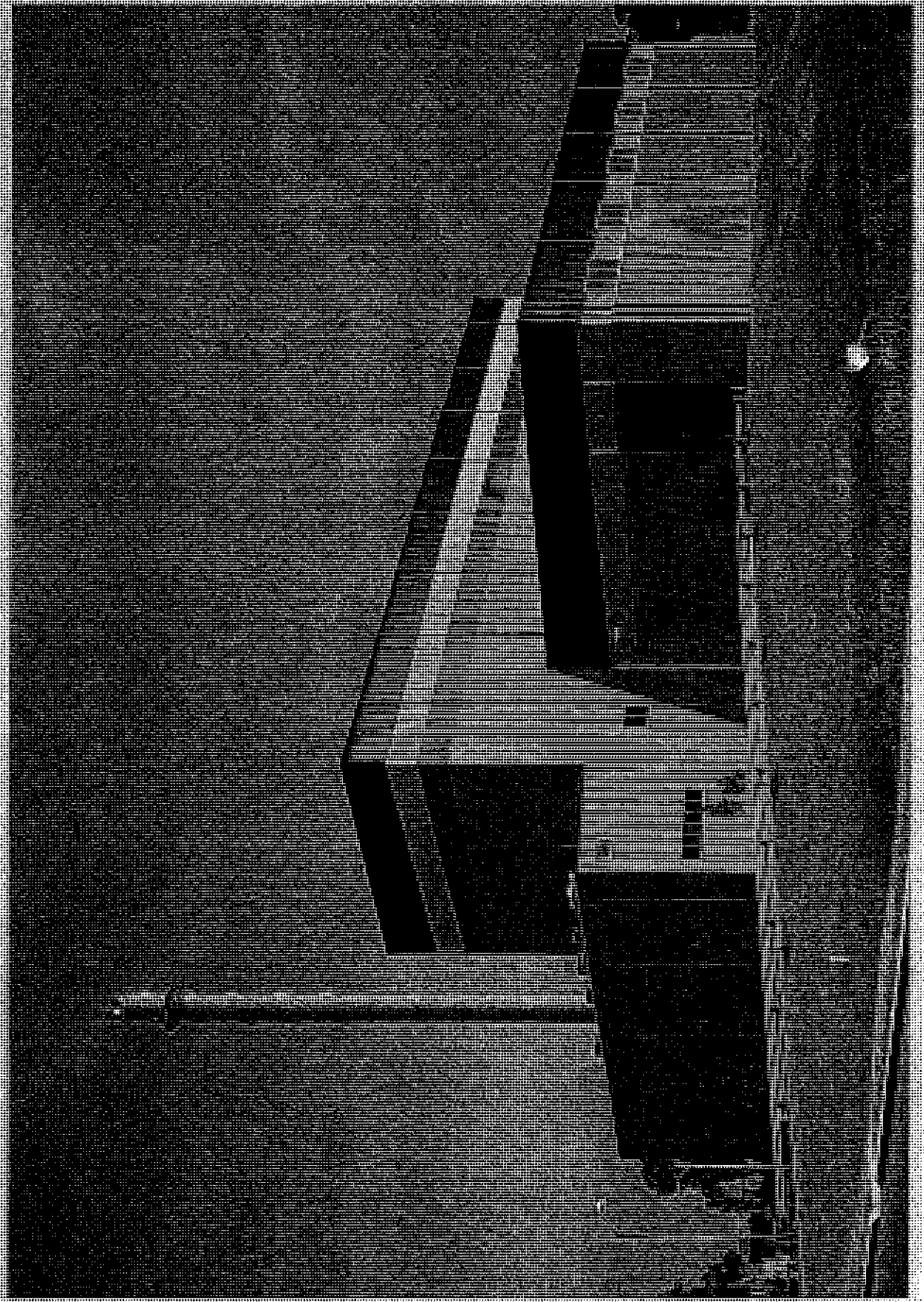


**Wheelabrator Environmental Systems Inc.**  
4 Liberty Lane West  
Hampton, NH 03842  
800-682-0026

Gloucester County, New Jersey  
Recycling Trash-to-Energy Facility



Wheelabrator Environmental Systems, Inc.



# Gloucester County, New Jersey

Designed, constructed, owned and operated by Wheelabrator Environmental Systems Inc., this unique recycling trash-to-energy facility disposes of up to 575 tons per day of municipal solid waste from the County of Gloucester.

The Gloucester facility is the nation's first regulated solid waste disposal and trash-to-energy utility. The facility is subject to the resource recovery rate making discretion of the New Jersey Board of Public Utilities. The privately initiated plant is a licensed utility, holds the franchise to all waste, and utilizes a published tariff and rate schedule.

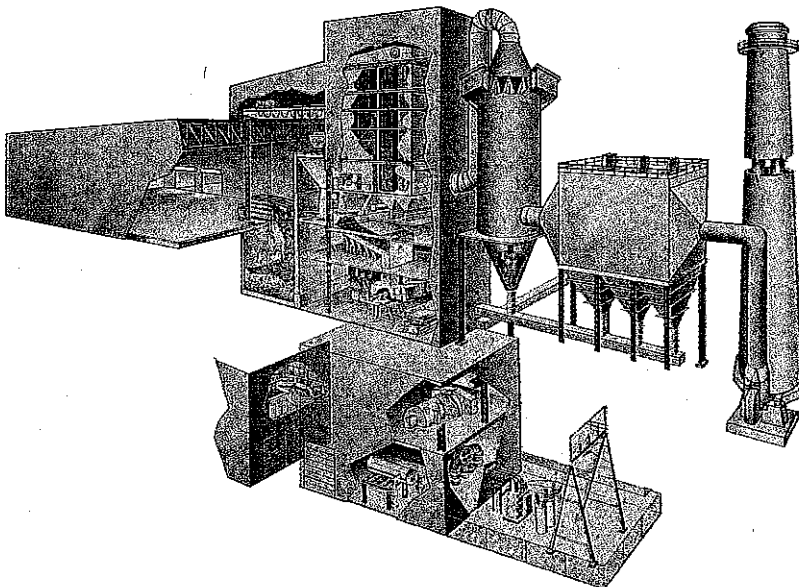
The licensed process used in Gloucester County is simple and a form of recycling. Incoming trucks deliver trash to an enclosed reception area. The trash is transferred by overhead cranes from the area to the feed hopper of each combustion unit. The trash is moved on reciprocating grates through the furnace, where combustion temperatures exceed 2500° Fahrenheit. Air from the reception area is blown in above and below the grates to fuel a complete combustion process in the furnace and to maintain negative pressure over the reception area, preventing the escape of dust and odors. A waterwall boiler above the grate area produces superheated steam. Steam is used to drive a turbine-generator, which will produce electricity for Jersey Central Power & Light. Dry scrubber and fabric filter systems for each furnace thoroughly clean emissions to meet all federal, state and local environmental standards.

Wheelabrator Environmental Systems Inc. has processed millions of tons of U.S. municipal waste into billions of kilowatts of energy in its recycling trash-to-energy plants since 1975. Our facilities in New York, Massachusetts, Maryland, Florida, Connecticut and New Hampshire are testimony to our leadership, expertise and financial commitment to conserving the nation's resources and preserving the environment in cooperation with the communities we serve.

Wheelabrator Environmental Systems Inc. is a unit of Wheelabrator Technologies Inc., one of the nation's foremost developers of high-technology energy and recycling technologies.

## Facility Highlights

| <b>GENERAL</b>               |   |
|------------------------------|---|
| Area served                  | County of Gloucester/200,000 people   |
| Type of agreement            | Regulated disposal utility; no Service Agreement  |
| Ownership                    | Wheelabrator Environmental Systems Inc.   |
| Financing                    | Revenue Bonds/Private equity  |
| Start-up                     | 1989  |
| <b>REFUSE COMBUSTION</b>     |   |
| Type of system               | Reciprocating grates with waterwall boilers   |
| Operation                    | 24 hours per day, 7 days per week   |
| Process lines                | 2 @ 287.5 tons per day  |
| Plant daily capacity         | 575 tons per day  |
| Average throughput           | 460 tons per day (365 days)   |
| Feed system                  | 2 overhead refuse cranes with ram feeder  |
| Grate design                 | Von Roll reciprocating  |
| Combustion temperature       | 2500°F+   |
| Auxiliary fuel               | Natural gas   |
| Waste volume reduction       | 95%   |
| Ash handling system          | Water quench, drag conveyor   |
| Materials recovery           | Ferrous   |
| <b>AIR POLLUTION CONTROL</b> |   |
| Type of equipment            | Dry scrubbers—Fabric filters  |
| Number of units              | 2   |
| <b>ENERGY PRODUCTION</b>     |   |
| Type of energy               | Electric power and steam  |
| Steam Flow to Turbine        | 130,000 pounds per hour @ 650 psig/750° F   |
| Electric power capacity      | 14 megawatts  |
| Cooling system               | Once-through cooling  |
| Customers                    | Jersey Central Power & Light Co.<br>(wheeled through Public Service Electric & Gas Company) |



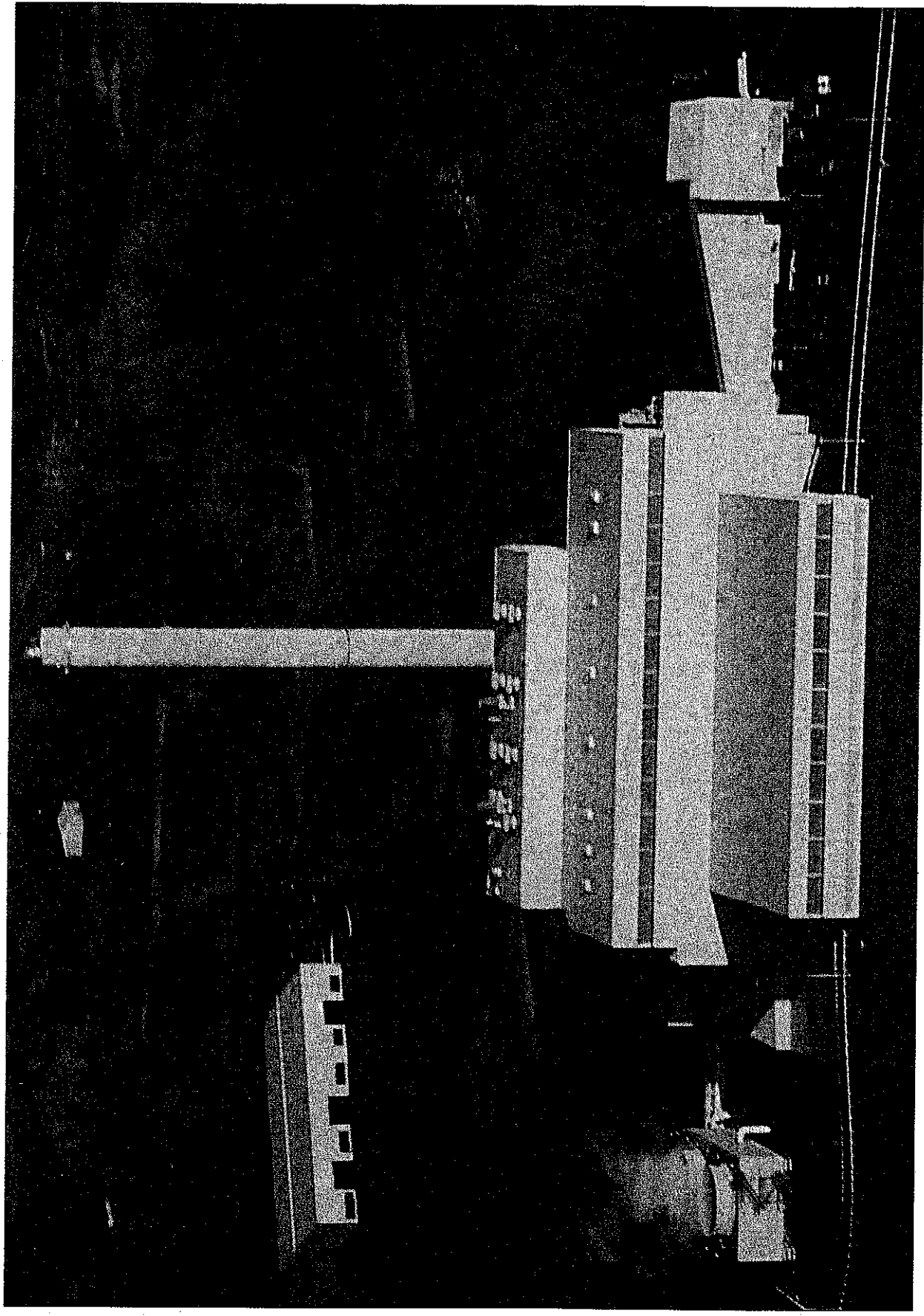
**Wheelabrator Environmental Systems Inc.**  
Liberty Lane  
Hampton, NH 03842  
603-929-3000  
1-800-682-0026

# Fall Township Recycling and Energy Recovery Facility



**Wheelabrator Environmental Systems Inc.**

A Wheelabrator Technologies Company



# Falls Township, Pennsylvania

The Falls Township Recycling and Energy Recovery Facility provides dependable, long-term, and environmentally safe solid waste disposal to meet the growing needs of the Bucks County area. Sized at an average capacity of 1,300 tons per day, with a nominal design capacity of 1,500 tons per day, the facility is owned and operated by Wheelabrator Falls Inc., a wholly owned subsidiary of Wheelabrator Environmental Systems Inc. The Falls Recycling and Energy Recovery Facility converts municipal solid waste into enough electricity to provide power to approximately 50,000 households.

Wheelabrator Environmental Systems Inc., has developed America's first privately initiated, totally integrated Materials Recovery Facility ("MRF") with a commercial trash-to-energy facility in Falls Township, Bucks County, Pennsylvania. The MRF is successfully recovering and marketing a variety of recycled products, while demonstrating that waste-to-energy and recycling are compatible and can be successfully integrated at a single site.

For the first time, the communities of Bucks County have the opportunity to send their recyclables along with their non-recyclable trash to the same location. This translates into substantial savings for the participating communities as collection systems for trash and recyclables develop in the future.

The MRF utilizes state-of-the-art technology for sorting and processing commingled recyclables. The facility is capable of processing up to 200 tons per day of recyclables into clean, marketable secondary materials that supplement the county's existing recycling program.

The second key component, the trash-to-energy process is a form of recycling and is a simple one. Trash that cannot be recycled is delivered to the facility during normal working hours. Delivery trucks deposit this fuel in an enclosed receiving pit, where it is then transferred by overhead cranes to the feed hopper of each of the two heat recovery units. The fuel is moved on reciprocating grates where combustion temperatures exceed 2,500° F. Air drawn in from the reception area is blown in above and below the grates to fuel a complete combustion process in the furnace and to maintain negative pressure, preventing the escape of dust and odor. A waterwall boiler above the grate area produces superheated steam. The steam drives a turbine generator that produces electricity. State-of-the-art air emissions control systems for each furnace thoroughly clean emissions to meet all local, state and federal environmental standards.

As an industry leader, Wheelabrator's experience is extensive. Our projects have collectively reprocessed millions of tons of municipal solid waste into billions of kilowatt hours of usable electricity. Wheelabrator's facilities provide reliable, long-term solid waste disposal for hundreds of communities in the U.S. These facilities, located in Connecticut, Florida, Massachusetts, Maryland, New Hampshire, New Jersey, New York and Washington are testimony to our leadership, expertise and financial commitment to conserving the nation's resources and preserving the environment in cooperation with the communities we serve.

Wheelabrator Environmental Systems Inc. is the nation's foremost developer of high technology energy and recycling technologies.

## Facility Highlights

### GENERAL

|                            |                              |
|----------------------------|------------------------------|
| Area served .....          | The Bucks County Area        |
| Type of contract .....     | Full service/Own and Operate |
| Financing .....            | Wheelabrator                 |
| Commercial operation ..... | 1994                         |

### RECYCLING

|                       |  |
|-----------------------|--|
| Type of service ..... | Materials Recovery Facility            |
|                       | 200 tons per day                       |
|                       | • Glass                                |
|                       | • Ferrous and nonferrous metals        |
|                       | • Plastics: PET, HDPE                  |
|                       | • Newspapers, corrugated, other grades |

### TRASH-TO-ENERGY FACILITY CHARACTERISTICS

|                              |   |
|------------------------------|---|
| Type of system .....         | Reciprocating grates with waterwall boilers |
| Boiler operation .....       | 24 hours per day, 7 days per week           |
| Process lines .....          | 2 @ 750 tons per day                        |
| Nominal plant capacity ..... | 1,500 tons per day                          |
| Average throughput .....     | 1,300 tons per day                          |
| Feed system .....            | Overhead cranes with ram feeders            |
| Grate design .....           | Von Roll Reciprocating                      |
| Combustion temperature ..... | 2,500° F+                                   |
| Waste volume reduction ..... | 90-95%                                      |
| Cooling system .....         | Cooling tower                               |

### AIR QUALITY CONTROL

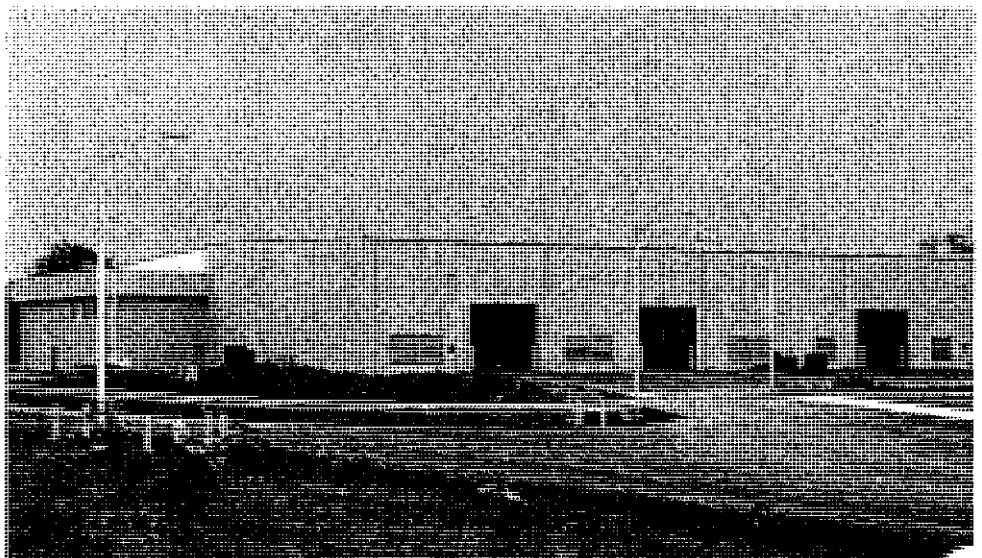
|                         |  |
|-------------------------|--|
| Type of equipment ..... | Dry scrubbers - fabric filters             |
|                         | Selective non-catalytic reduction controls |
| Mercury removal .....   | Activated carbon injection                 |
| Number of units .....   | 2  |

### ENERGY PRODUCTION

|                                     |                                  |
|-------------------------------------|----------------------------------|
| Type of energy .....                | Electric power                   |
| Electric power capacity (net) ..... | 48 megawatts                     |
| Customer .....                      | Public Service, Electric and Gas |

### RESIDUE TREATMENT

|                             |   |
|-----------------------------|---|
| Residue handling .....      | Residue is water quenched; WES-PHix® ash immobilization process is then applied, moved on a reciprocating conveyor and passed through a grizzly and under a rotating magnet for ferrous metals recovery |
| Residue disposal site ..... | GROWS Landfill  |

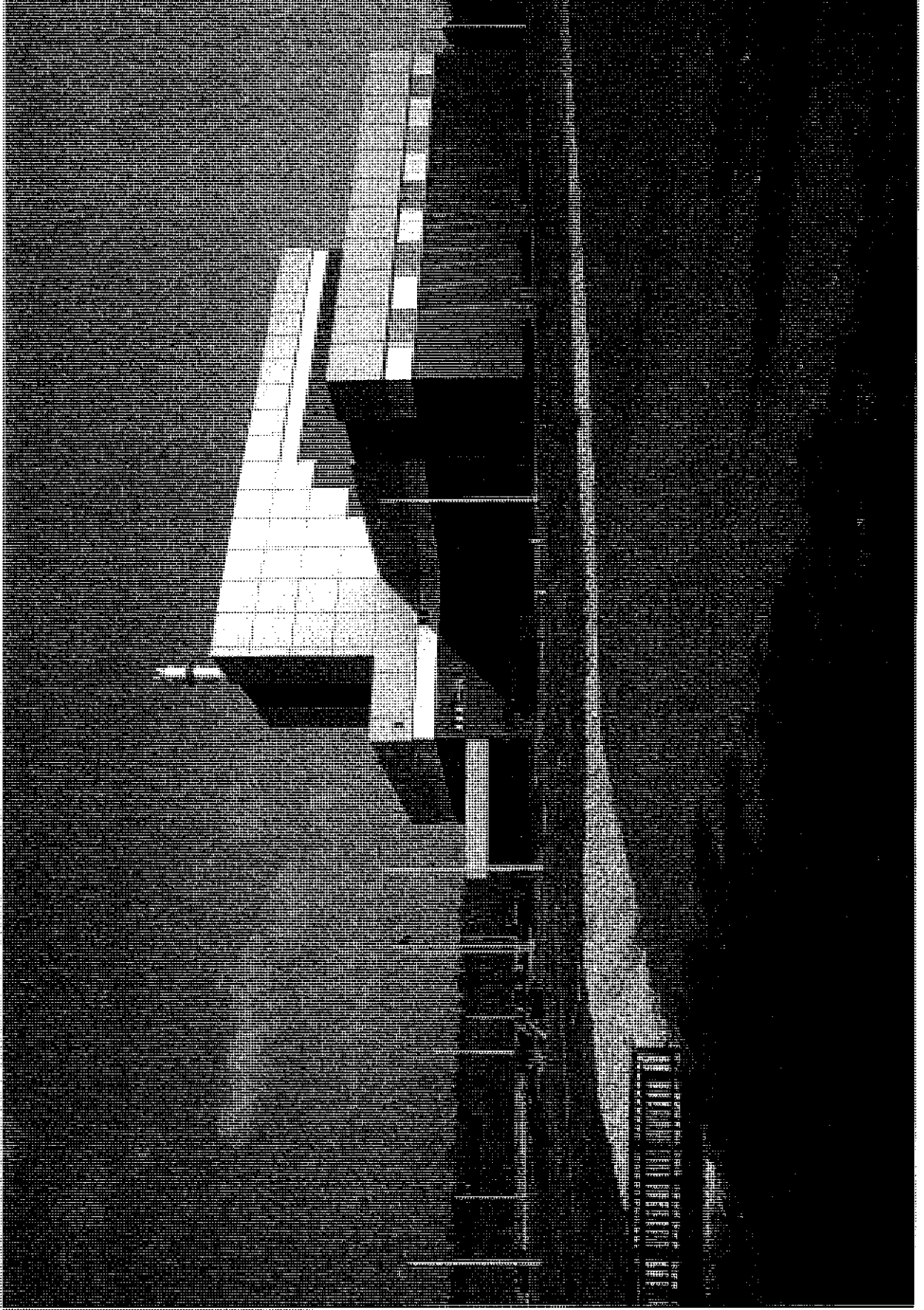


Materials Recovery Facility  
**Wheelabrator Environmental Systems Inc.**  
 Liberty Lane  
 Hampton, NH 03842  
 1-800-682-0026

# Concord, New Hampshire Recycling Trash-to-Energy Facility

**Wheelabrator Environmental Systems .nc.**

A Wheelabrator Technologies Company



# Concord, New Hampshire

The Concord facility is New Hampshire's second recycling trash-to-energy facility. The first is in Claremont, NH. Both plants are designed, constructed, owned and operated by Wheelabrator Environmental Systems Inc. The Concord facility safely disposes of up to 500 tons per day of municipal solid waste from 24 towns and 3 cities in southern and central New Hampshire.

The facility was financed by a combination of approximately \$48 million in tax-exempt industrial revenue bonds and \$12 million in Wheelabrator equity. The project achieved escrow financing in December 1985 and construction began in 1987 after final permits were obtained.

The process is simple and a form of recycling. Incoming trucks deliver trash to an enclosed reception area. The trash is transferred to the feed hoppers of two combustion units. It then moves on reciprocating grates through two furnaces, where combustion temperatures exceed 2500° Fahrenheit. Recovered heat is converted to high pressure steam which produces electricity in the plant's turbine generator. The 14-megawatt power plant is designed to produce enough electricity to service approximately 18,000 homes.

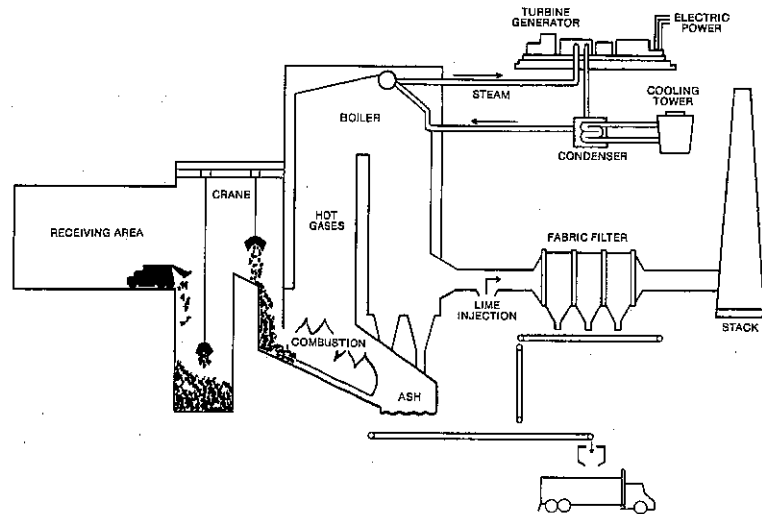
Emission-control systems meet stringent environmental standards with sophisticated fabric filter and acid gas control systems. The process has been widely demonstrated to be dependable and environmentally safe.

Wheelabrator has extensive experience in the trash-to-energy field, with a commitment to preserving the environment and making available new sources of energy. Our other projects in Maryland, New York, Massachusetts, Florida, Connecticut, New Jersey and New Hampshire are testimony to that commitment and to our leadership in the nation's recycling trash-to-energy industry. Collectively, these facilities have converted millions of tons of municipal waste into billions of kilowatts of energy since 1975.

Wheelabrator Environmental Systems Inc. is a unit of Wheelabrator Technologies Inc., one of the nation's foremost developers of high-technology energy and recycling technologies.

## Facility Highlights

| GENERAL                       |   |
|-------------------------------|---|
| Area served .....             | 27 communities<br>70,000 people   |
| Type of contract .....        | Own and Operate   |
| Ownership .....               | Wheelabrator Environmental Systems Inc.<br>(Wheelabrator Concord Co., L.P.) |
| Financing .....               | Revenue Bonds/Private Equity  |
| Start-up .....                | 1989  |
| REFUSE COMBUSTION             |   |
| Type of system .....          | Reciprocating grates with waterwall boilers                                 |
| Operation .....               | 24 hours per day, 7 days per week   |
| Process lines .....           | 2 @ 250 tons per day  |
| Plant daily capacity .....    | 500 tons per day  |
| Average throughput .....      | 425 tons per day (365 days)   |
| Feed system .....             | 2 overhead refuse cranes with ram feeder                                    |
| Grate design .....            | Von Roll reciprocating  |
| Combustion temperature .....  | 2500° F+  |
| Auxiliary fuel .....          | Propane   |
| Waste volume reduction .....  | 90%   |
| Ash handling system .....     | Water quench, drag conveyor   |
| AIR POLLUTION CONTROL         |   |
| Type of equipment .....       | Pulse jet fabric filters with dry lime injection for acid gas reduction     |
| Number of units .....         | 2   |
| ENERGY PRODUCTION             |   |
| Type of energy .....          | Electric power  |
| Steam Flow to Turbine .....   | 120,000 pounds per hour @ 650 psig/750° F                                   |
| Electric Power capacity ..... | 14 megawatts  |
| Cooling system .....          | 2-cell mechanical draft cooling tower                                       |
| Customer .....                | Public Service Company of NH  |

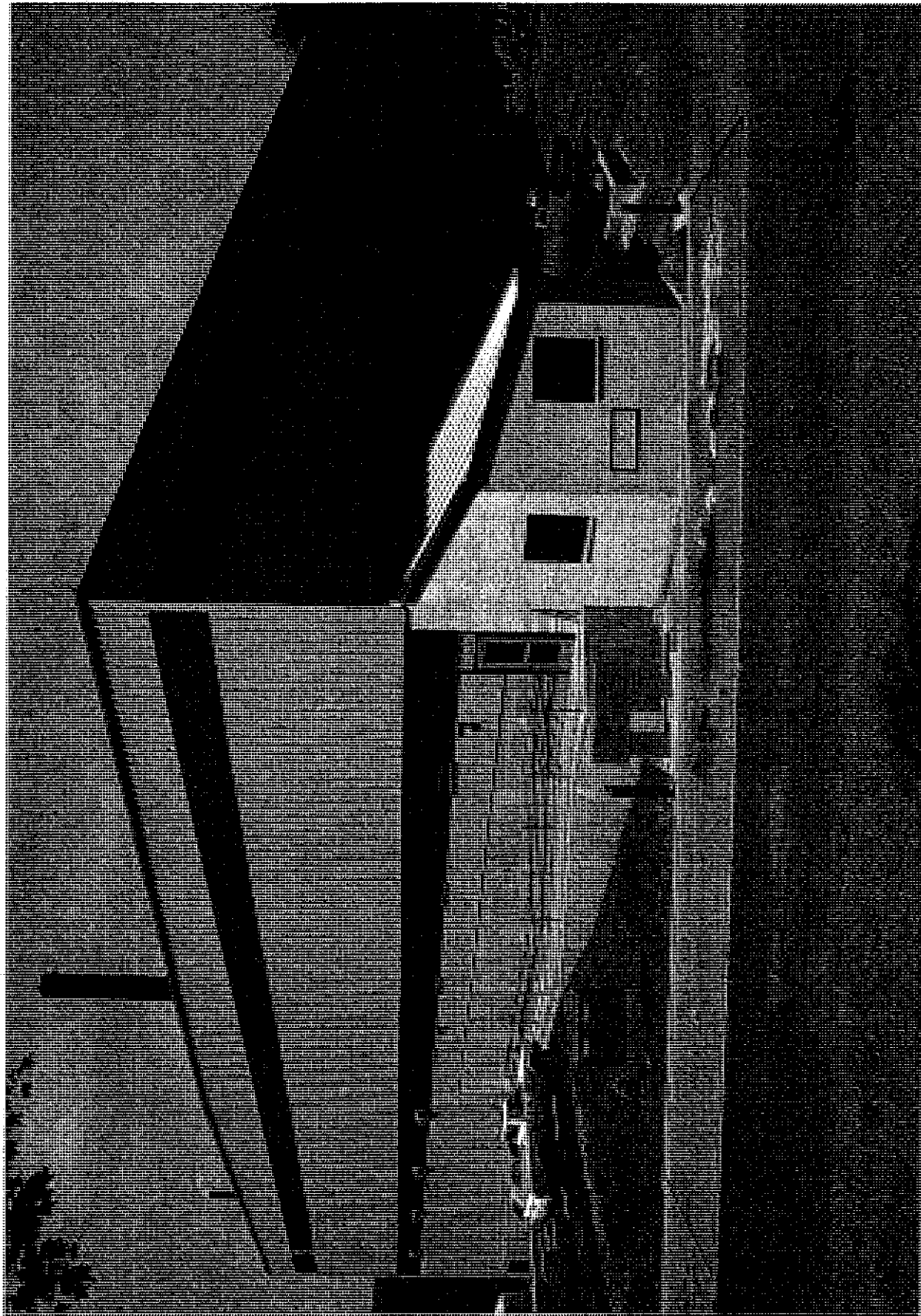


**Wheelabrator Environmental Systems Inc.**  
Liberty Lane  
Hampton, NH 03842  
1-800-682-0026

**Claremont, New Hampshire  
Recycling Trash-to-Energy Facility**

**WHEELABRATOR ENVIRONMENTAL  
SYSTEMS INC.**

A Wheelabrator Technologies Inc. Company





# Claremont, New Hampshire

New Hampshire's first recycling trash-to-energy facility, in Claremont, processes up to 200 tons per day of municipal solid waste, converting it to electric power for the Connecticut Valley Electric Corporation. Wheelabrator Environmental Systems Inc. owns and operates this unique plant, the sixth of the company's nationwide recycling trash-to-energy systems that today process thousands of tons of trash each day and have a total electric generating capacity in excess of 400 megawatts.

The Claremont facility provides solid waste disposal services to twenty-seven communities in Vermont's Windsor and Windham Counties, and in New Hampshire's Sullivan and Merrimac Counties. The project was realized through an innovative interstate compact that allowed both New Hampshire and Vermont to jointly resolve long-term solid waste disposal needs. The project was financed through a combination of approximately \$26 million in revenue bonds and \$4 million in Wheelabrator equity.

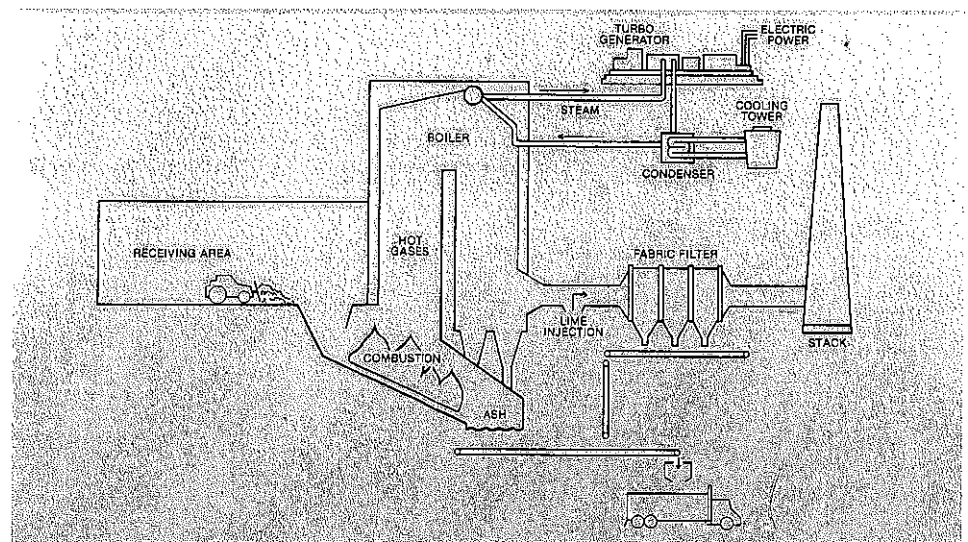
The process used in Claremont is a form of recycling and is simple. Trash is delivered to an enclosed reception area and transferred to the feed hoppers of the combustion units. Moved through the furnaces on Von Roll reciprocating grates, the trash is combusted at temperatures exceeding 2500° Fahrenheit. Recovered heat is converted to high pressure steam which produces electricity in the plant's turbine generator. The electric power is sold to Connecticut Valley Electric Corporation. Sophisticated fabric filter and acid gas scrubbing systems for each combustion unit thoroughly clean emissions to meet all local, state and federal environmental requirements.

Wheelabrator has owned and operated the nation's most commercially successful trash-to-energy facility since 1975, in Saugus, Massachusetts. Since then, it has developed other successful projects elsewhere in New Hampshire, Maryland, New York, Massachusetts, Connecticut, New Jersey and Florida. Currently, Wheelabrator's facilities provide reliable long-term trash disposal for hundreds of communities in the U.S.

Wheelabrator Environmental Systems Inc. is a unit of Wheelabrator Technologies Inc., one of the nation's foremost developers of high-technology energy and recycling technologies.

## Facility Highlights

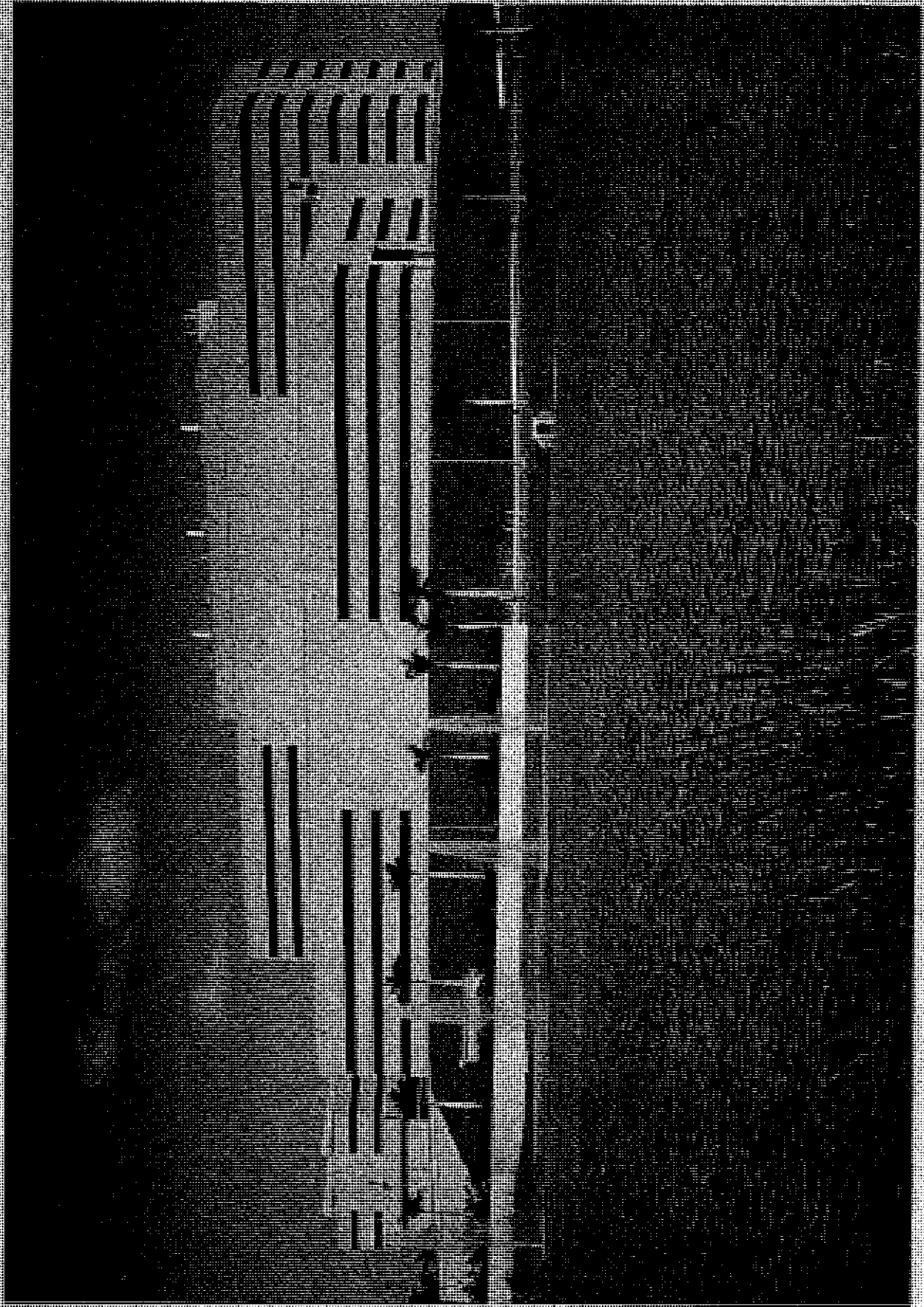
| GENERAL                 |   |
|-------------------------|---|
| Area served             | 27 Communities in New Hampshire and Vermont/70,000 people             |
| Type of contract        | Full Service/Own and Operate  |
| Ownership               | Wheelabrator Environmental Systems Inc.                               |
| Financing               | Revenue Bonds/Private Equity  |
| Start-up                | 1987  |
| REFUSE COMBUSTION       |   |
| Type of system          | Reciprocating grates with waterwall boilers                           |
| Operation               | 24 hours per day, 7 days per week                                     |
| Process lines           | 2 @ 100 tons per day  |
| Plant daily capacity    | 200 tons  |
| Average throughput      | 160 tons per day (365 days)   |
| Feed system             | 2 + 1 cu. yd. front-end loaders                                       |
| Grate design            | Von Roll reciprocating  |
| Combustion temperature  | 2500° F+  |
| Auxiliary fuel          | Propane   |
| Waste volume reduction  | 90%   |
| Ash handling system     | Water quench, drag conveyor   |
| Materials recovery      | Aggregate   |
| AIR QUALITY CONTROL     |   |
| Type of equipment       | Pulse jet fabric filters with dry lime injection for acid gas control |
| Number of units         | 2   |
| ENERGY PRODUCTION       |   |
| Type of energy          | Electric power  |
| Steam Flow to Turbine   | 46,000 pounds per hour @ 600 psig/600° F                              |
| Electric power capacity | 4.5 megawatts   |
| Cooling system          | 2-cell mechanical draft cooling tower                                 |
| Customer                | Connecticut Valley Electric Corporation                               |



**Wheelabrator Environmental Systems Inc.**  
 Liberty Lane  
 Hampton, NH 03842  
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Brevard County, Florida  
Recycling Trash-to-Energy Facility,  
North and South

Wheelabrator Environmental Systems Inc.



# Broward County, Florida

Wheelabrator Environmental Systems Inc. is operating two recycling trash-to-energy facilities which provide dependable, environmentally safe disposal of municipal solid waste for Broward County, Florida. The two facilities each process up to 2,250 tons per day of municipal solid waste from the incorporated and unincorporated areas of Broward County. Both facilities are owned and operated by Wheelabrator Environmental Systems Inc. The facility featured on the cover of this profile is the South Broward plant located in Ft. Lauderdale.

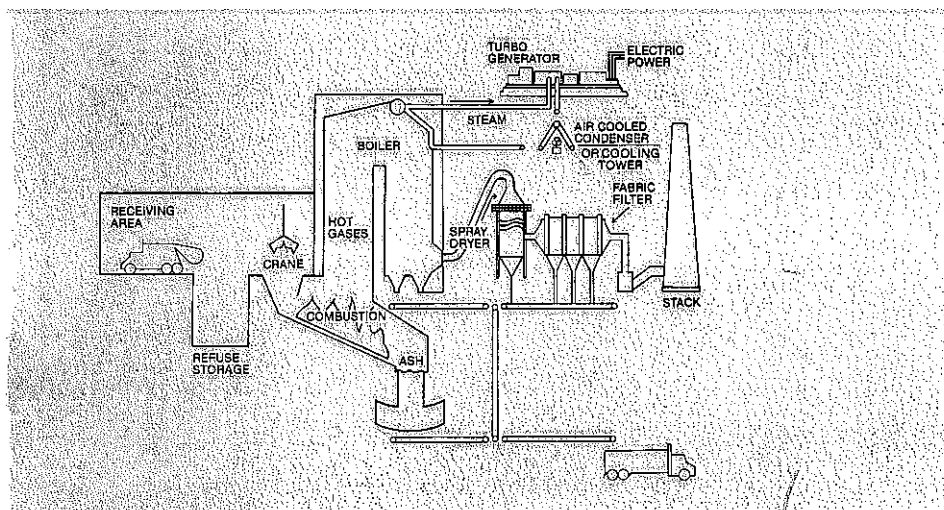
The licensed process used in Broward County is a form of recycling and is simple. Incoming trucks deliver trash to an enclosed reception area. Trash is transferred by overhead cranes from the reception area to the feed hopper of each heat recovery unit. The trash is moved on reciprocating grates, where combustion temperatures exceed 2500° Fahrenheit. Air from the reception area is blown in above and below the grates to fuel a complete combustion process in the furnace and to maintain negative pressure, preventing the escape of dust and odors. A waterwall boiler above the grate area produces superheated steam. Steam is used to drive a turbine-generator, which will produce electricity for Florida Power & Light Co. A dry scrubber and fabric filter for each furnace thoroughly clean emissions to meet all local, state and federal environmental standards.

Wheelabrator has processed millions of tons of U.S. municipal trash into energy in its trash-to-energy plants since 1975. Our first plant, located in Saugus, Massachusetts, serves 750,000 people north of Boston. Another Wheelabrator facility, located in Pinellas County, Florida, began commercial operation in May 1983. Our other operating facilities, located elsewhere in Florida and in New York, Connecticut, Maryland, Massachusetts, New Jersey and New Hampshire are testimony to our leadership, expertise and financial commitment to conserving the nation's resources and preserving the environment in cooperation with the communities we serve.

Wheelabrator Environmental Systems Inc. is a unit of Wheelabrator Technologies Inc., one of the nation's foremost developers of high-technology energy and recycling technologies.

## Facilities Highlights

| GENERAL                 |   |
|-------------------------|---|
| Area served             | Broward County  |
| Type of contract        | Full service/Own and operate  |
| Ownership               | Wheelabrator Environmental Systems Inc.<br>(Wheelabrator South Broward Inc.)<br>(Wheelabrator North Broward Inc.) |
| Financing               | Revenue bonds/Private equity  |
| Start-up                | 1991  |
| REFUSE COMBUSTION       |   |
| Type of system          | Reciprocating grates with waterwall boilers   |
| Operation               | 24 hours per day, 7 days per week   |
| Process lines           | 3 @ 750 tons per day  |
| Plant daily capacity    | 2250 tons per day   |
| Average throughput      | 1980 tons per day (365 days)  |
| Feed system             | 2 overhead refuse cranes with ram feeder  |
| Grate design            | Von Roll  |
| Combustion temperature  | 2500° F+  |
| Auxiliary fuel          | Natural gas   |
| Waste volume reduction  | 95%   |
| Ash handling system     | Semi-dry, vibrating pan conveyor  |
| AIR QUALITY CONTROL     |   |
| Type of equipment       | Dry scrubbers—Fabric filters  |
| Number of units         | 3   |
| ENERGY PRODUCTION       |   |
| Type of energy          | Electric power  |
| Steam Flow to Turbine   | 576,000 pounds per hour @ 850 psig/825° F   |
| Electric power capacity | 67.5 megawatts  |
| Cooling system          | Air cooled condenser/Cooling tower  |
| Customer                | Florida Power and Light Co.   |



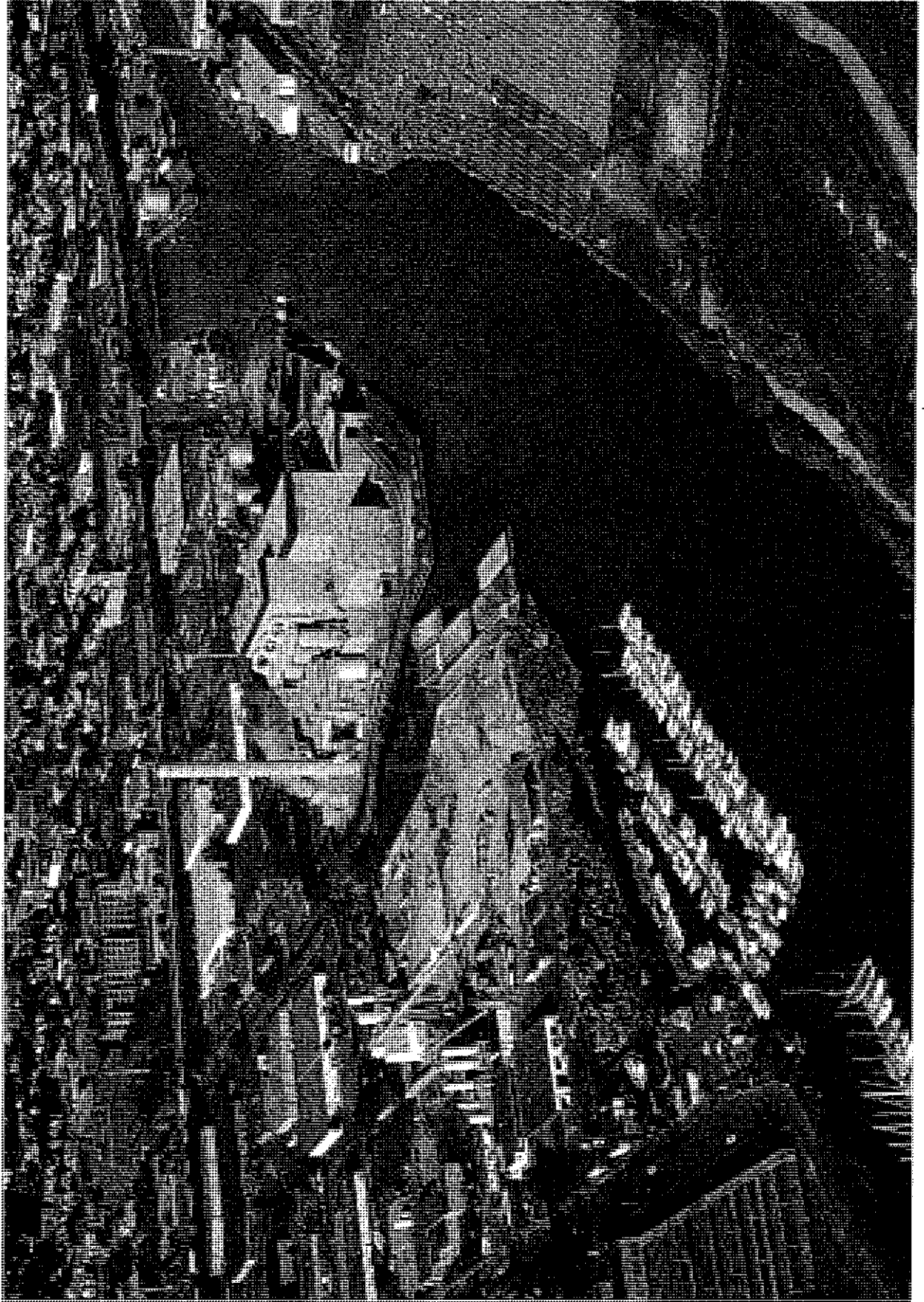
**Wheelabrator Environmental Systems Inc.**  
Liberty Lane  
Hampton, NH 03842  
1-800-682-0026

**Bridport, Connecticut  
Recycling Trash-to-Energy Facility**



*Wheelabrator Environmental Systems Inc*

A Wheelabrator Technologies Inc. Company



# Bridgeport, Connecticut

Designed, constructed, and operated by Wheelabrator Environmental Systems Inc., the Bridgeport Recycling Trash-to-Energy facility provides dependable, environmentally safe disposal of up to 2250 tons per day of municipal solid waste from more than a dozen Bridgeport-area towns and cities.

The licensed process used in the Bridgeport plant is a form of recycling and is simple. Incoming trucks deliver trash to an enclosed reception area. Trash is transferred by overhead cranes from the reception area to the heat recovery unit. The trash is moved on reciprocating grates where combustion temperatures exceed 2500° Fahrenheit. Air from the reception area is blown in above and below the grates to fuel a complete combustion process in the furnace and to maintain negative pressure, preventing the escape of dust and odor. A waterwall boiler above the grate area produces superheated steam. The steam drives a turbine-generator, which produces electricity for The United Illuminating Company. A dry scrubber—fabric filter system for each furnace thoroughly cleans emissions to meet all local, state and federal environmental standards.

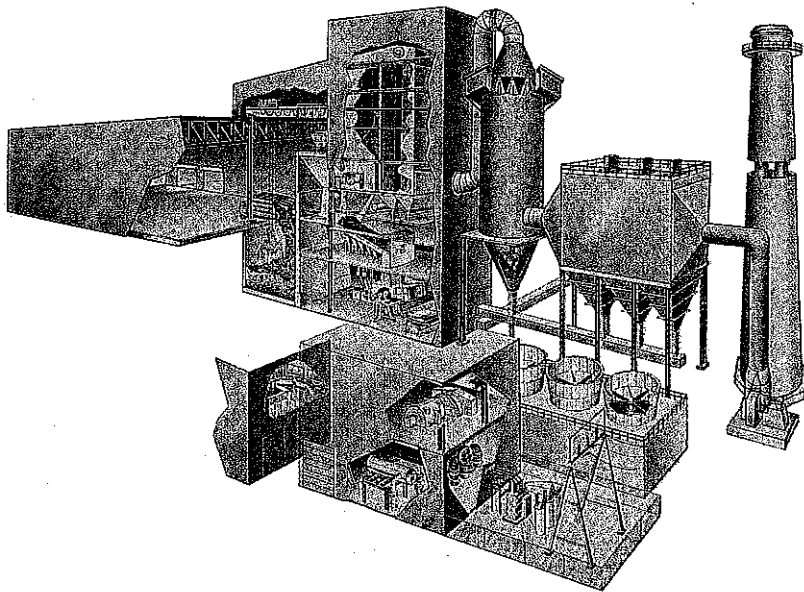
The Wheelabrator Bridgeport facility was financed by a combination of tax-exempt revenue bonds and \$60 million of Wheelabrator Technologies Inc. equity.

Wheelabrator Environmental Systems Inc.'s experience in the trash-to-energy field is extensive. Operating Wheelabrator projects have collectively processed millions of tons of municipal solid waste into billions of kilowatt hours of usable energy. Our first plant, located in Saugus, Massachusetts, serves 750,000 people north of Boston. It has operated continuously since its start-up in 1975. Our other operating facilities, located elsewhere in Massachusetts and in New York, New Jersey, Florida, Maryland and New Hampshire are testimony to our leadership, expertise and financial commitment to conserving the nation's resources and preserving the environment in cooperation with the communities we serve.

Wheelabrator Environmental Systems Inc. is a unit of Wheelabrator Technologies Inc., one of the nation's foremost developers of high-technology energy and recycling technologies.

## Facility Highlights

| GENERAL                 |   |
|-------------------------|---|
| Area served             | Greater Bridgeport Area/850,000 people      |
| Type of contract        | Design, construct and operate               |
| Financing               | Revenue Bonds/Private Equity                |
| Start-up                | 1988  |
| REFUSE COMBUSTION       |   |
| Type of system          | Reciprocating grates with waterwall boilers |
| Operation               | 24 hours per day, 7 days per week           |
| Process lines           | 3 @ 750 tons per day                        |
| Plant daily capacity    | 2250 tons                                   |
| Average throughput      | 1800 tons per day (365 days)                |
| Feed system             | 2 overhead refuse cranes with ram feeder    |
| Grate design            | Von Roll reciprocating                      |
| Combustion temperature  | 2500°F+                                     |
| Auxiliary fuel          | Natural gas                                 |
| Waste volume reduction  | 95%   |
| Ash handling system     | Semi-dry, vibrating pan conveyor            |
| Materials recovery      | +10" metals, aggregate                      |
| AIR QUALITY CONTROL     |   |
| Type of equipment       | Dry scrubbers—Fabric filters                |
| Number of units         | 3   |
| ENERGY PRODUCTION       |   |
| Type of energy          | Electric power                              |
| Steam Flow to Turbine   | 576,000 pounds per hour @ 850 psig/840°F    |
| Electric power capacity | 60 megawatts                                |
| Cooling system          | Cooling tower                               |
| Customer                | The United Illuminating Company             |



**Wheelabrator Environmental Systems Inc.**

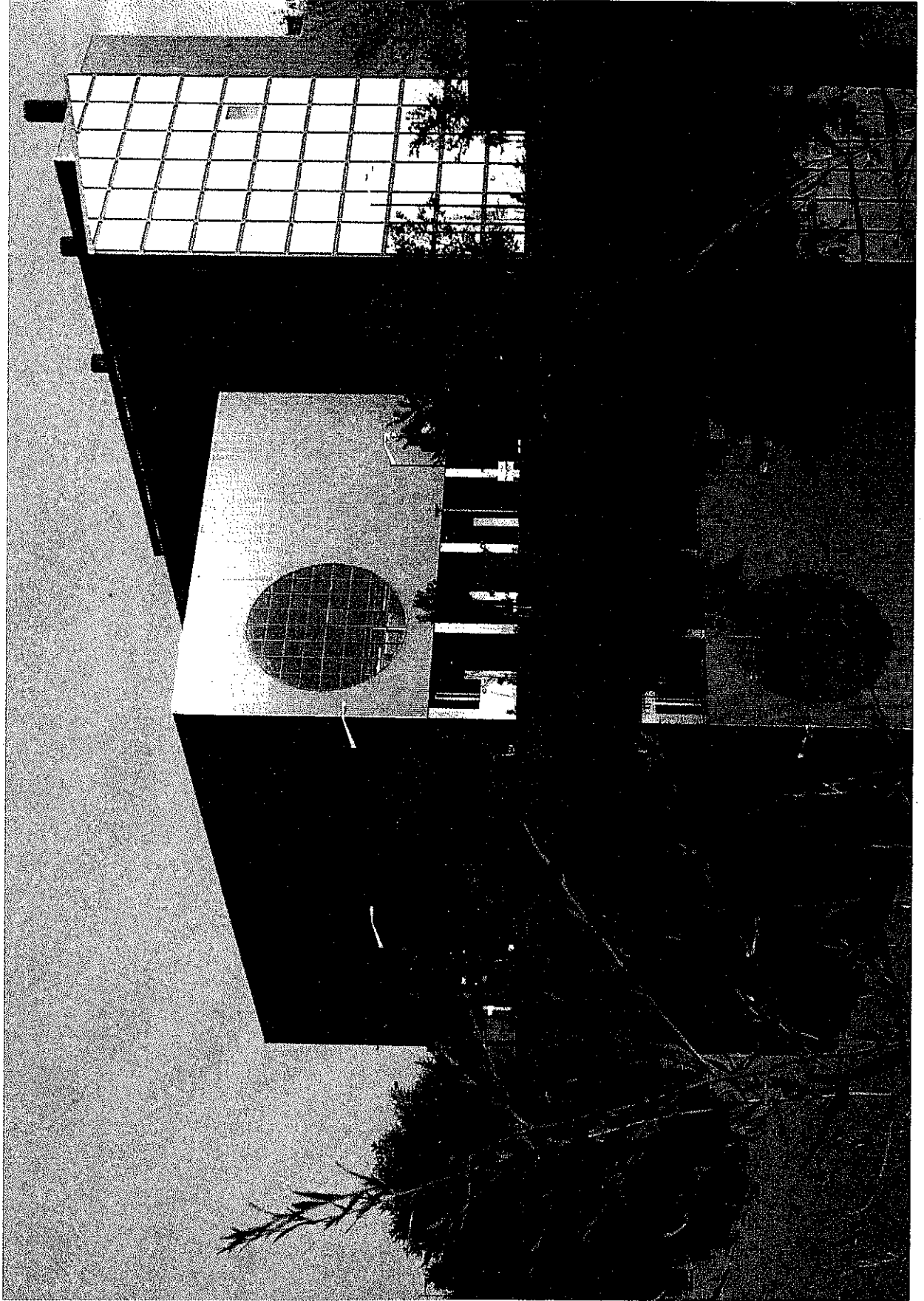
Liberty Lane  
Hampton, NH 03842  
1-800-682-0026

**Baltimore, Maryland  
Recycling Trash-to-Energy Facility**



**Wheelabrator Environmental Systems Inc.**

A Wheelabrator Technologies Company



# Baltimore, Maryland

Designed, constructed, and operated by Wheelabrator Environmental Systems Inc. the Baltimore recycling trash-to-energy facility provides dependable, environmentally safe disposal of up to 2,250 tons per day of municipal solid waste from the City and County of Baltimore, Maryland.

The licensed process used in Baltimore is a form of recycling and is simple. Incoming trucks deliver trash into an enclosed reception area. Trash is transferred by overhead cranes from the reception area to the feed hopper of each combustion unit. The fuel is moved on reciprocating grates where combustion temperatures exceed 2,500° F. Air from the reception area is blown in above and below the grates to fuel a complete combustion process and maintain negative pressure over the reception area, eliminating odors and preventing the escape of dust. A waterwall boiler above the grate area produces superheated steam. The steam drives a turbine-generator, which produces electricity for Baltimore Gas & Electric Company. The production of electricity is enhanced by a high-efficiency, once-through cooling water system. Steam is also supplied by the plant to Baltimore Thermal Energy Company's downtown heating loop. An electrostatic precipitator for each furnace thoroughly cleans emissions to meet all environmental standards.

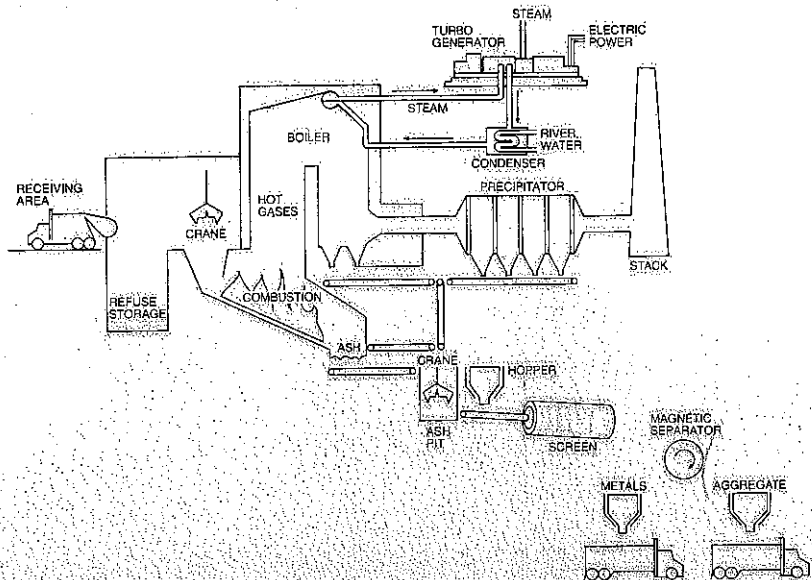
The Baltimore facility was financed by a combination of \$191 million in tax-exempt revenue bonds and \$63 million of Wheelabrator equity.

Wheelabrator Environmental Systems experience in the recycling trash-to-energy field is extensive. Our first plant, located in Saugus, Massachusetts, serves 750,000 people north of Boston. It has operated continuously since its start-up in 1975. Another Wheelabrator facility located in Pinellas County, Florida began commercial operation in May 1983. Our other facilities operating in New York, Massachusetts, New Hampshire, Connecticut, Florida and New Jersey are testimony to our leadership, expertise and financial commitment to conserving the nation's resources and preserving the environment in cooperation with the communities we serve.

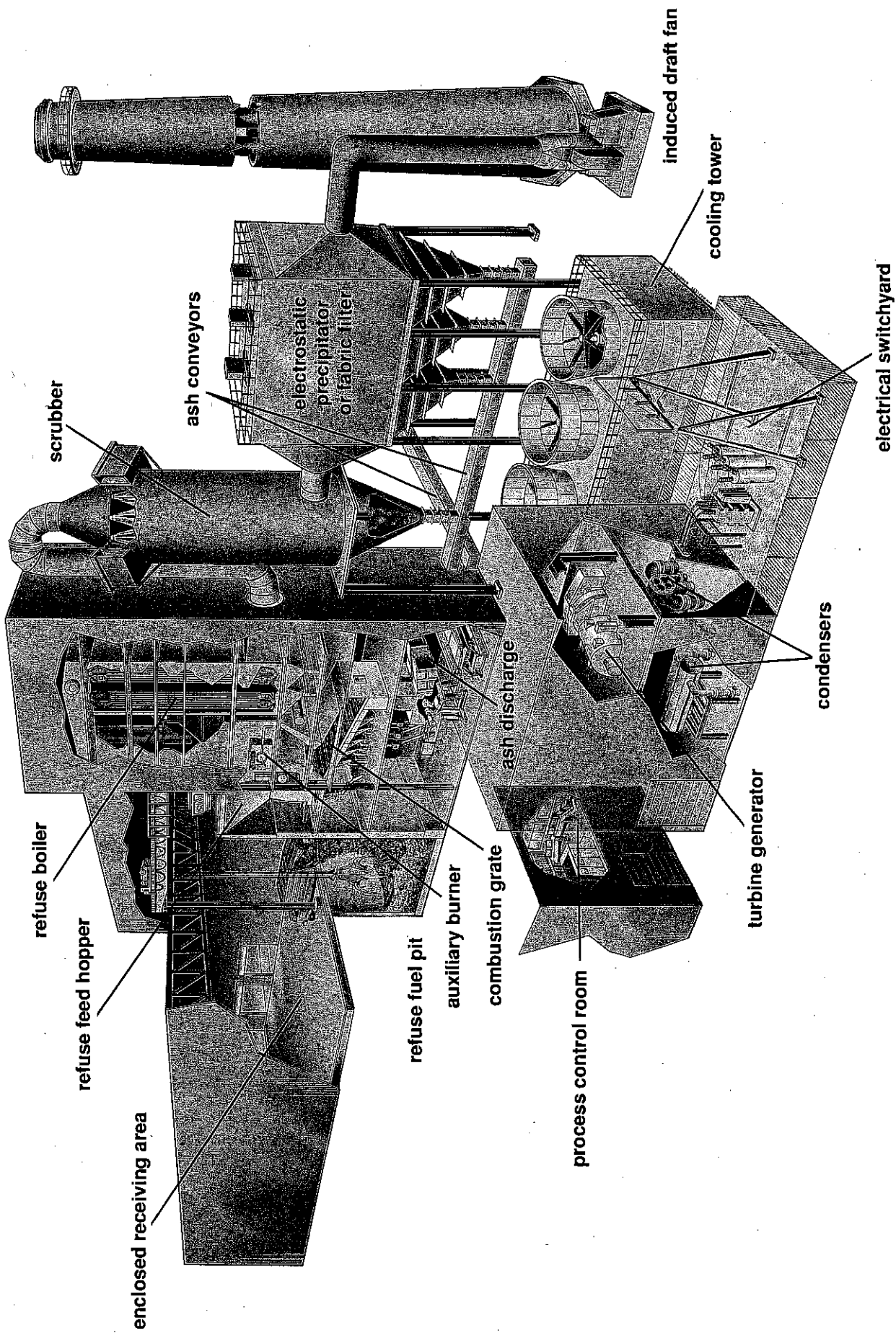
Wheelabrator Environmental Systems Inc. is a unit of Wheelabrator Technologies Inc., one of the nation's foremost developers of high-technology energy and recycling technologies.

## Facility Highlights

| GENERAL                 |  |
|-------------------------|--|
| Area served             | Baltimore City and County/850,000 people                             |
| Type of contract        | Design, construct and operate  |
| Financing               | Revenue bonds/Private equity   |
| Start-up                | 1985   |
| REFUSE COMBUSTION       |  |
| Type of system          | Reciprocating grates with waterwall boilers                          |
| Operation               | 24 hours per day, 7 days per week                                    |
| Process lines           | 3 @ 750 tons per day   |
| Plant daily capacity    | 2,250 tons   |
| Average throughput      | 1,800 tons per day (365 days)  |
| Feed system             | 2 overhead refuse cranes with ram feeder                             |
| Grate design            | Von Roll reciprocating   |
| Combustion temperature  | 2,500° F+  |
| Auxiliary fuel          | Natural gas  |
| Waste volume reduction  | 95%  |
| Ash handling system     | Semi-dry, vibrating pan conveyor                                     |
| Materials recovery      | Ferrous, aggregate   |
| AIR QUALITY CONTROL     |  |
| Type of equipment       | Electrostatic precipitators/4 fields each                            |
| Number of units         | 3  |
| ENERGY PRODUCTION       |  |
| Type of energy          | Electric power   |
| Steam flow to turbine   | 510,000 pounds per hour @ 850 psig/825° F                            |
| Electric power capacity | 60 megawatts   |
| Cooling system          | Once-through cooling   |
| Customers               | Baltimore Gas & Electric Company<br>Baltimore Thermal Energy Company |



**Wheelabrator Environmental Systems Inc.**  
 Liberty Lane  
 Hampton, NH 03842  
 1-800-682-0026



# Trash-to-Energy System



# Wheelabrator Environmental Systems Inc.

A Wheelabrator Technologies Company  
Where environmental quality comes first.





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And the winners are...



Profiles of all 1999 winners of the Chairman's Core Principles Award.

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Employee News  
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and People on the Move

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Cliff Jessberger joins in dedication of American Ref-Fuel's Jessberger Conference Room.

## Core Principles Awards find rapid prestige

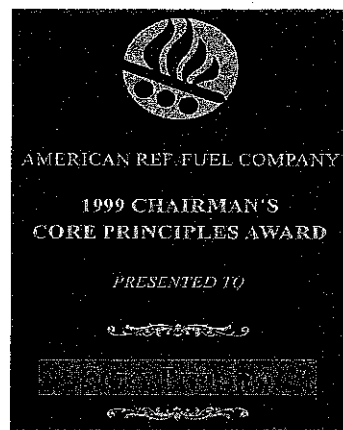
In 1998, American Ref-Fuel announced the creation of the Chairman's Core Principles Award as a way of recognizing employees who exemplify our company's core principles of *safety and environmental excellence, customer satisfaction, creative teamwork, employee enthusiasm and ethical conduct*. "Who would ever have thought that we would receive as many as 76 individual and team nominations in only the second year of these awards?" said American Ref-Fuel Chairman Paul Varello. "I'm extremely pleased at how quickly the stature of this award has grown among Ref-Fuel's employees."

However, the enthusiastic response did not make the process easy on the committee assigned to make selection recommendations to Varello. "Just like in 1998, the nominations were of the highest quality," said American Ref-Fuel Vice President, Safety and Environmental Andrew Szurgot, who shared committee responsibilities with American Ref-Fuel's Dan Carey, Curt Hurst, Robert Middleton and John Waffenschmidt. Based on the group's recommendations, Varello selected



one group winner and 18 individual employees as recipients. The plaques for each were personally presented by Varello in conjunction with recent State of the Company meetings held at each company location.

The Team Award went to the Braintree Transfer Station Operations Team. Varello noted how, amid all the operational, fiscal, geographical and political issues and restrictions at the site, this team set monthly and annual records for tons handled at the facility. Beyond the numbers, Varello



added, they consistently gave customers the highest possible degree of satisfaction, performing their jobs with enthusiasm and without jeopardizing safety and environmental standards. Varello presented the award to the team members at the transfer station in January. Participants in this event, as shown in the above photo were (from left) Arthur Sousa, Doc Withey, Mark Ennis, Ron Monahan, Bob Henault, Frank Place, Doug Cote, Varello, Scott Peterson and Luis Menendez.

## And the winners are...

### *Houston*

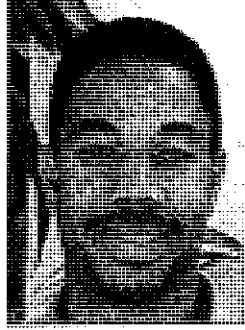
#### *Nadine Michalec*

In her job as corporate HR Administrator, Nadine Michalec is the link between the HR staff at Ref-Fuel's many locations. Reliability, dependability and fast acting were among the characteristics cited in her nomination. Michalec consistently displays all of these qualities, and always does it with good cheer and perseverance. Customer satisfaction and employee enthusiasm make Michalec a deserving Core Principles Award winner.



#### *Kevin Brown*

Quietly and behind the scenes, Houston's Sr. Systems Analyst Kevin Brown works his miracles. Brown is the company's single-handed support for both PeopleSoft and Payroll. His customers in Human Resources continuously praise his work. Brown also took the initiative to set up the PeopleSoft self-service application available to all employees. Furthermore, he collaborated on the design for the New York City Department of Sanitation scale ticket project.



### *Hempstead*

#### *John Cutrone*

Hempstead Ferrous & Ash Loadout Supervisor John Cutrone sets an excellent example for all new hires by teaching and showing them the American Ref-Fuel culture. He truly presents a sense of ownership and is known for his problemsolving skills. Cutrone

will not hesitate to go beyond the call of duty. As an active member of the Safety Committee, he also coordinates the annual Truck Driver Safety Day for all ash truck drivers.



### *Southeastern Connecticut*

#### *Bruce Schumacher*

Ranked as American Ref-Fuel Company of Southeastern Connecticut's Number 1 Tech for 2 years in a row, Bruce Schumacher is known as a man of many talents. He is a certified control room operator and has also cross-trained as a mechanic. Schumacher became a certified welder in his spare time and is close to completing his Maintenance Tech III qualifications. He also serves as the plant's OSHA contact.



### *SEMASS*

#### *Tim Clark*

SEMASS IC&E Tech Tim Clark has demonstrated a true commitment to safety and environmental excellence. Clark became ERT certified in 1999, and also trains new hires on electrical safety. His employee enthusiasm shows in his involvement in the VPP process by working with OSHA and training all Structured Safety Process groups at SEMASS on the value of the VPP Star.



#### *Anthony Dell'Anno*

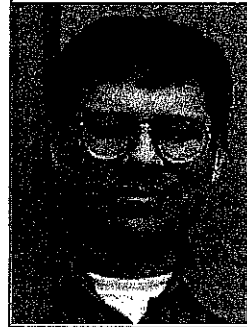
Highly praised for his ethical conduct, SEMASS' Regional Manager of Environmental Affairs Anthony Dell'Anno is known for his honesty, integrity and trustworthiness in dealing with the many challenging constituents of the plant. Called "a pillar of fairness in dealing with different plant issues," Dell'Anno truly represents the essence of the core principle of ethical conduct at SEMASS.



### Essex

#### John Vinson

Since arriving at Essex in 1998 as I&C supervisor, John Vinson's efforts have made a substantial impact on the plant's Continuous Emissions Monitoring System. He also introduced substantial improvement to the Quality Assurance/Quality Control documentation. Praised for safety and environmental excellence, Vinson has proven himself to be a great asset to the Essex team.



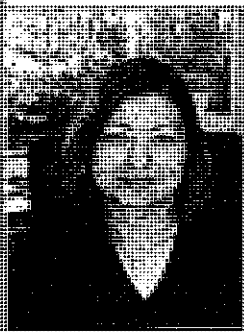
#### Jose "Pepe" Castro



Essex Tech B/Supervisor Jose Castro thrives on being safety and quality conscious and has shown great leadership skills. He has really turned his crew into a team with his affable manner. Furthermore, Castro played an instrumental role in the Essex VPP recertification and has shown dedication and continuous effort in maintaining the plant's heralded VPP Star status.

### TransRiver and Regional

#### Sajida Amin



Sajida Amin was cited for her efforts in fostering creative teamwork in her role as controller of the TransRiver Marketing group. She did an outstanding job organizing the team, providing accurate and timely information and supporting corporate requests as needed. Throughout her career at TransRiver, Amin encouraged new ideas and demonstrated her dedication to creative teamwork. She recently left TransRiver to establish a new business in Dallas, Texas, with her husband. Her American Ref-Fuel and TransRiver co-workers join in wishing her the best in her new career.

#### Ken Armellino

Ken Armellino has the unique ability to balance safety and environmental excellence with customer satisfaction, a balance required for his job as an environmental engineer. He also always keeps the company's best interests in mind, and has often been the voice of reason in bringing two parties together toward a common goal. Armellino's ethical conduct is called "above reproach." These attributes and his good sense of humor combine to make him one of American Ref-Fuel's best examples of a commitment to living the core principles.

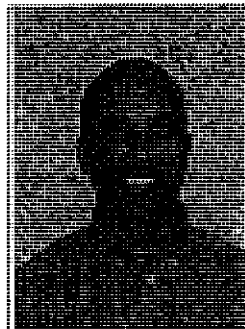


#### Steve Bossotti

1999 was a challenging year for Steve Bossotti: He was called on to manage Southern Regional Engineering group in addition to his regular job as manager of the Northern Group. Bossotti managed to keep the engineer morale up and deliver quality engineering services to all six plants. Bossotti successfully combined customer satisfaction, employee enthusiasm, integrity and dedication, and that is what the Core Principles Award is all about.



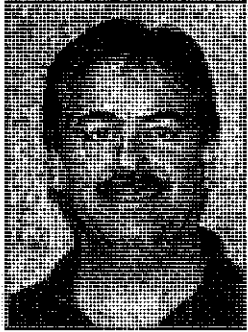
#### Paul Colon



As a senior safety coordinator, a strong commitment to safety and environmental excellence is an absolute must. Paul Colon continues to demonstrate this commitment, both on and off his primary job. Colon designed health, safety, fire protection, life safety and industrial hygiene programs to promote safe work practices within Ref-Fuel. Also, as a volunteer firefighter and advanced emergency medical technician, Colon shares his talents in the community.

## Winners (Continued from page 3)

### *TransRiver and Regional (cont'd)*



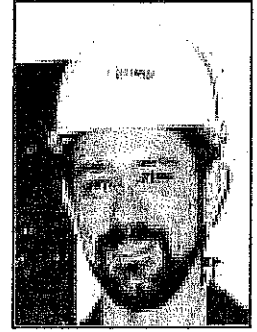
**Art Winckler**

Art Winckler's day-to-day commitment to his job and the success of American Ref-Fuel exemplify customer satisfaction and teamwork. His leadership skills and experience have made him the first choice for a wide variety of assignments, only some of which are directly related to his technical area of expertise - instrumentation and controls. Winckler always balances his many responsibilities and commitments, frequently putting in extra personal effort to get the job done in satisfying his many customers.

### *Niagara*

**Jim Filosofos**

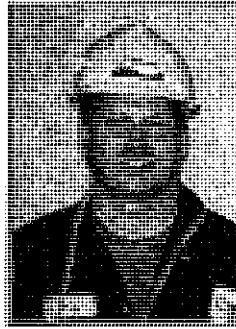
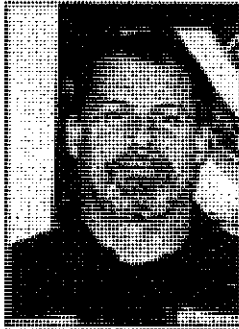
American Ref-Fuel's first repeat winner of a Chairman's Core Principles Award, Jim Filosofos continues to embody all of the core principles. His leadership in the Niagara water treatment plant has led to another great year of availability and cost savings, enabling the plant to reach its steam sales goals. Filosofos also lent his expertise to the Delco water treatment plant where he was praised for improving the system's efficiency. Ready for a three-peat, Jim?



### *Niagara (cont'd)*

**John Gonzales**

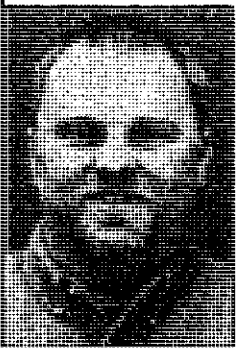
John Gonzales is the personification of the word teamwork. He has not only stepped up as maintenance supervisor, but also makes himself 100 percent available to staff the emergency backup boiler. Gonzales routinely helps out in other departments. His employee enthusiasm shows in his capacity as secretary of the Safety, Health & Environmental Committee and his support of all company functions.



**Mike Borsuk**

Niagara I&C Tech Mike Borsuk received the Chairman's Core Principles Award for his outstanding problem-solving skills and his strength as a team player. Borsuk will always step up to the plate to help out others. He voluntarily took on a struggling turbine project and infused ownership and pride in the effort. One of his fellow workers probably put it best in saying, "Think of Niagara without Mike Borsuk."

### *Delaware Valley*



**Bruce Griffith**

Delco's Operations Tech Bruce Griffith has two reasons to celebrate: Not only did he win the 1999 Delaware Valley Safety Award, but by continuously exceeding American Ref-Fuel's safety and environmental standards, Griffith also received the Chairman's Core Principles Award. Griffith was praised for taking action and finding solutions, and for never lowering his standards, even when conditions around him are very difficult.

**Marcial Padilla**

An American Ref-Fuel employee for over ten years, Marcial Padilla shifted gears and joined the Human Resources Department over a year ago. He brought with him his proven employee enthusiasm, a knack for customer satisfaction, excellent interpersonal skills and desire to help both his colleagues and the company succeed. All this combined with his strong technical background made Padilla a well-rounded candidate for the Core Principles Award.



# Anniversaries

7/1/99 - 12/31/99

## Houston and Regional

|          |                  |                                       |
|----------|------------------|---------------------------------------|
| 15 years | Edward Overtree  | <i>General Counsel</i>                |
| 10 years | Roland Brown     | <i>Regional Controller</i>            |
| 10 years | Regina Cunico    | <i>Assistant Company Secretary</i>    |
| 10 years | Curt Hurst       | <i>Vice President Southern Region</i> |
| 5 years  | Elizabeth Becker | <i>Payroll Coordinator</i>            |
| 5 years  | William Kavanagh | <i>Technical Training Specialist</i>  |
| 5 years  | Sharon Spurlin   | <i>Director of Financial Analysis</i> |
| 2 years  | Otis Bias        | <i>Network Analyst</i>                |
| 2 years  | Michele DuPhily  | <i>Systems Analyst</i>                |
| 2 years  | Stuart Gulotta   | <i>Manager Application Support</i>    |
| 2 years  | Mark Romefelt    | <i>Vice President Law</i>             |

## Hempstead

|          |                      |  |
|----------|----------------------|--|
| 10 years | Spiro Germanakos     | <i>Technician</i>                          |
| 10 years | Paul Hanson          | <i>Mechanic</i>                            |
| 10 years | William Liljehult    | <i>Technician</i>                          |
| 10 years | John Thomas          | <i>Technician</i>                          |
| 5 years  | Hally Gottlieb       | <i>Accounting Manager</i>                  |
| 5 years  | Walter Robinson III  | <i>Supervisor Operations</i>               |
| 2 years  | Russell Benny        | <i>Technician</i>                          |
| 2 years  | Robert Comba         | <i>Mechanic</i>                            |
| 2 years  | Christine Puncowski  | <i>Administrative Assistant/Operations</i> |
| 2 years  | Ephraim Rodriguez    | <i>Mechanic</i>                            |
| 2 years  | Christopher Saraceni | <i>Technician</i>                          |
| 2 years  | Eric Schoettle       | <i>Mechanic</i>                            |

## Essex

|          |                   |                                  |
|----------|-------------------|----------------------------------|
| 10 years | Robert Scotko     | <i>Operations Superintendent</i> |
| 5 years  | Hassan Bennett    | <i>Technician</i>                |
| 5 years  | Richard Dillard   | <i>Technician</i>                |
| 2 years  | Kevin Alexander   | <i>Technician</i>                |
| 2 years  | Gilberto Cano     | <i>Technician</i>                |
| 2 years  | Janet Crosta      | <i>Secretary</i>                 |
| 2 years  | Russell Gundy     | <i>Technician</i>                |
| 2 years  | Charlie Jennings  | <i>Technician</i>                |
| 2 years  | Steven Smith      | <i>Technician</i>                |
| 2 years  | Robert Vining Jr. | <i>Technician</i>                |

## Anniversaries

### Southeastern Conn.

|          |                      |                              |
|----------|----------------------|------------------------------|
| 10 years | Robert Alonge        | <i>Operations Technician</i> |
| 5 years  | James Henderson      | <i>I&amp;C Technician</i>    |
| 2 years  | Peter Berard         | <i>Accountant</i>            |
| 2 years  | Kevin Ganoe          | <i>Operations Technician</i> |
| 2 years  | George Laughlin Jr.  | <i>Scalehouse Planner</i>    |
| 2 years  | Stephen Lynn Novosad | <i>Operations Technician</i> |

### Niagara

|         |               |                         |
|---------|---------------|-------------------------|
| 2 years | Derek Veenhof | <i>Business Manager</i> |
|---------|---------------|-------------------------|

### SEMASS

|          |                 |                               |
|----------|-----------------|-------------------------------|
| 10 years | William Price   | <i>Maintenance Supervisor</i> |
| 2 years  | Ronald Auld Jr. | <i>Technician</i>             |
| 2 years  | David Couto     | <i>Technician</i>             |
| 2 years  | Nancy DaSilva   | <i>Accounting Coordinator</i> |
| 2 years  | Jose Goncalves  | <i>Technician</i>             |
| 2 years  | Patricia O'Hara | <i>Buyer</i>                  |
| 2 years  | James Rizzitano | <i>Technician</i>             |
| 2 years  | Joel Rosperich  | <i>Mechanic</i>               |

### Delaware Valley

|         |                   |                           |
|---------|-------------------|---------------------------|
| 2 years | John Coles Jr.    | <i>Mechanic</i>           |
| 2 years | August Cutrara II | <i>Technician</i>         |
| 2 years | Nehemiah Davis    | <i>Technician</i>         |
| 2 years | William Golle     | <i>I&amp;C Technician</i> |
| 2 years | Hassan Green      | <i>Technician</i>         |
| 2 years | Michael Handy     | <i>Technician</i>         |
| 2 years | Terrence O'Brien  | <i>Technician</i>         |

### TransRiver

|          |                  |  |
|----------|------------------|--|
| 10 years | Ann Marie Byrnes | <i>Special Waste Scientist</i>                 |
| 10 years | Sandra Robinson  | <i>Secretary Ops. Support</i>                  |
| 10 years | Steven Turner    | <i>Regional Marketing Controller</i>           |
| 5 years  | Brett Cooper     | <i>Regional Environmental Engineer</i>         |
| 2 years  | James Belden     | <i>Marketing Coordinator</i>                   |
| 2 years  | Adele Kuncze     | <i>Secretary Engineering (Northern Region)</i> |
| 2 years  | Thomas Rubinetti | <i>Special Waste Representative</i>            |

# People on the move

In July 1999, **John Ouderkirk** was named *backend/ash operator* at Hempstead. ★ **Michael Pierce** accepted the position of *process technician* at the Southeastern Connecticut plant. ★ At Niagara, **Mark Roberts** became *maintenance craftsman* in the mechanical department and **Michael Thomas** was named *material handling technician*. ★ **David Evans** assumed the role of *maintenance materials coordinator* at SEMASS. ★

In August 1999, **Luther Johnson Jr.** was named *control room operator* at Essex. ★ **Robert Vining Jr.**, also from Essex, assumed the role of *tip-ping bay/crane operator*. ★ Things didn't stand still at Niagara either, where **Michael Breniser** became *shift supervisor*. ★ In the same month, **Arlette Paul** was elevated to the position of *buyer* in Delaware Valley's plant purchasing department, where **John Moffitt** expanded his responsibilities by becoming *manager of operations*. ★ And to round out the month of August 1999, **Aaron Ross** accepted the position of *loader operator* at the same location. ★

September 1999 had a major administrative change in store affecting all of the controllership departments companywide. **Roland Brown** of Niagara and **Hank Asher** from Southeastern Connecticut, controllers for their respective facilities, were promoted to *regional controllers*, coordinating the northern and southern controllership departments. ★ As a result of this restructuring, **Christine Curcio** and **Laura Murray**, lead accountants at Southeastern Connecticut

and Niagara, were named as *accounting managers*. ★ In Delaware Valley's controllership department, **Natasha Holmes** became *scalehouse technician*. ★ On the operations' side, **David Carroll** of Essex was named *control room operator* and **Percy White** became *back end/ash operator*. ★ In the electrical department at Essex, **Efrain Mendez** accepted the position of *electrical, instrumentation and controls craftsman*. ★ And, at SEMASS, **James Koska** and **Barry Willett** assumed the roles of *ACRO/rover*. ★ **Brian Pires**, also a SEMASS technician, became *ACRO*, and **Larry Smith Jr.** accepted the position of *control room operator*. ★

October 1999 meant a new start for **Jose "Pepe" Castro** of the Essex mechanical department when he assumed the role of *maintenance craftsman*, followed by a move to maintenance administration where he is now *maintenance supervisor*. ★ The Essex plant controllership was reinforced with **John Joyner Jr.** joining the team as *accounting coordinator*. ★ October was also a very active month at SEMASS with **Derek Costa**, **Craig Santos**, and **Jeffrey St Cyr** moving into the positions of *material handling technicians*. ★ **Nancy DaSilva** expanded her responsibilities as *accounting coordinator* in plant controllership. ★ **Matthew Sears** joined the plant's environmental department as *environmental scientist*. ★ At Delaware Valley, **David Peterson** was named *maintenance craftsman* in the mechanical department. ★ And, at the same location, **Jason Thomas** accepted the position of *loader operator*. ★

In November 1999, **Tom Honeycheck** became American Ref-Fuel's *chief engineer* for Central Engineering. ★ In the same department, **Timothy Siegfried** accepted the position of *senior engineer*. ★ **Randy Bayer** took on a new challenge as an *engineer* for the Southern Region. ★ November was also a busy month for the Northern Engineering department with **Ainsworth James** accepting the position of *maintenance engineer*, **Raymond Mc Govern Jr.** becoming *senior engineer* and **Farouk Abdool** joining the team as *associate engineer*. ★ **Wendy Betik** expanded her secretarial duties as the Hempstead *plant secretary*. ★ **Fernando De Melo** was named *assistant fuel CRO* at SEMASS. ★ **Richard Bouyea** assumed the role of *supervisor safety & training* at Delaware Valley. ★

The last month of 1999 meant a new position for **Christopher Saraceni** when he became *ash/crane operator* at Hempstead. ★ Also in December, **Peter Berard**, previously SEMASS' accounting coordinator, moved to Southeastern Connecticut where he now uses his previously gathered knowledge as *accountant* at the plant's controllership department. ★ **Ray Martin** of Delaware Valley also accepted the position of *shift supervisor* in the operations department. ★ And, at corporate headquarters in Houston, **Ingrid van Praag** joined corporate public affairs as *public affairs specialist*. Before taking on this new challenge, van Praag was active as translator and accounts payable coordinator. ★



## Former Ref-Fuel Vice Chairman Jessberger receives special honor

When meeting space was getting a little tight in the corporate office, American Ref-Fuel's management decided to have a brand-new conference room built. Bookshelves and some cubicles were moved to free up the needed space, and in a matter of weeks the construction was done and the meeting room was ready for use.

Then another question arose: What to call the new room? It did not take long to come to a consensus that the new space should be named in honor of American Ref-Fuel's founding President and retired Vice Chairman Cliff Jessberger. Who could be more suited to lend his name to the nicely decorated and elegant conference room? The newest American Ref-Fuel employees may be less fa-

miliar with Jessberger's influence on the company's history. Until his retirement in 1997, and on a part-time basis thereafter, Jessberger was a tireless proponent of waste-to-energy. He was instrumental in bringing DBA technology to America through his roles at Grumman Engineering Corp., BFI Energy Systems and, ultimately, American Ref-Fuel Company. The room dedication held on Valentine's Day was a perfect occasion to commemorate Jessberger's many contributions to the origin, development and success of the company.

The guest of honor and his wife, Clare, appeared visibly moved when a framed photo of Jessberger was unveiled and placed in its position to preside over the new room.



*Clare and Cliff Jessberger helped dedicate Ref-Fuel's new Jessberger Conference Room.*

Corporate employees joined in a reception to congratulate the Jessbergers on this honor and to once more thank the man who played such a vital role in setting the course for Ref-Fuel's success.



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## ENVIRONMENTAL PHILOSOPHY

*American Ref-Fuel is committed to be an industry leader in environmental protection by achieving superior awareness and performance.*

- Concern for the public's health and environment will be evident through our plant design, operation of our facilities and the business decisions we make.
- Environmental compliance, meeting or exceeding applicable standards, will not be compromised for the sake of production, throughput or profits.
- This philosophy will be implemented by way of employee training and adequate resources.
- Constant improvement is a way of life. We will develop specific environmental policies and practices to ensure our continuous progress.



*Environmental awareness and performance are every employee's responsibilities. By embracing this philosophy, we all can make a difference.*

Paul J. Varello, Chairman and CEO

Lynn Johnston, Vice President, Northern Region

John Miller, Vice President and CFO

Dave Gutacker, President and COO

John O'Sullivan, Vice President, Engineering

Bill Reynolds, Vice President, Treasurer

Andrew Szurgot, Vice President, Safety and Environment

Richard Oliver, Vice President, Project Development

Sean Burke, Vice President, Organization Development

Curt Hurst, Vice President, Southern Region

Mark Romfelt, Vice President, Law

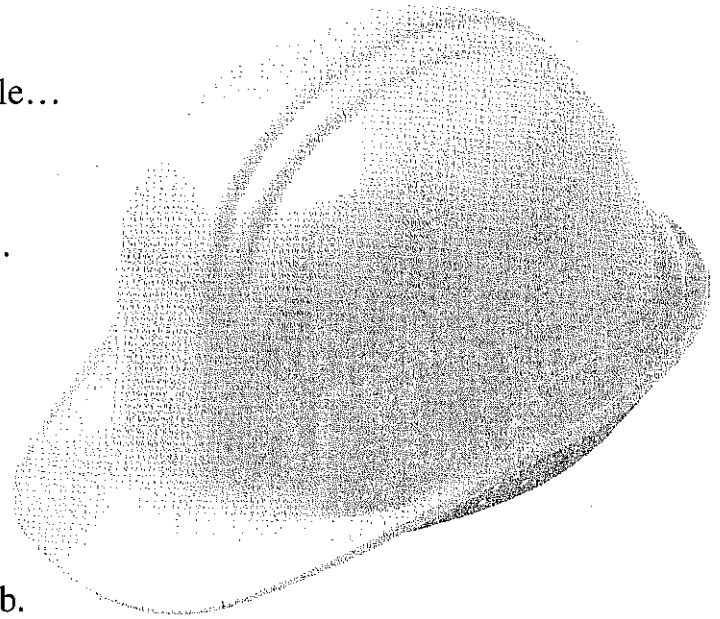




## TOTAL SAFETY PHILOSOPHY

*Total Safety is the ongoing integration of safety into all activities with the objective of eliminating injuries and improving performance.*

- Nothing is more important than safety... not production, not throughput, not profits.
- All accidents and injuries are preventable... they are not inevitable.
- Safety is a management responsibility... and safety can be managed.
- Safety is an individual responsibility... and a condition of employment.
- Safety is a way of life... around the clock, both on and off the job.
- Every task must be performed with a concern for safety... for ourselves, our fellow employees, our contractors, our visitors, our customers and the communities in which we operate.



*A commitment to Total Safety is a commitment to doing things right.*

Paul J. Varello, Chairman and CEO

Dave Gutacker, President and COO

Andrew Szurgot, Vice President, Safety and Environment

Lynn Johnston, Vice President, Northern Region

John O'Sullivan, Vice President, Engineering

Richard Oliver, Vice President, Project Development

Curt Hurst, Vice President, Southern Region

John Miller, Vice President and CFO

Bill Reynolds, Vice President, Treasurer

Sean Burke, Vice President, Organization Development

Mark Romefelt, Vice President, Law



# Typical American Ref-Fuel Waste-to-Energy Facility



1. Collection trucks enter the site at a computer-controlled weigh station and are directed to an enclosed tipping hall.
2. Waste from collection vehicles is unloaded directly into the refuse bunker.
3. The overhead refuse crane mixes the waste and transfers it from the bunker and drops it into the waste charging hopper.
4. The charging hopper holds a ready supply of waste for charging the grate system.
5. The ram feeder pushes the solid waste onto the uppermost roller of the Duessel-dorf Roller Grate.
6. The constant rotation of the set of rollers tumbles and distributes the waste evenly along the downward slope of the roller grate to promote thorough combustion. The speed of the rollers, the quantity of combustion air provided and the speed of the ram feeder are individually controlled to maintain optimum furnace conditions.
7. After combustion of the solid waste on the roller grate, the remaining ash falls off the final roller into the water-filled ash quench trough.

8. A conveyer carries the ash to further processing for ferrous and other materials recovery (optional) and then to the ash storage area. A front-end loader is used to remove and load the ash into trucks in an enclosed building.
9. The control room houses the computerized central monitoring and control network for the facility.

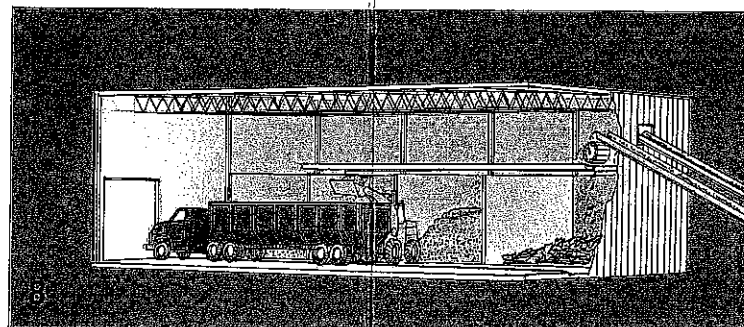
Additional materials recovery and pollution abatement subsystems may be incorporated in the facility as required.

10. The heat generated by burning the waste produces steam in the waterwall boiler.
11. Approximately 10 percent of the energy produced by the turbine generator is used to operate the plant and the balance is sold to the energy customer.

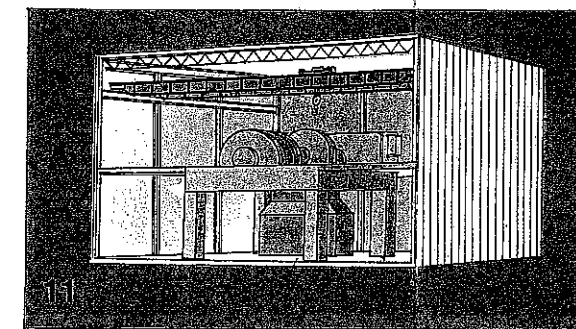
12. After cooling in the boiler, combustion gases pass through a scrubber for the removal of acid gases.

13. The air flow then continues through a particulate collection system.

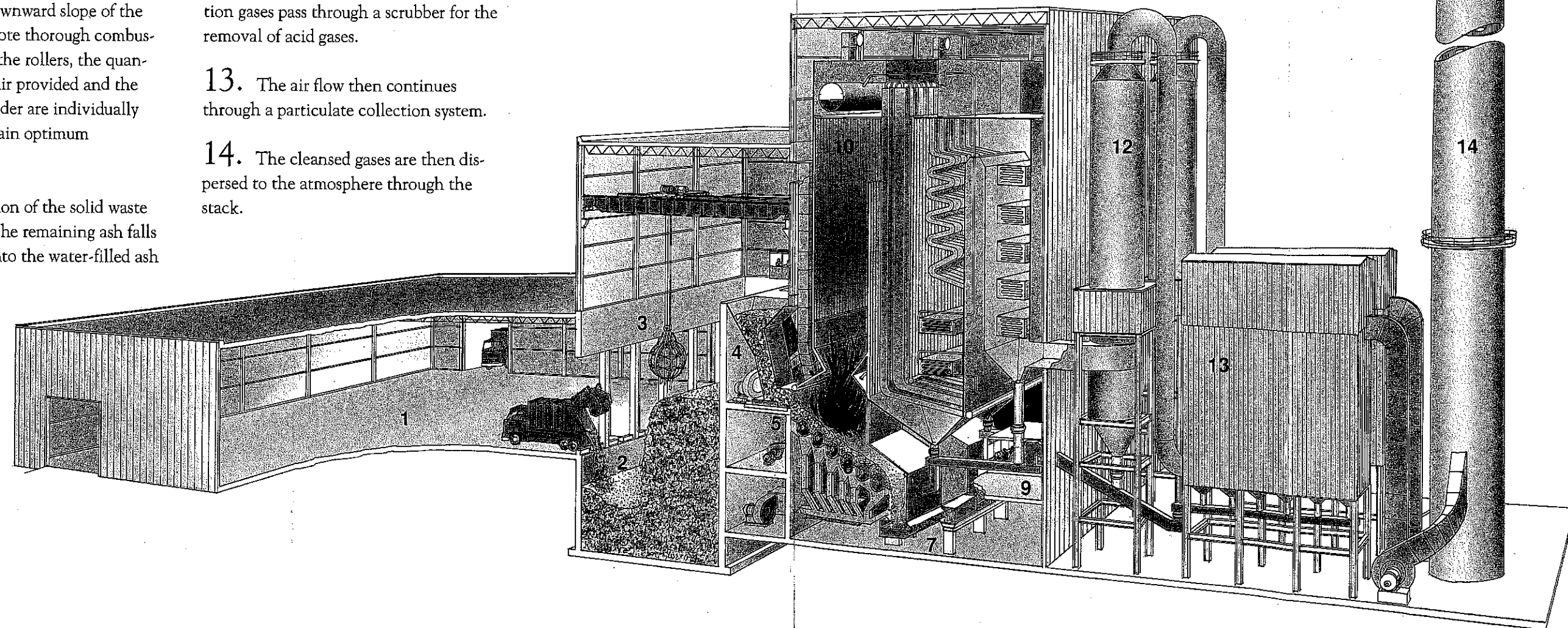
14. The cleansed gases are then dispersed to the atmosphere through the stack.



Materials Recovery & Ash Handling Systems



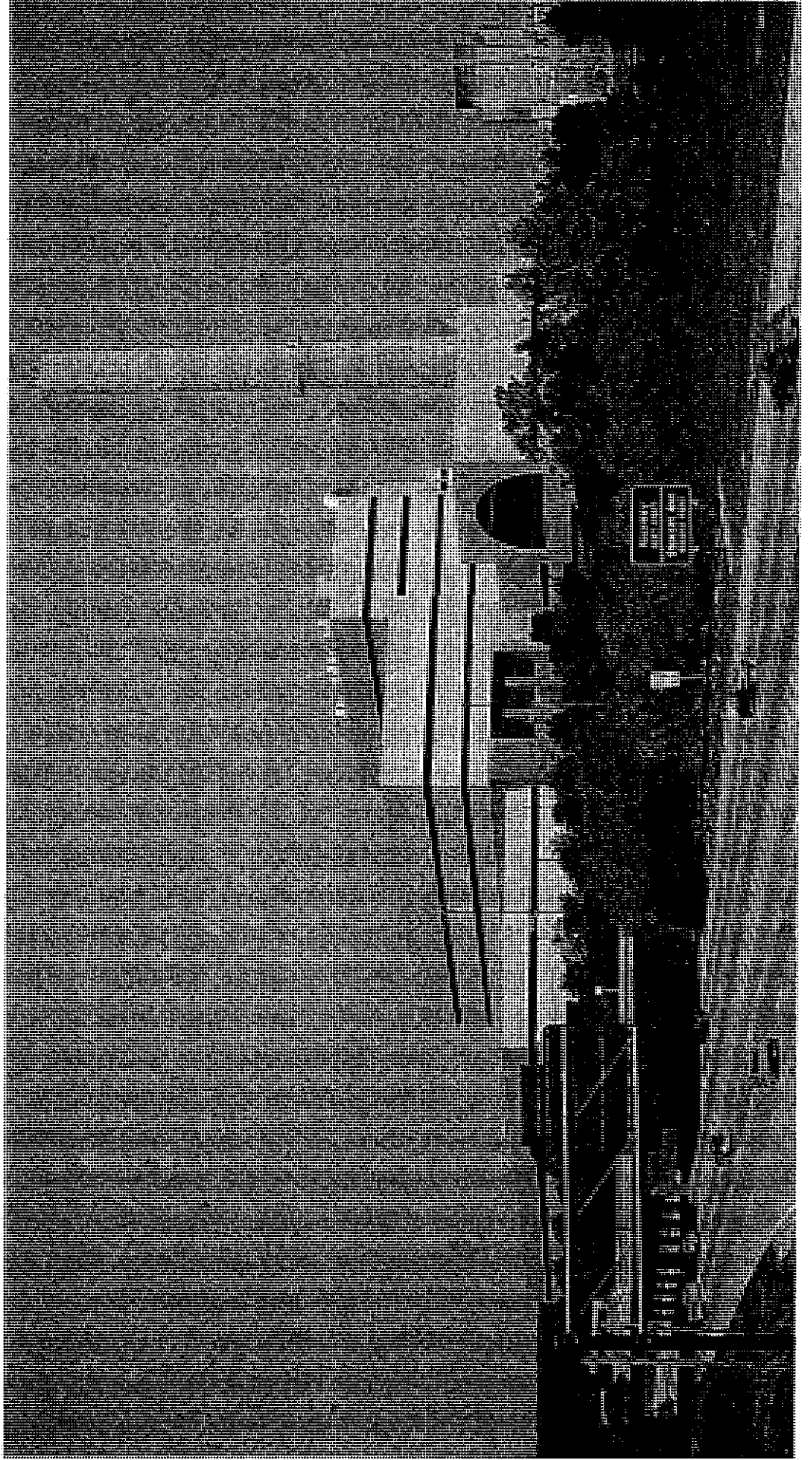
Turbine - Generator

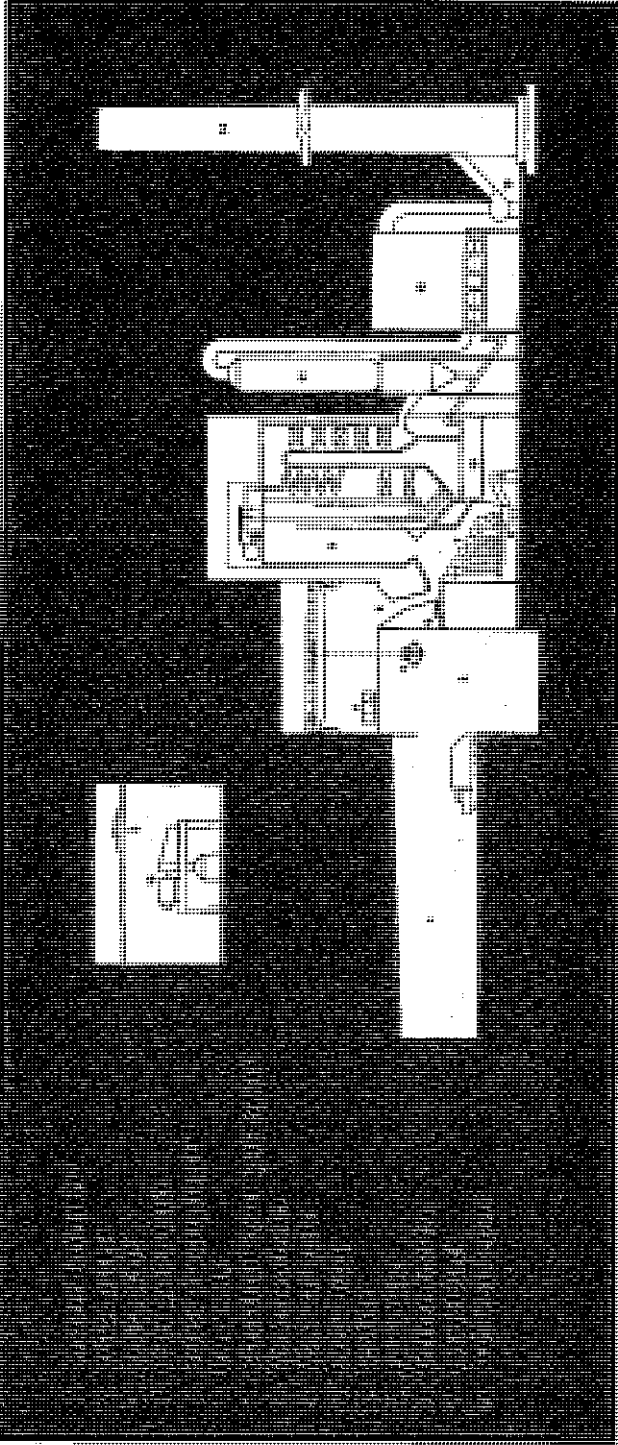




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**TOWN OF HEMPSTEAD  
WASTE-TO-ENERGY FACILITY  
LONG ISLAND, NEW YORK**





### Hempstead Resource Recovery Facility

American Ref-Fuel's flagship facility, in Hempstead, New York, opened for business in 1989. The Hempstead facility, Long Island's largest waste-to-energy plant, provides environmentally safe municipal solid waste disposal for the nation's most populous township. It marks the first United States installation of a globally successful mass burn technology, by Deutsche Babcock Anlagen.

The Hempstead facility accepts delivery of waste six days a week and processes on a 24-hour-a-day, seven-day-a-week basis. Steam created in the combustion process drives a 72-megawatt turbine-generator producing electricity for in-plant use and for sale to the local

utility. Three dry scrubber systems control acid gases, as do fabric filters, minimizing the release of particulates before exiting the exhaust stack.

The Hempstead facility is the cornerstone of the town's integrated waste service plan that includes an extensive curbside collection system for recyclable materials and a long-term agreement with neighboring Brookhaven for disposal of ash residue.

OSHA designated the Hempstead plant a Star facility in 1994. American Ref-Fuel Company of Hempstead set the OSHA Star standard for all other waste-to-energy facilities in the nation, as it

received the very first Star in the industry.

American Ref-Fuel is a joint venture company owned by subsidiaries of Browning-Ferris Industries Inc., Duke Energy Power Services and United American Energy Corp. Its primary objective is to develop, own and operate advanced waste-to-energy facilities that convert municipal solid waste into energy in the form of steam and electricity. American Ref-Fuel, with its parent companies, offers a wide range of waste disposal solutions and related services.

### Key Project Facts:

#### Business Arrangements:

##### Service Area:

Town of Hempstead, New York

##### Owner/Operator:

American Ref-Fuel Company of Hempstead

##### Contract Term:

20 years with provisions for extensions

##### Financing Method:

Tax-exempt revenue bonds plus private equity

##### Waste Supply:

Town guarantees to deliver a minimum of

540,000 tons per year

##### Energy Market:

Electricity sales to Long Island Lighting Company

#### Facility Specifications:

##### Capacity:

2,505 tons per day

##### Number of process lines:

Three @ 835 tons per day

##### Type of Stoker Grate:

Duesseldorf Roller Grate

##### Steam Conditions at Boiler Outlet:

225,000 lbs/hr @ 870 psia/842 F

##### Turbine-Generator:

One 72-megawatt nominal condensing unit

##### Air Quality Control:

Three dry scrubber systems followed by three fabric (baghouse) systems

##### Stack Height:

382 feet

##### Burker Capacity:

15,000 tons

##### Secondary Materials Recovery:

Recovery of ferrous materials from post-incinerated ash



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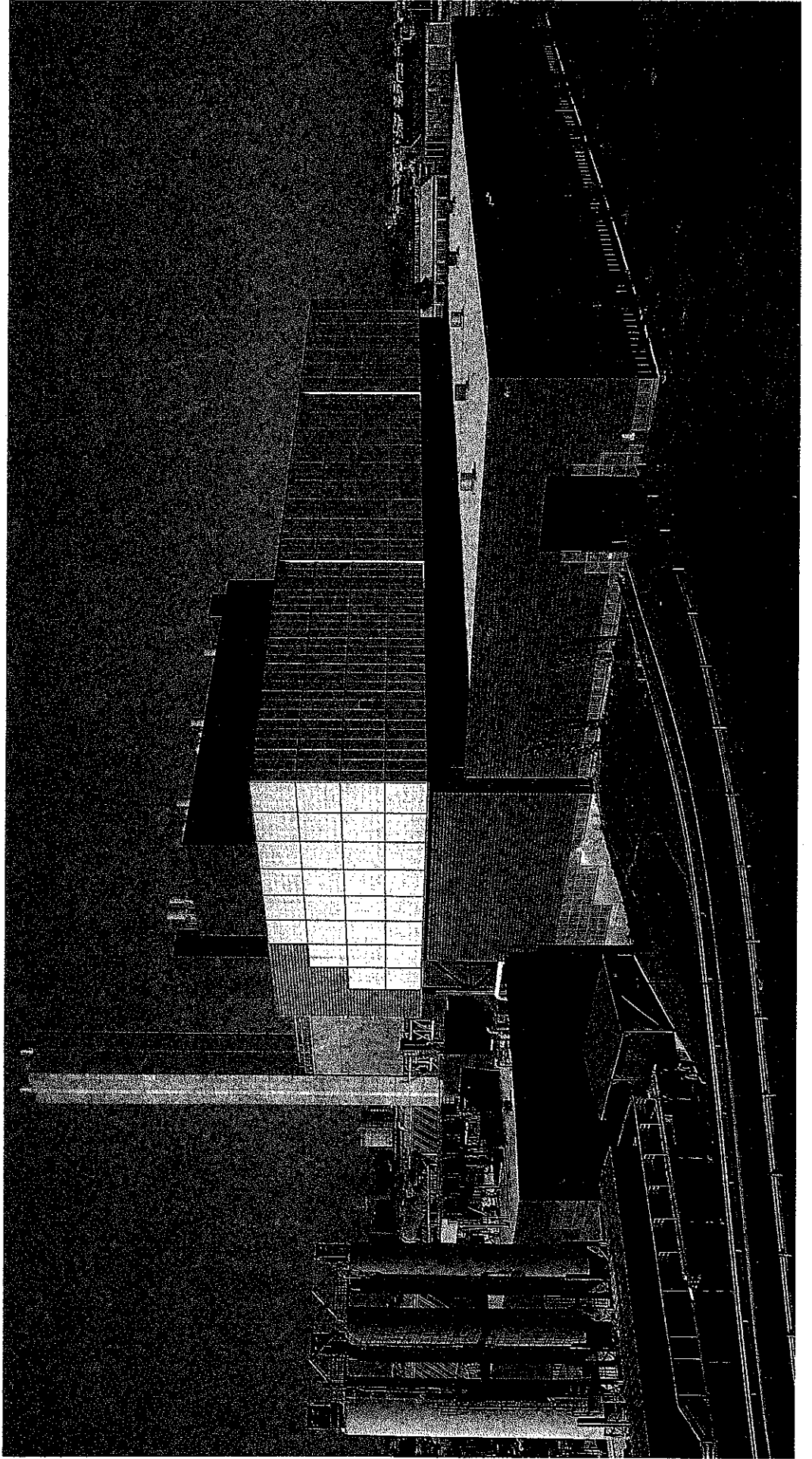


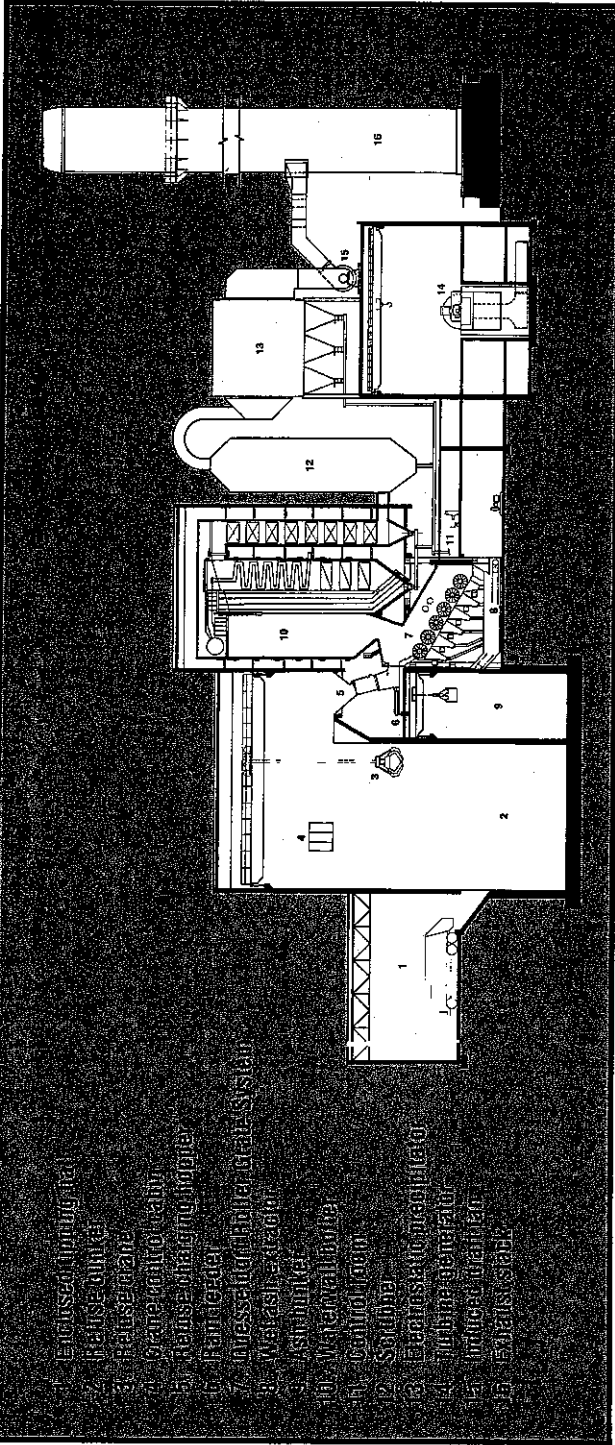




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**ESSEX COUNTY  
WASTE-TO-ENERGY FACILITY  
NEWARK, NEW JERSEY**





- 1. Engine-driven refuse choker
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### American Ref-Fuel Company of Essex County

New Jersey's largest waste-to-energy facility, owned and operated by American Ref-Fuel Company of Essex County, serves the refuse disposal needs of 22 municipalities in Essex County and the surrounding region.

The Essex County Resource Recovery Facility opened in 1990, boasting one of the smoothest plant start-ups in industry history. Today the facility combusts 2,800 tons per day of municipal solid waste and generates approximately 65 megawatts of electricity for sale.

Essex County, New Jersey, sponsored

sored the facility developed by the Port Authority of New York and New Jersey and constructed by American Ref-Fuel. The project's design and construction employed the largest Minority Business Enterprise Plan in New Jersey history. The reduction of the county's landfill requirements and the recovery of energy from the Essex County solid waste stream in an environmentally sound manner are among the benefits the facility brings to the community.

The Essex Resource Recovery Facility received its OSHA Star facility designation in 1995.

American Ref-Fuel is a joint venture company owned by subsidiaries of Browning-Ferris Industries Inc., Duke Energy Power Services and United American Energy Corp. Its primary objective is to develop, own and operate advanced waste-to-energy facilities that convert municipal solid waste into energy in the form of steam and electricity. American Ref-Fuel, with its parent companies, offers a wide range of waste disposal solutions and related services.

### Key Project Facts

- Business Arrangements:**
- Primary Service Area:** Essex County, New Jersey
- Owner:** American Ref-Fuel Company of Essex County
- Contract Term:** 25 years with provisions for extensions
- Financing Method:** Tax-exempt revenue bonds plus private equity
- Waste Supply:** County municipalities guarantee delivery of a combined minimum of 680,000 tons per year.
- Energy Market:** Electricity generation for plant use and export to Public Service Electric and Gas
- Facility Specifications:**

- Capacity:** 2,800 tons per day
- Number of Process Lines:** Three @ 933 tons per day
- Type of Stoker Grate:** Duesseldorf Roller Grate
- Steam Conditions at Boiler Outlet:** 240,000 lbs/hr @ 650 psia/750F
- Turbine-Generators:** Two 35 nominal megawatt units
- Air Quality Control:** Three electrostatic precipitators and three spray dry scrubber systems
- Stack Height:** 279 feet
- Bunker Capacity:** 14,000 tons
- Secondary Materials Recovery:** Recovery of ferrous materials from post-incinerated ash

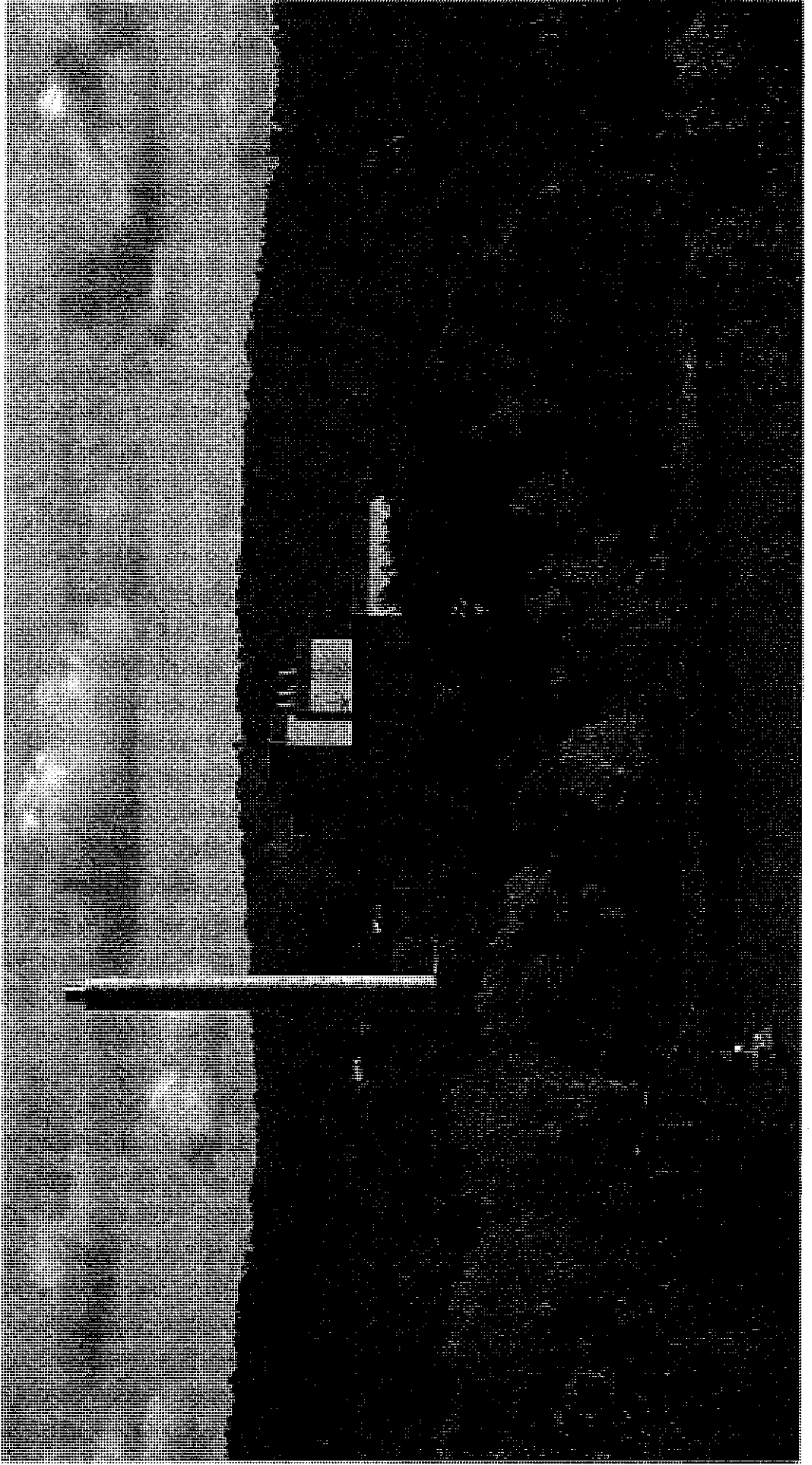


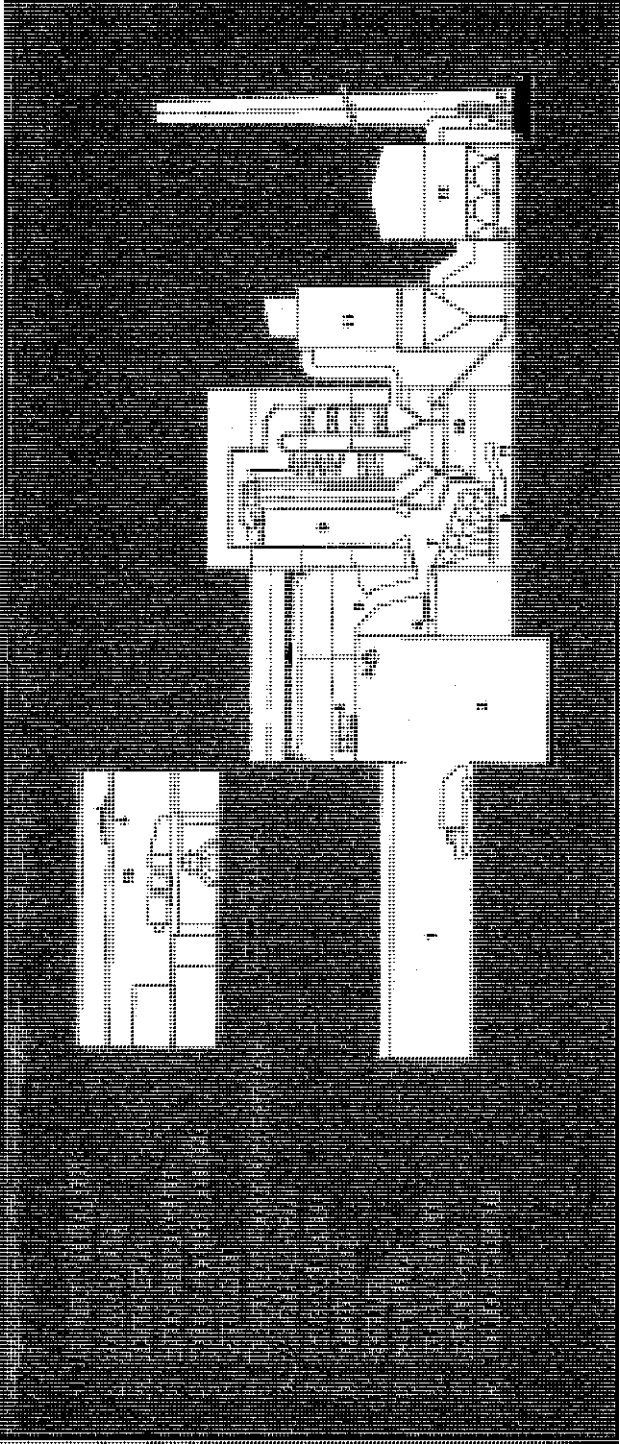
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**SOUTHEASTERN CONNECTICUT  
WASTE-TO-ENERGY FACILITY  
PRESTON, CONNECTICUT**





### Southeastern Connecticut Resource Recovery Facility

Numerous communities benefit from the waste disposal and energy generating services provided by the Southeastern Connecticut Resource Recovery Facility in Preston, Connecticut. The facility opened in 1991 and will provide a minimum of 25 years of municipal solid waste disposal service to towns comprising the Southeastern Connecticut Regional Resources Recovery Authority.

The facility receives waste six days a week and processes 689 tons of

municipal solid waste daily. The plant sells electricity generated beyond its internal operating consumption to Connecticut Light and Power, reducing disposal costs and returning the power generated to CL&P's grid.

The Southeastern Connecticut facility received the OSHA Star designation in 1995 and recertification in 1998.

American Ref-Fuel is a joint venture company owned by subsidiaries of

Browning-Ferris Industries Inc., Duke Energy Power Services and United American Energy Corp. Its primary objective is to develop, own and operate advanced waste-to-energy facilities that convert municipal solid waste into energy in the form of steam and electricity. American Ref-Fuel, with its parent companies, offers a wide range of waste disposal solutions and related services.

### Key Project Facts:

#### Business Arrangements:

**Service Area:**  
Eastern Connecticut region

**Owner:**  
American Ref-Fuel Company of Southeastern Connecticut

**Contract Term:**  
25 years with provisions for extensions

**Financing Method:**  
Tax-exempt revenue bonds

**Waste Supply:**  
Participating municipalities guarantee to deliver a combined minimum of 147,000 tons per year.

**Energy Market:**  
Electricity generation for plant use and export to Connecticut Light & Power

#### Facility Specifications

**Capacity:**  
689 tons per day

**Number of Process Lines:**  
Two @ 345 tons per day

**Type of Stoker Grate:**  
Duesseidorf Roller Grate

**Steam Conditions at Boiler Outlet:**  
91,000 lbs/hr. @ 855 psia/842 F

**Turbine Generator:**  
One 18-megawatt unit

**Air Quality Control:**  
Two dry scrubber systems followed by two fabric filter (baghouse) systems

**Stack Height:**  
240 feet

**Bunker Capacity:**  
3,000 tons



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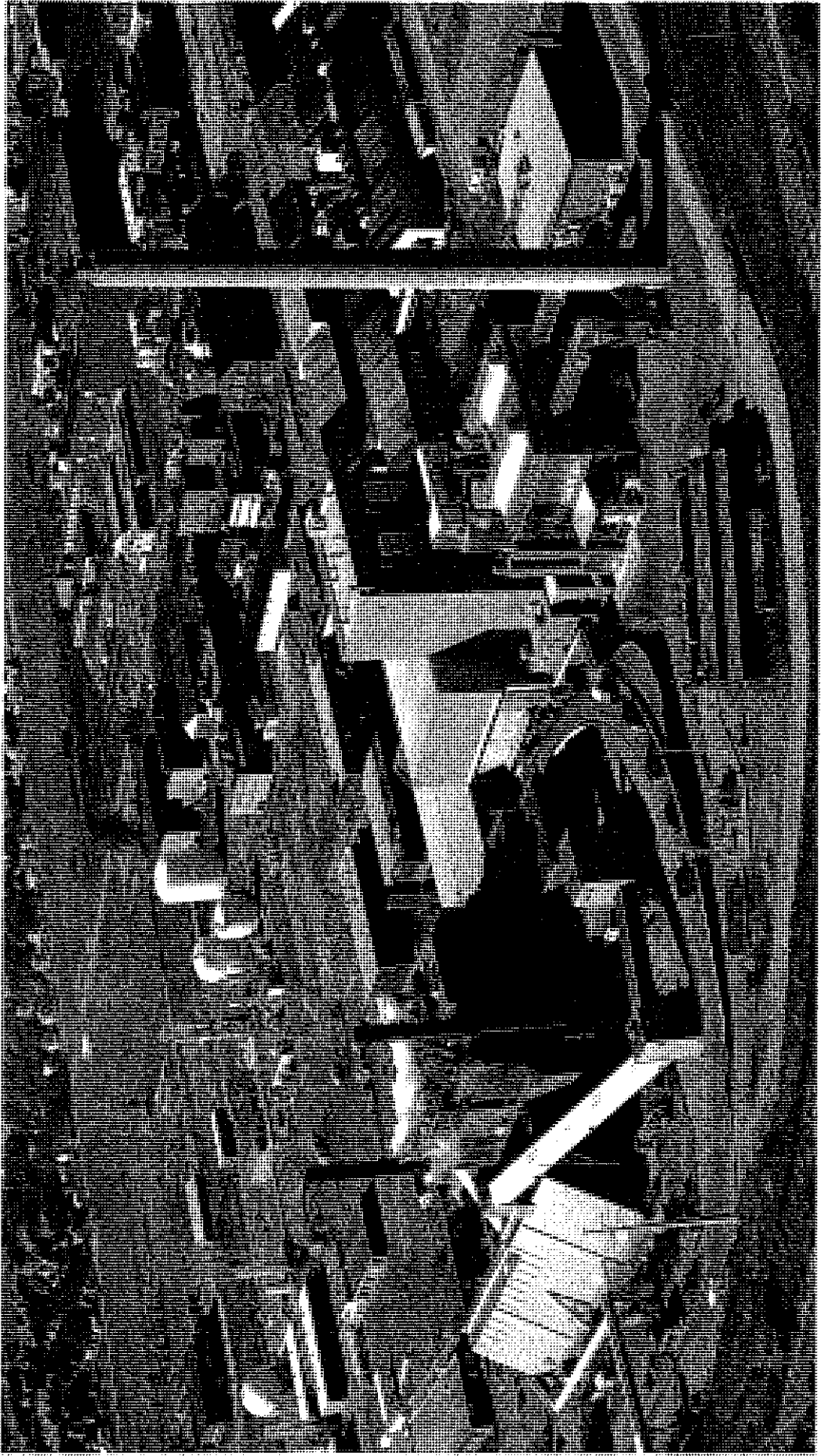
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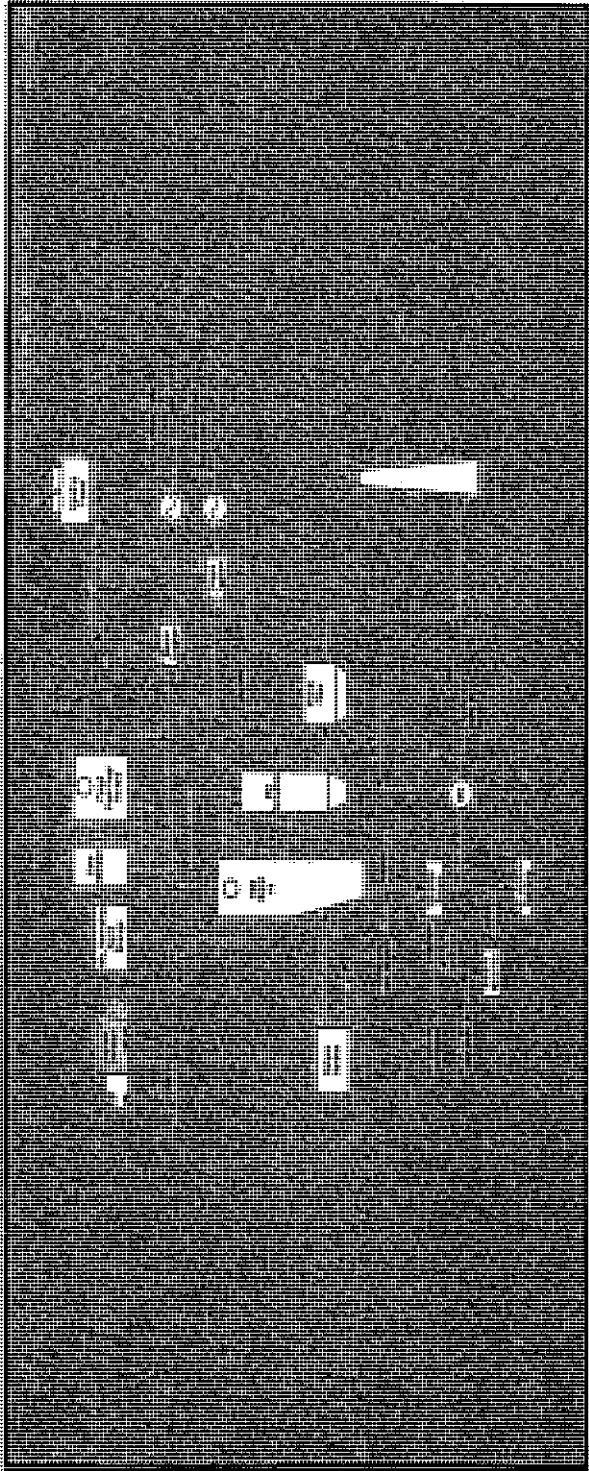




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**NIAGARA RESOURCE RECOVERY FACILITY  
NIAGARA FALLS, NEW YORK**





## Niagara Falls Resource Recovery Facility

The conversion of municipal solid waste to energy at the Niagara Resource Recovery Facility, a pioneer in the modern waste-to-energy industry, began in 1980. Today, the facility processes 2,250 tons of waste per day, selling the steam to adjacent chemical facilities and the electricity to Niagara Mohawk Power Company.

American Ref-Fuel Company acquired the Niagara Resource Recovery Facility from Occidental Chemical Corporation in 1993, a move enabling Ref-Fuel to gain a long-term presence in the western New York disposal market.

Upon acquisition, Ref-Fuel retrofitted air quality control equipment enabling the facility to meet Ref-Fuel's stringent environmental standards and commitments. The mass burning Duesseldorf Roller Grate System also replaced the existing refuse-derived fuel technology. The continued availability of the facility allows the greater Niagara Falls region to serve as an example of integrated waste disposal in action.

The Niagara facility earned OSHA's elite Star ranking in 1996.

American Ref-Fuel is a joint venture company owned by subsidiaries of Browning-Ferris Industries Inc., Duke Energy Power Services and United American Energy Corp. Its primary objective is to develop, own and operate advanced waste-to-energy facilities that convert municipal solid waste into energy in the form of steam and electricity. American Ref-Fuel, with its parent companies, offers a wide range of waste disposal solutions and related services.

## Key Project Facts

### Business Arrangements:

**Service Area:**  
Greater Western New York region

**Owner:**  
American Ref-Fuel Company of Niagara, L.P.

### Financing Method:

Tax-exempt revenue bonds, private financing, plus private equity

### Waste Supply:

Participating municipalities and private haulers to deliver up to 800,000 tons per year

### Energy Market:

Steam is exported to adjacent chemical plants and electricity is exported to Niagara Mohawk Power Co.

### Facility Specifications:

#### Capacity:

2,250 tons per day

#### Number of Process Lines:

Two @ 1,125 tons per day

#### Type of Stoker Grate:

Duesseldorf Roller Grate

#### Steam conditions at Boiler Outlet:

1,250 psi/750 F

#### Turbine-Generator:

Two Asea Brown Boveri 25-megawatt units

#### Air Quality Control:

Two acid gas scrubbers and fabric filter baghouses

#### Stack Height:

396 feet

#### Bunker Capacity:

7,500 tons

#### Secondary Materials Recovery:

Recovery of ferrous and non-ferrous metals



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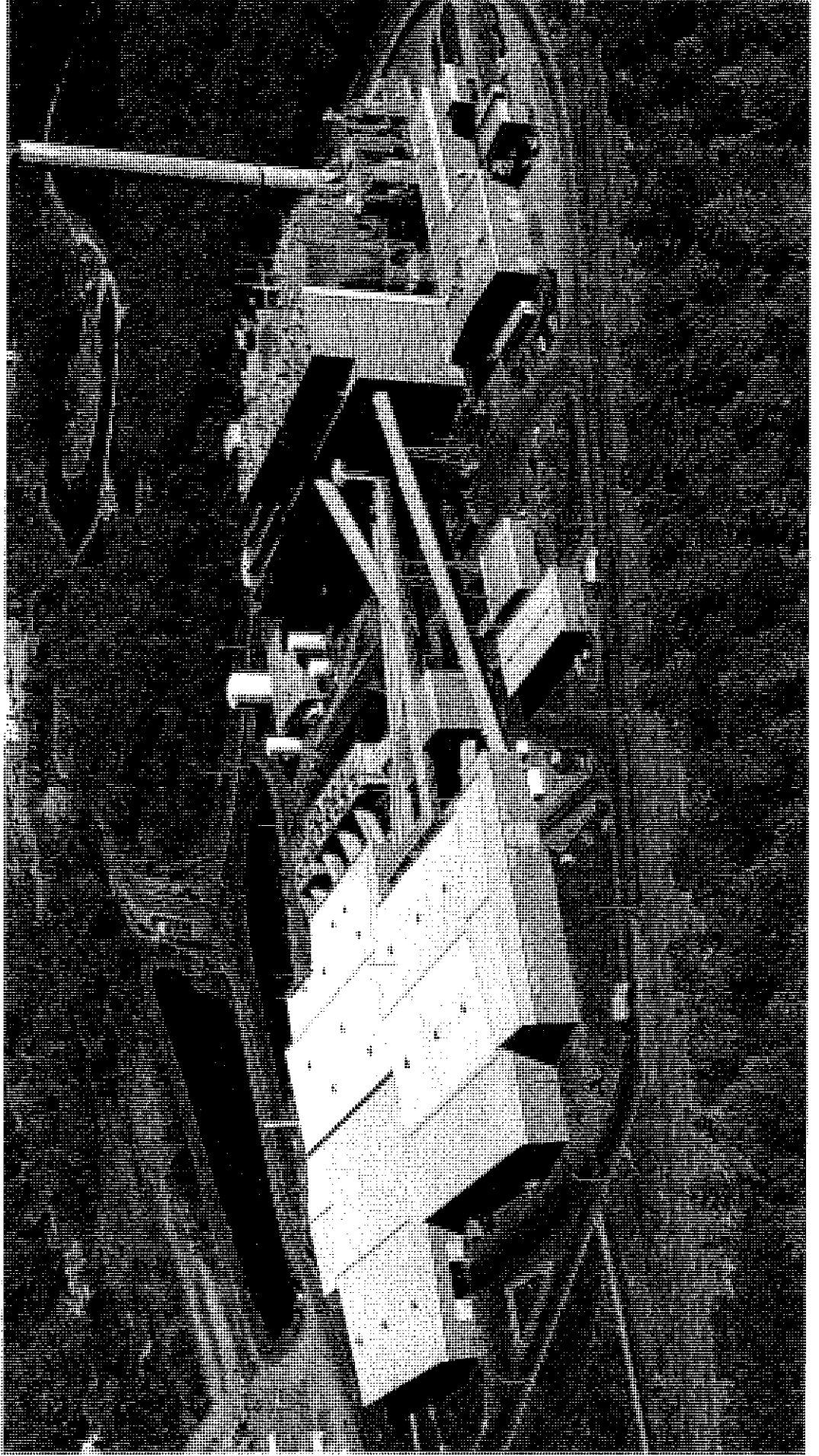
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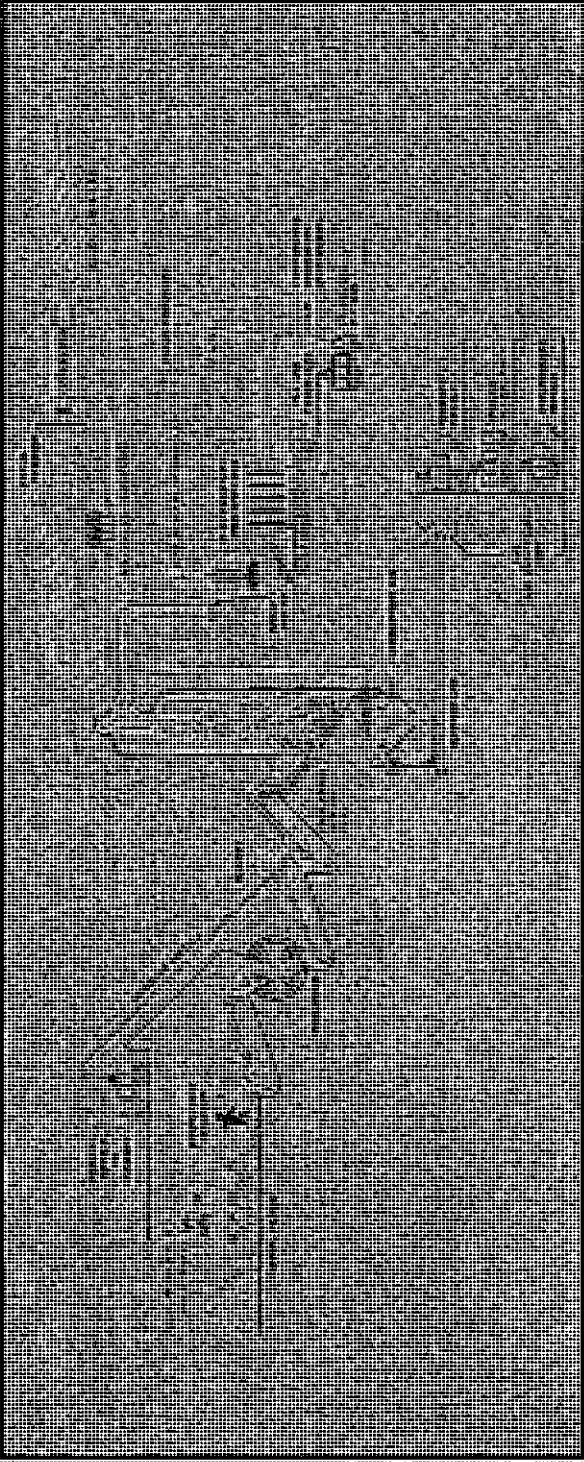
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**SEMSS RESOURCE RECOVERY FACILITY  
ROCHESTER, MASSACHUSETTS**





## Key Project Facts

### Business Arrangements:

**Service Area:**  
Southeastern Massachusetts, Cape Cod and Boston vicinity

**Owner:**  
SEMASS Partnership, which is 90 percent owned by American Ref-Fuel Company of SEMASS, L.P.

**Financing Method:**  
Private financing

**Waste Supply:**  
Participating municipalities and private haulers to deliver up to 997,000 tons per year

**Energy Market:**  
Electricity generation for plant use and export to Commonwealth Electric Company

### Facility Specifications:

**Capacity:**  
2,700 tons per day

**Number of process lines:**  
Three at 900 tons per day

**Type of Stoker Grate:**  
Riley-Stoker

**Steam Conditions at Boiler Outlet:**  
300,000 lbs/hr @ 650 psia/750F

**Turbine-Generator:**  
One 54-megawatt nominal condensing unit and one 26-megawatt nominal condensing unit

**Air Quality Control:**  
Two units with dry scrubbers followed by a five-field electrostatic precipitator and one unit with a dry scrubber followed by a baghouse.

**Stack Height:**  
345 feet

**Tipping Floor Capacity:**  
8,000 tons

**Secondary Materials Recovery:**  
Recovery of ferrous and non-ferrous metals

## SEMASS Resource Recovery Facility

The SEMASS Resource Recovery Facility provides southeastern Massachusetts communities with an alternative to landfilling their municipal solid waste. Since opening in 1989, the facility has employed a shred-and-burn process developed by Energy Answers Corporation (EAC), the SEMASS facility's developer, enabling the plant's processing of approximately 900,000 tons of solid waste each year. The resulting electricity meets the needs of more than 75,000 homes. The facility also recovers nearly 20,000 tons of recyclable metals from bottom ash annually.

American Ref-Fuel Company acquired controlling interest in

SEMASS Partnership, the facility's owner, in 1996.

Among the numerous operational and environmental prizes awarded to the SEMASS facility is the American Academy of Environmental Engineers' Honor Award for EAC's ash technology.

American Ref-Fuel Company is a joint venture owned by subsidiaries of Browning-Ferris Industries Inc., Duke Energy Power Services and United American Energy Corp. Its primary objective is to develop, own and operate advanced waste-to-energy facilities that convert municipal solid waste into energy in the form of steam and electricity. American Ref-Fuel, with its parent

companies, offers a wide range of waste disposal solutions and related services.

*Boiler Aggregate™ is a registered trademark of Energy Answers Corporation.*



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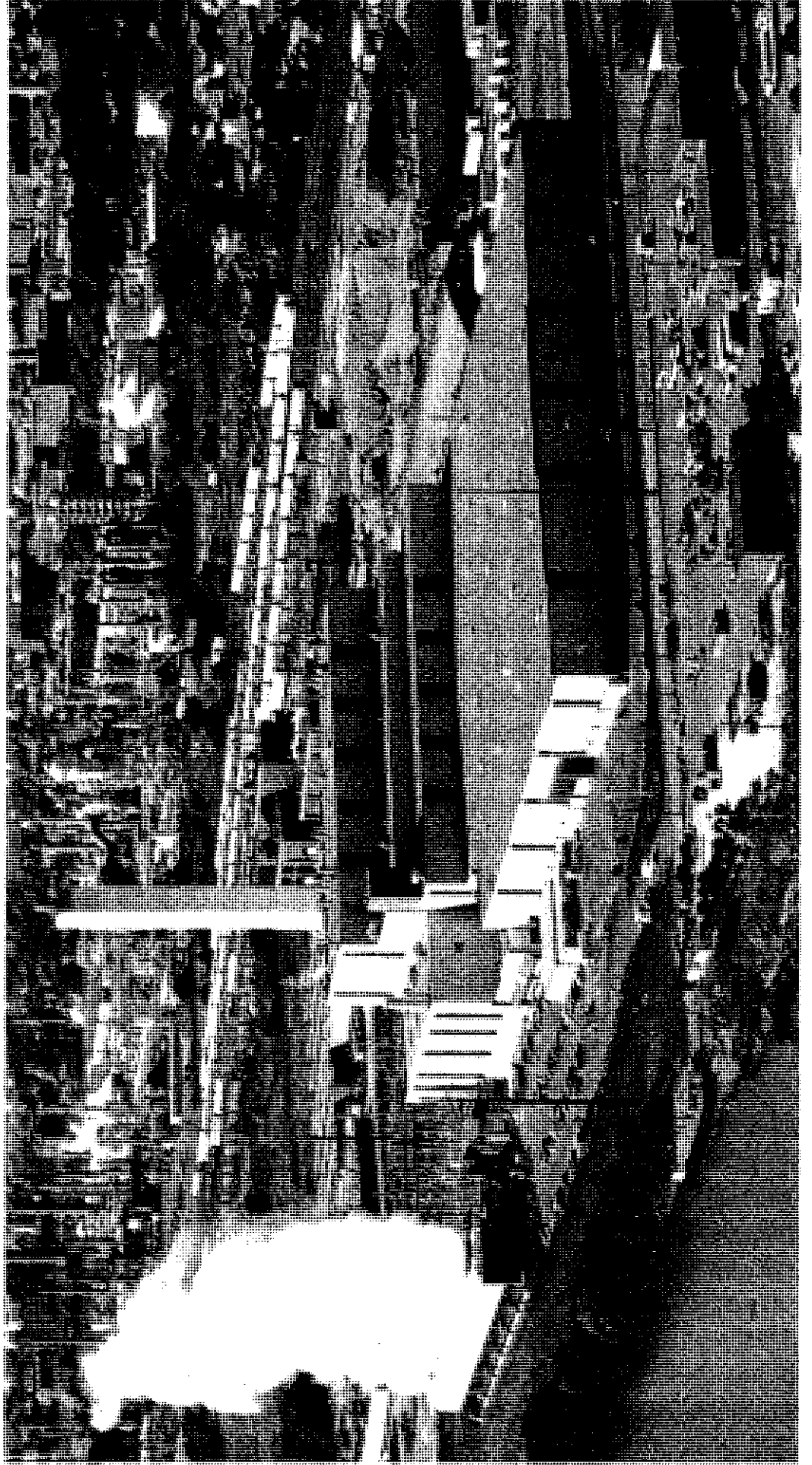
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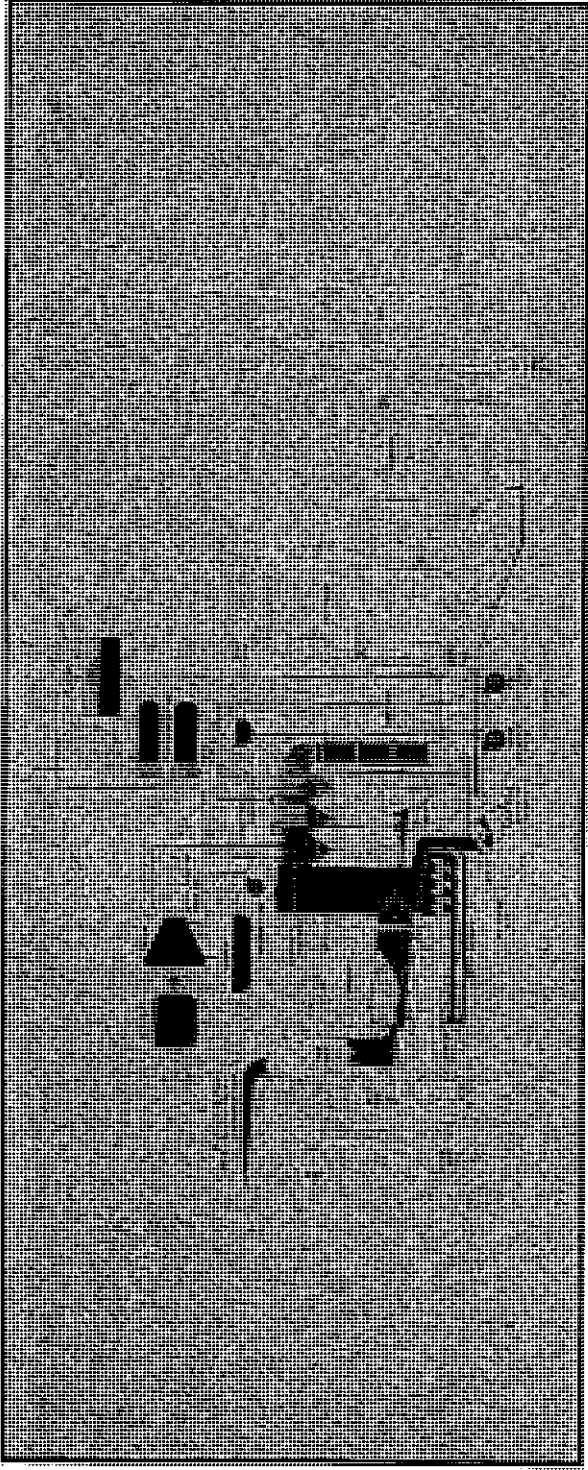






**DELAWARE VALLEY RESOURCE RECOVERY FACILITY  
CHESTER, PENNSYLVANIA**





### Delaware Valley Resource Recovery Facility

The Delaware Valley Resource Recovery Facility, located in Chester, Pennsylvania, joined American Ref-Fuel's portfolio of environmentally sound waste-to-energy facilities in 1997. The plant processes up to 2,688 tons of municipal and commercial solid waste each day.

The facility, acquired from Westinghouse Energy Resource Systems, opened in 1992. At maximum output, the plant generates approximately 75 megawatts of electricity, 90 percent of which is sold to the local utility. The plant not only meets the municipal solid waste disposal and energy production needs of Delaware County, but also provides capacity for up to

500,000 tons of additional waste each year from surrounding counties.

Advanced control systems constantly monitor combustion performance, energy output and emissions at the Delaware Valley facility. The six-combustor plant provides an effective and environmentally safe solution to the county's solid waste disposal needs as well as those of communities and industries throughout the Delaware Valley region.

American Ref-Fuel is a joint venture company owned by subsidiaries of Browning-Ferris Industries Inc., Duke Energy Power Services and United American Energy Corp. Its

primary objective is to develop, own and operate advanced waste-to-energy facilities that convert municipal solid waste into energy in the form of steam and electricity. American Ref-Fuel, with its parent companies, offers a wide range of waste disposal solutions and related services.

### Key Facts:

#### Business Arrangements:

**Service Area:**  
Delaware Valley, Pennsylvania region  
**Lessee/Operator:**  
American Ref-Fuel Company of Delaware Valley, L.P. This limited partnership is owned by wholly-owned subsidiaries of Browning-Ferris Industries, Inc.  
**Management Contract:**  
American Ref-Fuel Company  
**Financing Method:**  
Fleet National Bank, as owner trustee  
**Waste Supply:**  
Participating municipalities and private haulers to deliver in excess of 1 million tons per year.  
**Energy Market:**  
Electricity generation for plant use and export to Atlantic City Electric Company

#### Facility Specifications:

**Capacity:**  
2,688 tons per day  
**Number of process lines**  
6 @ 448 tons per day  
**Type of Stoker Grate:**  
O'Connor Rotary Combustor  
**Steam Conditions at Boiler Outlet:**  
140,000 lbs/hr @ 690 psia/800F  
**Turbine-Generator:**  
90-megawatt condensing unit  
**Air Quality Control:**  
6 dry scrubbers followed by 6 fabric filter (baghouse) systems  
**Stack Height:**  
245 feet  
**Tipping Floor Capacity**  
10,000 tons  
**Secondary Materials Recovery:**  
Recovery of ferrous and non-ferrous metals

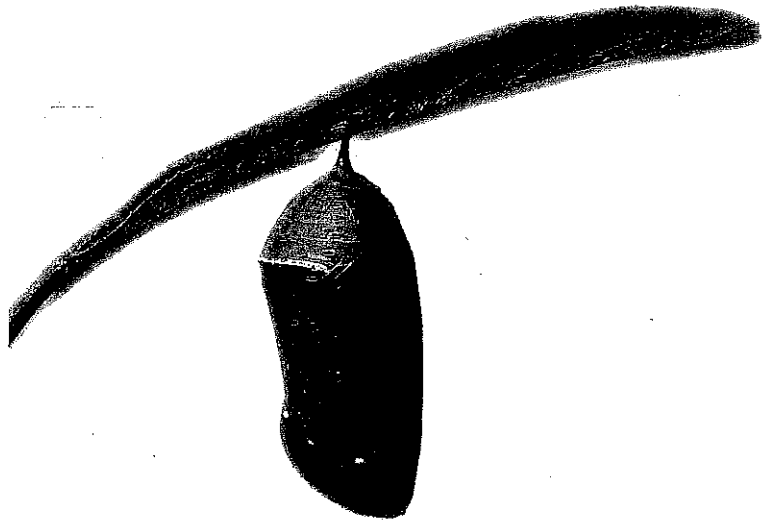


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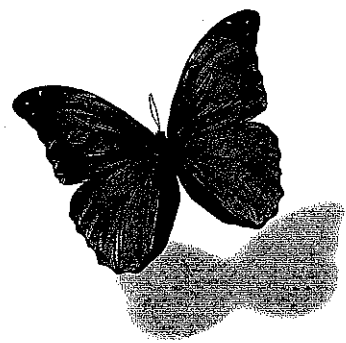
DUESSELDORF ROLLER GRATE SYSTEM





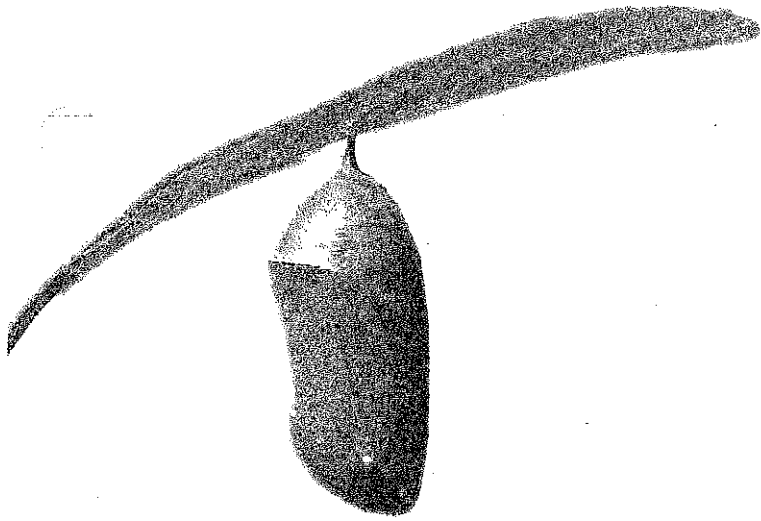
# *Transformations*

Succeeding In A Changing World





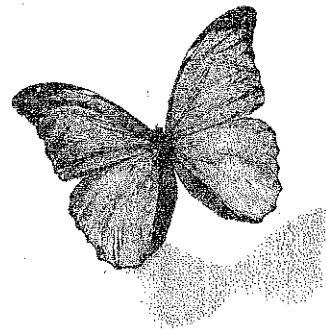
*American Ref-Fuel* is a partnership formed by subsidiaries of Allied Waste Industries, Inc., Duke Energy Power Services and United American Energy Corp. Its primary objectives are to develop, own and operate advanced waste-to-energy facilities that convert municipal solid waste into energy in the form of steam and electricity. American Ref-Fuel, along with its parent companies, offers a wide range of waste disposal solutions and related services.



## *Our Vision*

American Ref-Fuel will be the environmental solutions company recognized by the enthusiasm of its people, the respect of its neighbors and the satisfaction of its customers. We will create superior value, believing that success will be the natural result of living up to our core principles:

- Safety and Environmental Excellence
- Customer Satisfaction
- Creative Teamwork
- Employee Enthusiasm
- Ethical Conduct







## Chairman's Message



We enter the new millennium realizing that American Ref-Fuel's success has been, and continues to be, dependent on how effectively we manage change. Our business itself is based on a change process — transforming municipal solid waste into energy and recyclable metals. This annual report also reflects an administrative change, recapping a fiscal year that now coincides with the calendar year, rather than the September 30 year-end close used in previous reports.

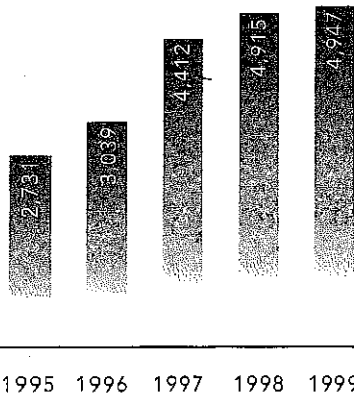
American Ref-Fuel witnessed big changes in both of the key dimensions of our business during 1999. The overall valuation of the waste industry plunged, with the largest participants losing an estimated 60 percent of their overall market value. This brought to light some fundamental issues at individual companies, but it also raised the question of what is the most efficient way to manage the nation's solid waste. It's notable that American Ref-Fuel continued to post stable results throughout this rocky period. On the energy side, market forces continued to move the business toward deregulation, creating opportunities for power contract buyouts. These buyouts provide a substantial cash infusion into our business and offer us the opportunity to play a more self-directed role in marketing the energy we produce.

We also changed ownership in 1999. Allied Waste Industries, Inc., of Scottsdale, Arizona, announced its planned purchase of the stock of Browning-Ferris Industries, Inc. This was less than 18 months after American Ref-Fuel's other original investor, Air Products and Chemicals, Inc., sold its half-interest to an entity formed by Duke Energy and United American Energy Corp. In both instances, the changes in ownership were largely transparent to our customers, who've come to identify our company culture as uniquely American Ref-Fuel.

But there are also a few things that won't change. Our commitment to our core principles of safety and environmental excellence, customer satisfaction, creative teamwork, employee enthusiasm and ethical conduct remains steadfast under new ownership and fluctuating markets. We also commit to our stakeholders that American Ref-Fuel will remain a reliable partner in meeting new challenges and leading our industry in the years ahead.

Paul J. Varello  
Chairman and CEO

# Hempstead Resource Recovery Facility Hempstead, New York



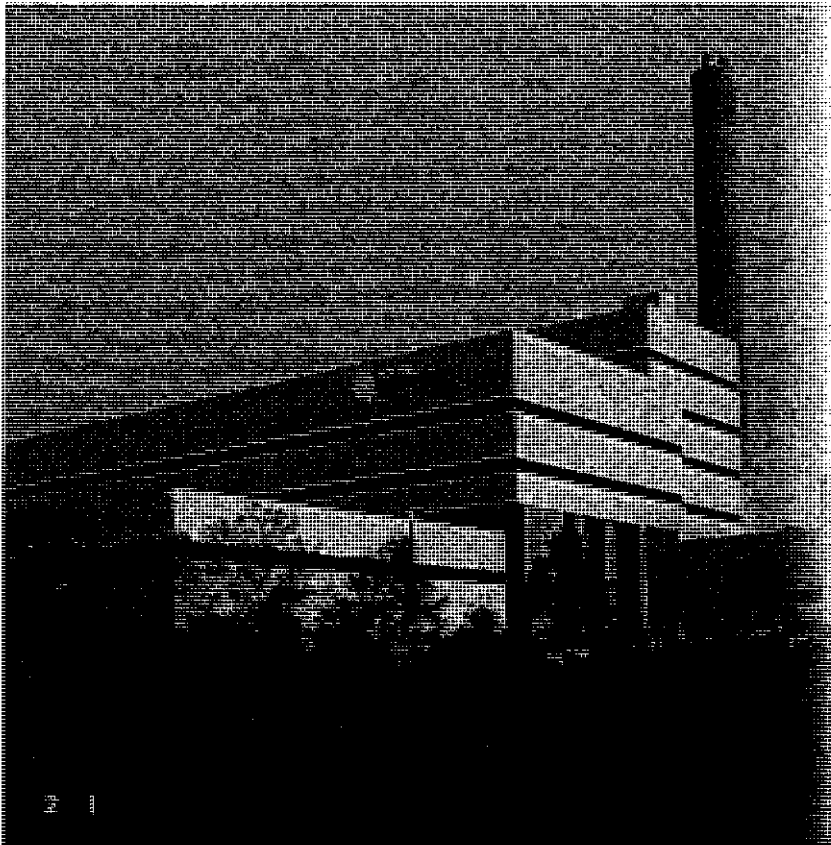
Tons of Garbage Processed at American Ref-Fuel Facilities Companywide  
(Thousands)

Past and present American Ref-Fuel employees, representatives of the town of Hempstead, New York, and other stakeholders celebrated in style in April 1999 when the company hosted a party to commemorate the 10th anniversary of operations at the Hempstead Resource Recovery Facility. The event recognized the outstanding performance of American Ref-Fuel's first business unit and its 10 consecutive years of increased productivity and outstanding records of safety and environmental performance.

Having successfully reached this milestone, American Ref-Fuel made moves in 1999 to further improve this asset in the area of metals recycling. First, the town of Hempstead amended its service agreement with the company to extend American Ref-Fuel's contract to recycle ferrous metals from the ash stream for another 10 years. Also, as the year ended, American Ref-Fuel was well underway in building a new system to recover nonferrous metals such as aluminum, brass and copper to further improve the plant's metal recycling volume.

In environmental developments, the New York Department of Environmental Conservation issued a five-year Title V Air Pollution Control permit for the facility. American Ref-Fuel contracted Fuel Tech, Inc., to furnish and install a nitrogen oxide reduction system, scheduled to be operational by December 2000.

The Hempstead plant operations team also continues to build on its solid record of corporate citizenship, lending its personnel, facilities or financial support to approximately 50 nonprofit organizations in the Hempstead area. The plant also opened its doors for the annual Earth Day open house and other tours upon request, welcoming more than 2,000 visitors during the year.



## Model Plant Follows Early Failure

**A** brief series of controlled explosions in March of 1987 toppled two, 200-foot stacks and two, 110-foot boilers of a failed solid waste disposal plant in Hempstead, New York. This demolition closed a chapter in the community's first attempt to minimize solid waste landfilling. Left unchanged was the need to handle the waste disposal needs of the more than 800,000 residents of Long Island's most populous township.

In 1983, the state of New York had passed legislation banning all landfill disposal of unprocessed waste on Long Island within eight years. The short-lived "wet process" waste-to-energy facility, which had opened in Hempstead in 1978, had already closed in 1980 after encountering insurmountable operational problems, financial difficulties and stiff local opposition following allegations of toxic emissions. In the interim, Hempstead was sending waste to a landfill 97 miles away while seeking a more viable solution.

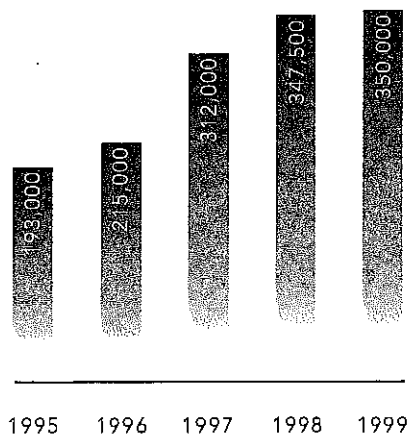
The town ultimately decided to replace the failed plant with a reliable facility that would handle all of the town's waste, but would be built, owned and operated by a private sector company. After submitting the successful bid, American Ref-Fuel constructed a new mass-burning facility on the same property as the failed plant. The new plant began operating in 1989. *The Wall Street Journal* described it as "a model" for a nationwide waste-to-energy program, noting that the facility could be "considered among the cleanest and safest anywhere."

Today, with more than a decade of performance on the very site of one of the solid waste industry's most notable debacles, American Ref-Fuel's plant continues to perform admirably. It has converted nearly 10 million tons of waste into marketable electricity for the region, extending its role as a quiet contributor to the attractive lifestyle enjoyed throughout the area.



*Hempstead residents watched a physical transformation take place when another company's failed facility was demolished in 1987 to make way for American Ref-Fuel to develop one of the most successful waste-to-energy plants in the world.*

# Essex County Resource Recovery Facility Newark, New Jersey



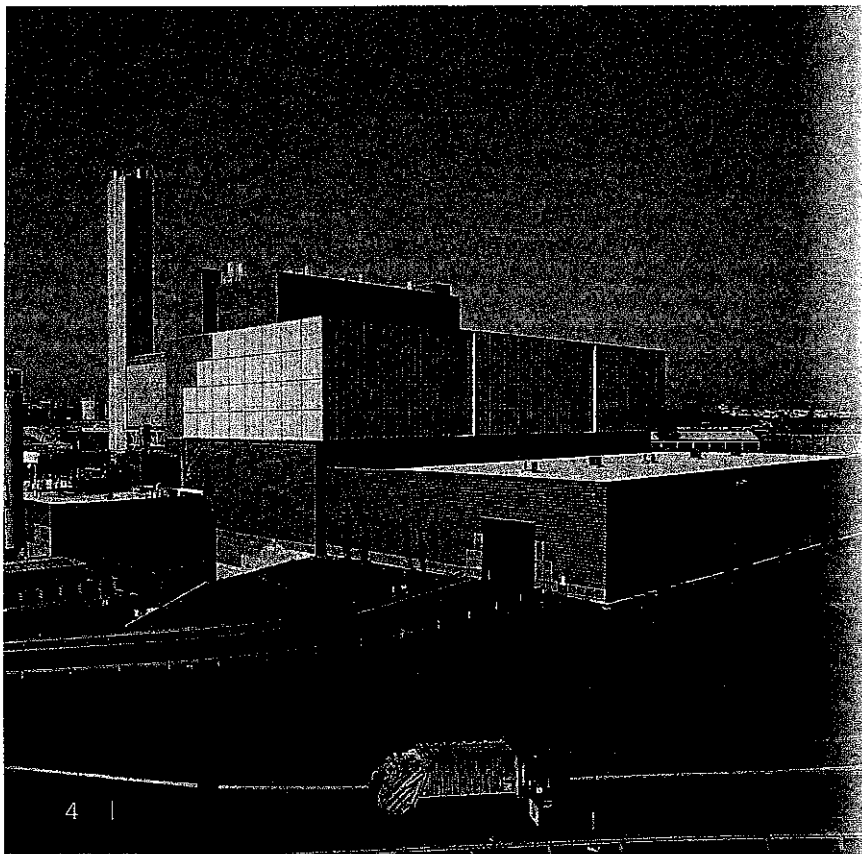
Power Generated at American Ref-Fuel Facilities Companywide (Equivalent Household Usage)

The Essex County Resource Recovery Facility in Newark, New Jersey, processed a plant record of 985,000 tons of the region's waste during 1999. This total included deliveries from New York City, which began in October as part of that city's interim disposal solution in its efforts to close Fresh Kills Landfill. Much of the anticipated controversy associated with the delivery of this waste was dissipated through the efficient routing of delivery trucks during nonpeak hours. The American Ref-Fuel plant continued to process waste in the same efficient manner to which Newark residents had become accustomed since the plant opened in 1990. In addition, the city of Newark will enjoy host-fee benefits associated with the delivery of the New York waste.

Essex County signed a new 10-year contract, reducing its commitment to the plant from 680,000 tons per year to 350,000 tons annually. The new figure is more aligned with the quantity of waste generated within the county. The duration of the new pact should also insulate the county financially if the impending closure of the massive Fresh Kills Landfill escalates prices in the region's solid waste disposal market.

A high level of availability (processing hours as a percentage of total hours in a year) also factored into the facility's overall excellent performance record. The plant averaged 95.9 percent availability, including 115 consecutive days in which all three processing lines remained at 100 percent.

American Ref-Fuel hosted an October 9 open house at the plant, where visitors learned that the facility has processed more than 8 million tons since opening for commercial operation in December of 1990. It has also recycled 155,000 tons of ferrous metals and generated an estimated 4 million megawatt hours of electricity.



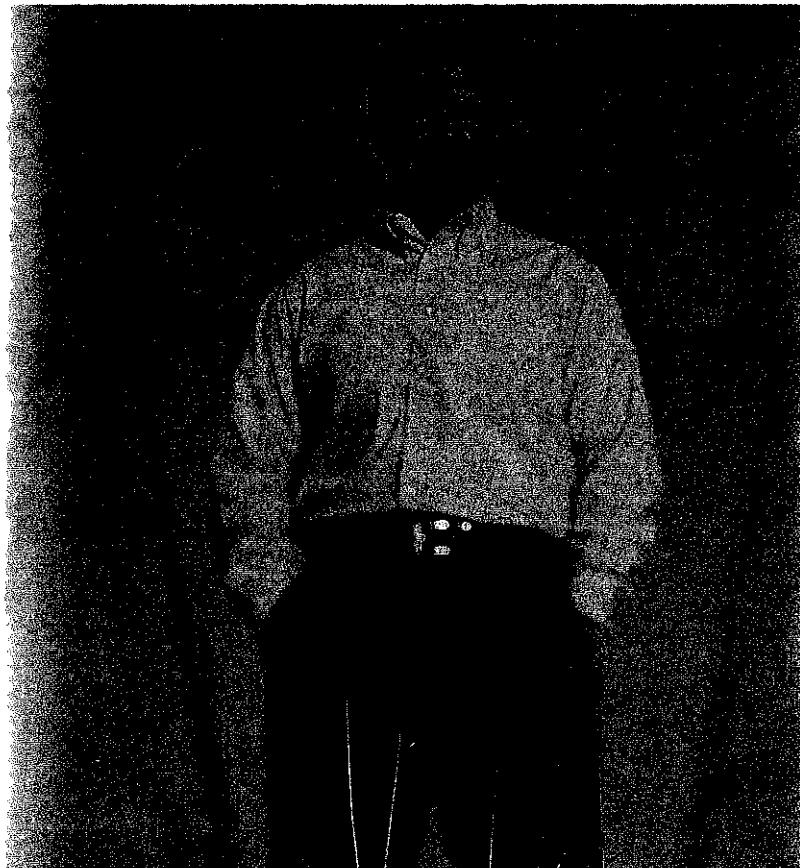
## Energy Market Looking to Pull Plug On Regulation

The advent of the year 2000 corresponds with a new era emerging in the marketing of electricity. An industry that had been strictly regulated in the United States throughout the 20th century is now being exposed to the market forces of free enterprise.

In anticipation of open competition, utilities are interested in renegotiating existing contracts with energy suppliers, like waste-to-energy, to reduce power supply costs to their customers. An excellent example is the buyout of the Power Purchase Agreement between Public Service Electric and Gas Company (PSE&G) and American Ref-Fuel for power produced at the Essex County Resource Recovery Facility.

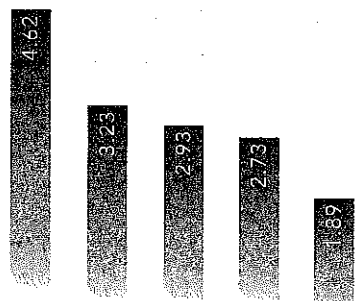
Under the terms of the buyout, PSE&G paid \$25 million to American Ref-Fuel and The Port Authority of New York and New Jersey and allowed the facility to sell power in the emerging competitive markets. In return, PSE&G's customers received an 8 percent cost reduction over the remaining 20 years of the contract. The terms were approved by the New Jersey Board of Public Utilities, a governmental agency that urges utilities to creatively mitigate above-market costs from non-utility generators.

According to Sami Kabbani, manager of energy marketing for American Ref-Fuel, "The agreement allows Ref-Fuel to capture the remaining value in the current contract, while also allowing us to participate in the emerging competitive power market. We were willing to accept competitive market risks, while offering PSE&G's customers tangible benefits."



*A transformation toward a deregulated market has involved American Ref-Fuel Manager of Energy Marketing Sami Kabbani and others in negotiations to competitively market the power produced at the company's waste-to-energy facilities.*

## Southeastern Connecticut Resource Recovery Facility Preston, Connecticut



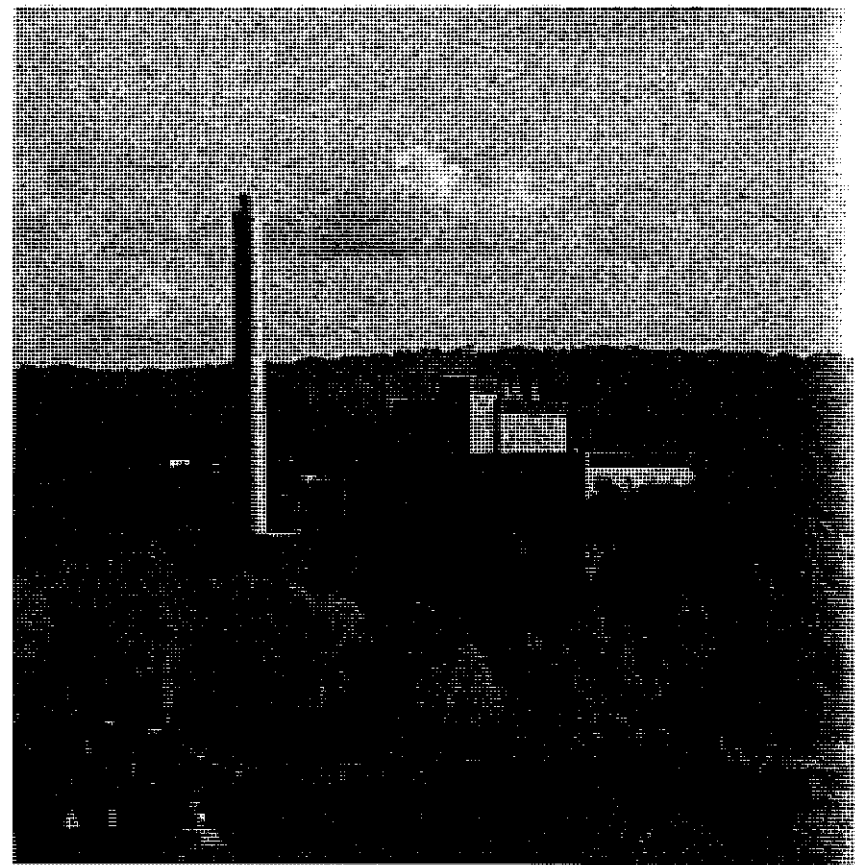
1995 1996 1997 1998 1999

American Ref-Fuel Employee Safety  
Recordable Injuries Companywide  
(Per 200,000 Man-hours)

Having won the group honor in American Ref-Fuel's Chairman's Core Principles Awards in 1998, the Southeastern Connecticut plant team turned its attention toward further expanding its reach in 1999. They initiated a customer service enthusiasm task force and also started a safety activity reward and recognition program.

The plant was modified during the year to improve the stormwater system and one of the two acid gas scrubbers. Concurrent to this activity, plant operators were able to set daily, weekly and monthly plant records for power sold from the 8-year-old facility. They were also able to reach these milestones in a very efficient fashion. For example, the operations group was able to improve the performance of the gas scrubbers while still operating well within all environmental standards. Such measures to enhance plant performance are notable at the Southeastern Connecticut plant, which is one-fourth the size of the company's other facilities.

This facility serves a regional mix of customers and makes its presence known throughout the local community. American Ref-Fuel had one of the area's highest employee contribution rates of all United Way campaigns conducted in the area. Plant personnel hosted their second open house, and also continued awarding five scholarships to high school seniors in the region served by the Southeastern Connecticut Regional Resource Recovery Authority. Furthermore, the facility received a continuing Safety Success Award from the Connecticut Business and Industry Association as well as an honorable mention in the Environmental Success category.



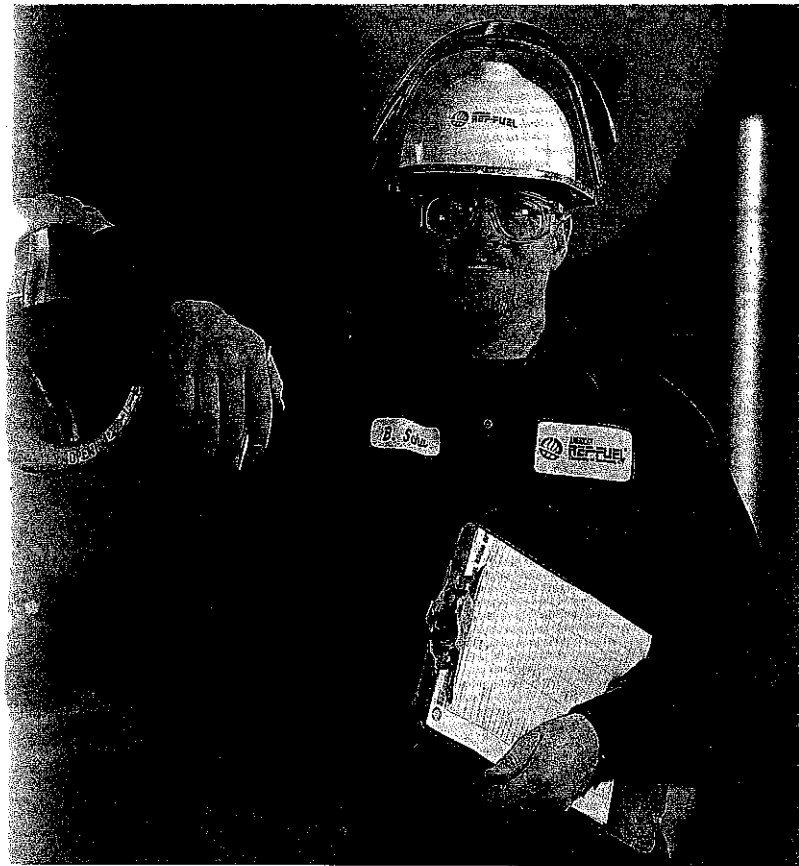
## The Student Becomes the Teacher

**B**ruce Schumacher's personal participation in OSHA's Voluntary Protection Program (VPP) parallels American Ref-Fuel's overall involvement. Since joining the company in 1991, Schumacher, an operations technician at American Ref-Fuel's Southeastern Connecticut plant, has served on the facility's safety committee, and chaired the VPP Star certification committee. Recently, he was recommended to serve as a Special Government Employee (SGE), assisting OSHA with VPP inspections of other facilities.

VPP recognizes, emphasizes and encourages outstanding safety and health programs through cooperation among labor, management and government. American Ref-Fuel was the first waste-to-energy company to have a VPP Star worksite. The company currently has four Star facilities. This commitment has earned American Ref-Fuel great respect among companies trying to attain similar success in VPP-related programs. Schumacher recalls how one company's representative in his SGE training group remarked, "When you think you've got all your ducks in a row, go see American Ref-Fuel."

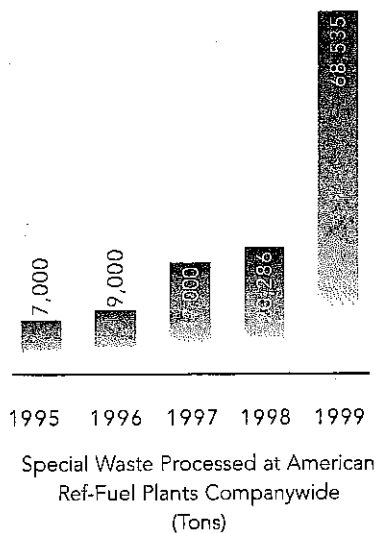
The SGE system (also known as the VPP Volunteers Program) was established in 1996 to utilize and leverage the abilities of skilled private sector safety and health professionals working at VPP sites throughout the United States.

American Ref-Fuel representatives have made presentations at safety conferences and have mentored other companies on safety issues. Current company SGEs Paul Colon, Ken Hinsch and Roy Kemsley are each eligible to participate as official members of OSHA teams inspecting candidates for Star, Merit or Demonstration worksites. By completing SGE training, Schumacher and fellow American Ref-Fuel employees Mark Skiba and Ray Stanton are candidates to join this elite group.



*American Ref-Fuel's  
transforming role in safety  
has evolved to the point  
where employees such as  
Southeastern Connecticut  
Operations Technician Bruce  
Schumacher are prepared to  
show other companies how to  
better protect their workers.*

# Niagara Falls Resource Recovery Facility Niagara Falls, New York

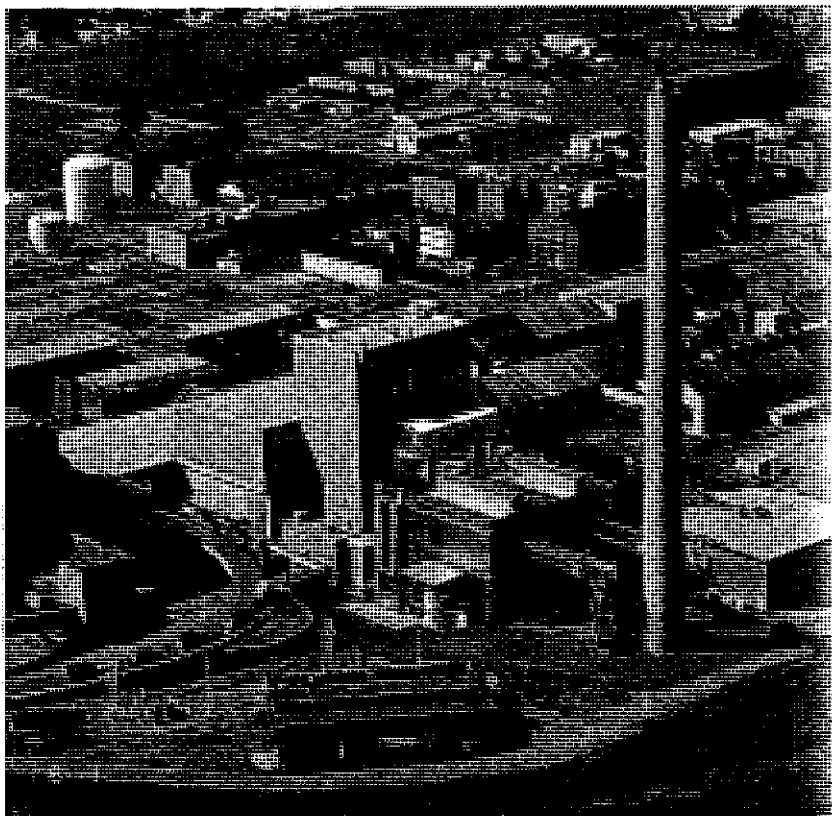


American Ref-Fuel's mass-burning waste-to-energy facility in Niagara Falls, New York, completed its third year of successful operation in 1999 with its best processing record to date. The company acquired the plant in 1993 when it operated with an older, refuse-derived-fuel technology. Faced with the fact that the plant would require a significant investment to meet new standards, the company replaced the prior technology with the proven Deutsche Babcock Anlagen Roller Grate system and improved air quality controls. These upgrades led to one of the largest reductions of dioxin emissions in the country.

The plant continues to prosper under the revised configuration. In addition to reliable disposal of waste from the local area, American Ref-Fuel expanded the delivery of waste to the plant via rail lines. Other highlights of 1999 included increased processing of special waste products and the addition of several new steam customers.

Plant personnel gathered in June to celebrate the facility's Voluntary Protection Program recertification with a party in the plant's warehouse. The staff also supported the overall company safety philosophy by distributing reflective Halloween bags and stickers to area municipalities to promote safe trick-or-treating.

With the start of a new school year, American Ref-Fuel continued to support the Adopt-a-School program. This includes sponsorship of a greenhouse project for middle school students and a "Success for All" reading program at the elementary level. American Ref-Fuel is also a major sponsor and co-chair of the Niagara community's Children's Holiday Festival.





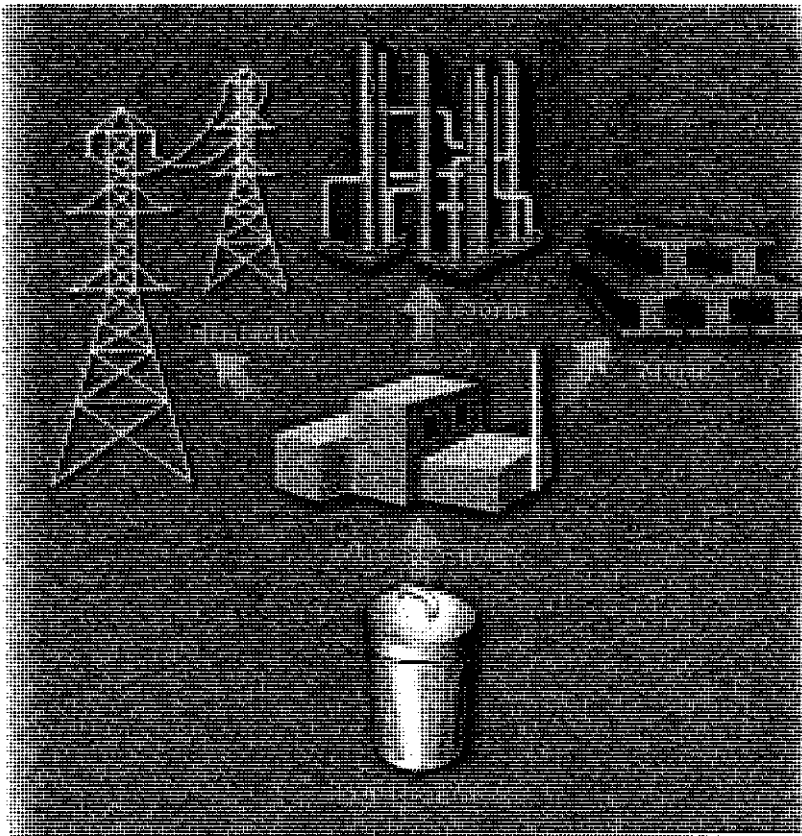
## Reclaiming Resources Takes Multiple Paths At Niagara

In the standard configuration of a waste-to-energy plant, the heat generated from combustion of the waste converts water into steam within the boilers. The steam is then directed through a turbine-generator to produce electricity. In addition, some of the steam produced in the waste-to-energy process can be sold to nearby industrial customers for process heat and temperature control. This was the vision held by Occidental Chemical Corporation when it built the Niagara Falls, New York, Energy-From-Waste Facility. The company operated the facility for more than a decade before selling it to American Ref-Fuel in 1993. After the sale, Occidental remained as a steam customer.

American Ref-Fuel, with its core focus on waste-to-energy, updated the facility's processing and environmental equipment and explored other ways to add value to the asset. Today, the company exports steam to two additional industrial customers. After negotiating a buydown from the electricity customer, Niagara Mohawk Power Company, American Ref-Fuel has also expanded its role in marketing electricity.

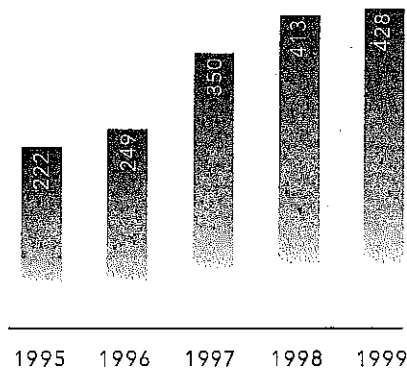
Ferrous metals are recovered in the post-combustion portion of the facility and recycled. In addition, the company entered into an alliance with Resource Recycling Company for the recovery and recycling of nonferrous recovery metals from Niagara and other American Ref-Fuel facilities.

American Ref-Fuel is exploring beneficial uses of the remaining product of the combustion process, ash residue. The company participated in a test project to use ash in the reclamation of former coal mining areas. The outlook is promising that this approach will help improve the environmental conditions at the mine site, while also improving the economics of the waste-to-energy process.



*Garbage is transformed to several marketable products at American Ref-Fuel's Niagara Falls facility. The combustion process generates industrial steam and electricity for power customers. The resulting ash stream is further reduced through the recovery of ferrous and nonferrous metals for sale to the secondary metals markets.*

## SEMASS Resource Recovery Facility Rochester, Massachusetts



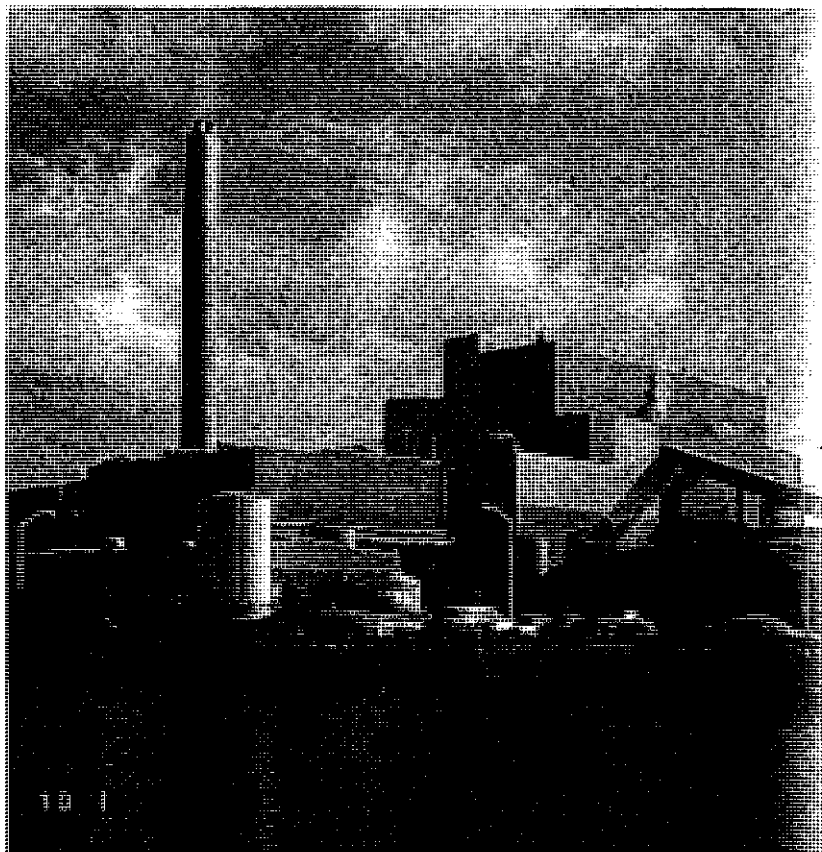
Combined Revenues of American Ref-Fuel  
Facilities Companywide  
(Dollars in Millions)

The U.S. Environmental Protection Agency's "Maximum Achievable Control Technology" regulations set new air pollution control requirements for combustion facilities to meet by December of 2000. The commonwealth of Massachusetts has elected to impose an even more stringent requirement for mercury control than is called for by the new federal regulations. In 1999, American Ref-Fuel researched and field demonstrated equipment that would be required to meet these standards while the company's SEMASS plant continued to provide reliable service to the more than 50 communities that generate one-sixth of the commonwealth's waste.

American Ref-Fuel will meet the new standards using a Compact Hybrid Particulate Collection System flue gas cleaning technology that was under construction as the year closed. The company's engineers are confident that the added measures will enable American Ref-Fuel to continue its long-standing tradition of outstanding environmental performance. It also balances this need with concern for protecting the financial interests of the facility's client communities.

Such concern for the communities was reciprocated in 1999, when SEMASS received an Award of Appreciation from the host town of Rochester for contributions the plant has made since opening in 1989. The plant's original owner, Energy Answers Corporation, expanded the facility in 1993. American Ref-Fuel began operating the plant in June of 1996 as the result of an acquisition.

American Ref-Fuel constructed, and now operates, a residential trash and recycling convenience center for residents of the towns of Rochester, Marion, Carver and Wareham. The company also upgraded the plant's computer hardware, donating all the replaced equipment to SHARE, an organization that uses equipment donations for the benefit of disabled children and adults.



## Employees Lead In Teaming Up and Branching Out

When American Ref-Fuel was formed in 1983, the company's charter was a specific one. The new joint venture would be responsible for developing mass-burn, waste-to-energy plants employing a proven combustion technology developed by Deutsche Babcock Anlagen of Germany. Over the years, that directive has expanded as acquisition opportunities came along enabling American Ref-Fuel to apply its operating expertise to technologies developed by others. The company has also been able to vertically integrate its core waste-to-energy services by branching out into related operations.

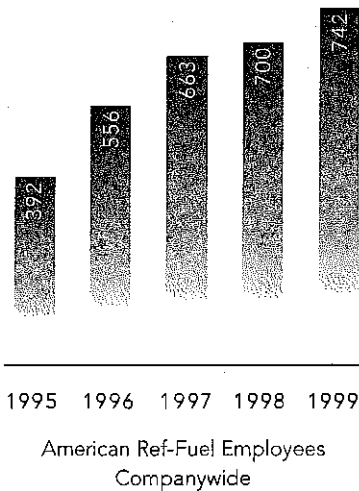
Nowhere was this diversification more evident than when American Ref-Fuel took over operations of the SEMASS refuse-derived-fuel facility in Rochester, Massachusetts, in 1996. The transaction also included operation of the Braintree and Plymouth Transfer Stations and the CMW (Carver-Marion-Wareham) Landfill.

The Braintree Transfer Station, in particular, was cited as a stellar performer in 1999. The nine-man operating team, under the direction of Operations Supervisor Doug Cote, captured the group category honor in the company's annual Chairman's Core Principles Awards. Among their many accomplishments, this tight-knit unit handled record amounts of municipal solid waste, up to 1,200 tons per day in which they efficiently unloaded waste from packer trucks and reloaded it onto transfer trailers. The team also initiated American Ref-Fuel's first rail transfer operation, sending waste to the company's Niagara Falls, New York, waste-to-energy facility.



*A transformation of business lines occurred when American Ref-Fuel augmented its core waste-to-energy focus with transfer station and landfill operations. American Ref-Fuel Chairman Paul Varello (third from right) congratulates the Braintree Transfer Station operations team with the 1999 Chairman's Core Principles Group Award. Participants include (from left) Arthur Sousa, Doc Withey, Mark Ennis, Rob Monahan, Bob Henault, Frank Place, Doug Cote, Varello, Scott Peterson and Luis Menendez.*

## Delaware Valley Resource Recovery Facility Chester, Pennsylvania

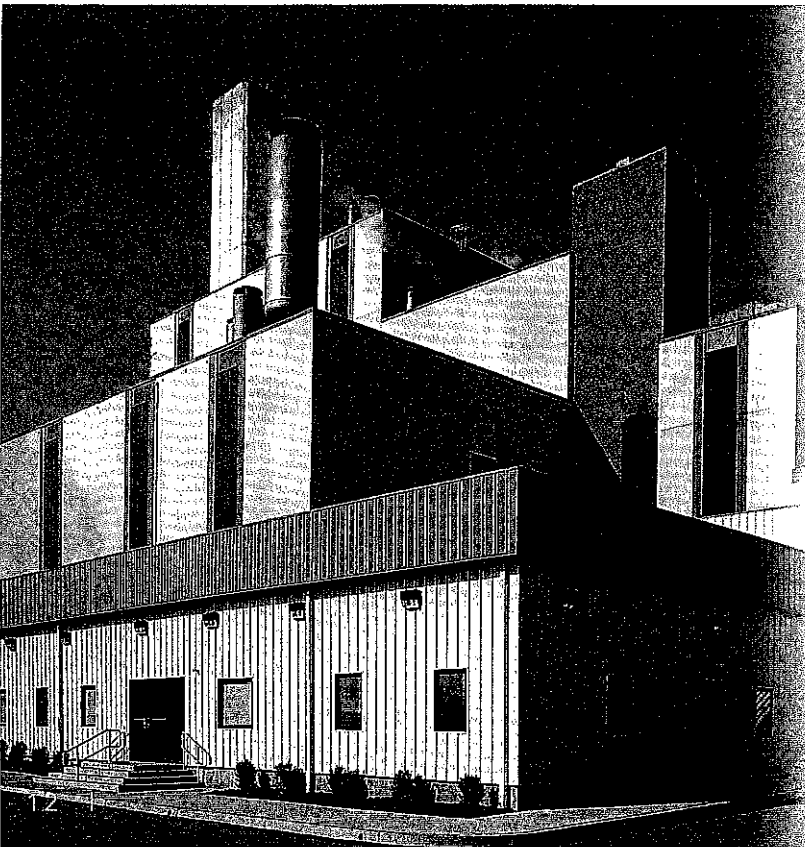


Plant records continued to fall in 1999 at the 8-year-old Delaware Valley Resource Recovery Facility. In its second full year under American Ref-Fuel operation, the facility once again processed in excess of 1 million tons of solid waste, converting the region's waste into more than a half-million megawatt hours of electrical power. In the month of September alone, the commonwealth's largest waste-to-energy plant received a record 105,020 tons.

The operations team at Delaware Valley has been able to maintain the company's emphasis on safety while processing these escalating volumes of waste. The maintenance department concluded the fiscal year having gone 30 months without a single recordable injury. The plant staff also took steps during the year to further promote safety to the Chester community. American Ref-Fuel conducted quarterly household hazardous waste days to educate citizens on the potential hazards of household chemicals and their proper disposal.

The Pennsylvania Department of Environmental Protection renewed and modified American Ref-Fuel's solid waste and air permits, allowing the company to operate the Delaware Valley Resource Recovery Facility in Chester for at least another 10 years. American Ref-Fuel's success in implementing effective environmental controls at the facility contributed measurably toward obtaining these approvals.

The \$20 million in capital improvements invested in the plant since American Ref-Fuel took over operations included new administrative facilities that were completed early in the 1999 fiscal year. The company made good use of the new accommodations, hosting numerous visitors from surrounding communities and as far away as Thailand.



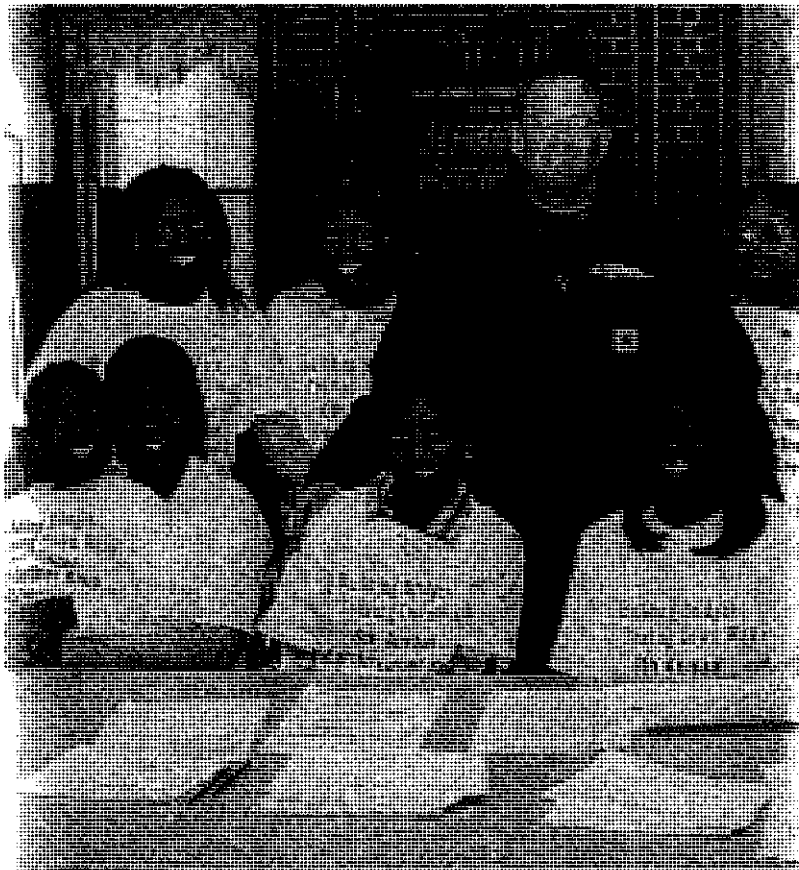
## Permit Process Enhances Community Partnership

A very public permit renewal process at the Delaware Valley facility considered the company's views as well as those of numerous area citizens prior to permit issuance in 1999. As a result, the new provisions include limiting the operating hours on Saturdays and the construction of a sound barrier around the facility's trash truck staging area. It also includes the elimination of waste deliveries on Martin Luther King Jr. Day, a day Chester leaders have designated for volunteerism in the community.

Well before American Ref-Fuel arrived on the scene in April of 1997 to operate the facility formerly owned by Westinghouse Electric Corporation, many Chester residents had fought the clustering of waste facilities along the Chester waterfront. They complained about dirt, noise, traffic and offensive odors and challenged what they believed to be the discriminatory siting of these facilities under Title VI of the Civil Rights Act.

After two years of American Ref-Fuel operations, as well as participation in the permit renewal process, a leader of the neighborhood groups noted that employees of American Ref-Fuel have taken extra efforts to be sensitive to the communities' needs and to address concerns. The company has also supported Chester-based environmental community projects.

American Ref-Fuel pays host fees annually to the city, allowing it to eliminate its annual operating deficit for the first time in seven years. In addition, the company is working with elected officials, local businesses and community leaders to improve the city's public image and to assist in attracting new industry and jobs.



*Transforming public perceptions has been critical to American Ref-Fuel's success in Chester, Pennsylvania, where the company inherited a controversial situation via acquisition of the Delaware Valley Resource Facility in 1997. American Ref-Fuel has encouraged open communications and continues to participate in community affairs such as the Martin Luther King Jr. Day cleanup attended by American Ref-Fuel Environmental Engineer Gene Bonner.*



# ARCNET



*T*ransRiver Marketing was established in 1994 to maintain year-round solid waste feedstock for all American Ref-Fuel plants. Its services include helping facilities deal with seasonal fluctuations in waste quantities by supplementing waste needs at the plants and helping commercial clients dispose of various wastestreams requiring special handling. In addition to seeing that American Ref-Fuel's facilities never ran out of waste in 1999, TransRiver Marketing successfully secured a contract for American Ref-Fuel's Essex County, New Jersey facility to begin accepting New York City municipal waste. TransRiver also contributed to American Ref-Fuel's performance by securing increased revenues from nonmunicipal sources of waste.

*A*RCNET is the unit of American Ref-Fuel Company responsible for marketing the by-products of the combustion process. All of American Ref-Fuel's waste-to-energy plants recover post-combustion metals. Through ARCNET, the company has established markets for the sale of both ferrous and nonferrous metals and continues to pursue beneficial use of the ash from waste-to-energy facilities. During 1999, ARCNET began shipping ash product under a pilot program for mixing with dredge spoil materials and placement at the abandoned Bark Camp Mine Complex in central Pennsylvania. This project is being performed in cooperation with Pennsylvania's Department of Environmental Protection.

*A*merican Ref-Fuel Special Waste Services Company focuses on the environmentally safe and efficient destruction of nonhazardous pharmaceutical and cosmetic wastes and other acceptable nonhazardous special waste streams that can be safely processed at American Ref-Fuel facilities. Special Waste Services also assisted American Ref-Fuel in obtaining a permit to begin accepting special wastes at the company's Southeastern Connecticut facility. Exceptional growth in the special waste services program was one of American Ref-Fuel's keys to success in 1999. The volume growth included an innovative "tar lake" cleanup project performed on behalf of the U.S. Environmental Protection Agency. The EPA required the tar debris to be destroyed in an environmentally safe and effective manner.

## Breen Wins Twice in Matters of the Heart

**L**istening to Art Breen reflect on the months he spent in a hospital waiting for a heart transplant, it's almost incredible to hear him describe how he felt "lucky" throughout such a trying ordeal. Breen, who serves as manager of customer service in the Management Information Systems Department in TransRiver Marketing Company, said, "I was amazed and proud of the support I received from my family, friends and coworkers."

One person who fits all three categories of that support network is then-fiancée, and now wife, Jennifer. The couple met at work, where Jennifer serves as a special waste scientist in the Special Waste Services group of American Ref-Fuel. They were dating in December of 1997 when Art, who had been noticing his lack of energy and shortness of breath, became excessively fatigued from a ski trip. Doctors later diagnosed a life threatening heart virus that would have Breen in the hospital by the summer, where he remained until his November 22, 1998 transplant.

Breen passed time in the hospital learning about Internet web design. He also laid the groundwork toward becoming a certified Novell network engineer. American Ref-Fuel Management Information Systems Director Jeff Winter credits Breen's positive outlook and dedication in choosing to pursue personal and professional development during the waiting period. Breen, in turn, praises the company for its excellent health benefits and supportive atmosphere throughout his recovery and return to full-time employment.

The Breens married on April 24, 1998, and both are now vocal advocates of organ donation, stressing the importance of discussing donor intentions with family members. Meanwhile, Breen is making the most of his new opportunities. "I used to be really laid back," he says. "Now it's like I want to be active all the time. I'm constantly looking for things to do."



*It was a year of personal transformation for Art Breen in which he was both a successful heart transplant recipient and bridegroom to coworker Jennifer.*

## Operating Committee

The Operating Committee of American Ref-Fuel Company is composed of officers who manage the day-to-day operation of the company. Its members are:

*(Seated, left to right)*

**David N. Gutacker**

President and Chief Operating Officer

**John T. Miller**

Vice President, Chief Financial Officer

**Paul J. Varello**

Chairman and Chief Executive Officer

*(Standing, left to right)*

**William R. Reynolds**

Vice President, Treasury

**Curt A. Hurst**

Vice President, Southern Region

**Richard L. Oliver**

Vice President, Project Development

**Mark W. Romefelt**

Vice President, Law

**Andrew M. Szurgot**

Vice President, Safety and Environment

**Sean G. Burke**

Vice President, Organizational Development

**Lynn C. Johnston**

Vice President, Northern Region

**William J. Clepper**

Vice President, Engineering





## Management Committee

The Management Committee of American Ref-Fuel Company acts in a capacity equivalent to a board of directors, controlling the business of the partnership. The Management Committee is composed of the following members:

**Steven F. Gilliland**

Senior Vice President, Asset Management  
Duke Energy North America, LLC

**Mary V. Gilbert**

Senior Vice President and  
Chief Financial Officer  
Duke Energy North America, LLC

**David R. Goodman**

Chairman and Chief Executive Officer  
United American Energy Corp.

**Douglas W. Borro**

Director, Engineering  
Allied Waste Industries, Inc.

**Jeffrey A. Hughes**

Allied Waste Industries, Inc.

**Charles M. Cooley, Jr.**

President  
Cooley Consulting Group, LLC

**Arthur W. Mellen**

Mellen Associates, Inc.

**Paul J. Varello**

Chairman and Chief Executive Officer  
American Ref-Fuel Company



# Locations/Contacts

## COMPANY HEADQUARTERS

### Houston, Texas

American Ref-Fuel Company  
15990 North Barker's Landing, Suite 200  
Houston, TX 77079  
Ph: (800) 727-3835

## MARKETING OFFICE

### Uniondale, New York

333 Earle Ovington Boulevard, Suite 302  
Uniondale, New York 11553  
Ph: (516) 227-1480

### TransRiver Marketing:

Tom Beck

### ARCNET and Special Waste Services:

Robert Middleton

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## OPERATING FACILITIES

### Delaware Valley (Chester), Pennsylvania

American Ref-Fuel Company of  
Delaware County, L.P.  
10 Highland Avenue  
Chester, Pennsylvania 19013  
Ph: (610) 497-8100

### Plant Manager:

Tim Gregan

### Business Manager:

Steve Simmons

### Essex County (Newark), New Jersey

American Ref-Fuel Company of Essex County  
183 Raymond Boulevard  
Newark, New Jersey 07105  
Ph: (973) 344-0900

### Plant Manager:

Alan Iantosca

### Hempstead, New York

American Ref-Fuel Company of Hempstead  
600 Merchants Concourse  
Westbury, New York 11590  
Ph: (516) 683-5400

### Plant Manager:

William Wareham

### Niagara Falls, New York

American Ref-Fuel Company of Niagara, L.P.  
100 Energy Boulevard @ 56th Street  
Niagara Falls, New York 14304  
Ph: (716) 284-0031

### Plant Manager:

Dan Carey

### Business Manager:

Derek Veenhof

### SEMASS (Rochester), Massachusetts

American Ref-Fuel Company of SEMASS, L.P.  
141 Cranberry Highway  
West Wareham, Massachusetts 02576  
Ph: (508) 291-4400

### Plant Manager:

Michael de Castro

### Business Manager:

Kevin Cmunt

### Southeastern (Preston), Connecticut

American Ref-Fuel Company of  
Southeastern Connecticut  
132 Military Highway  
Preston, Connecticut 06365  
Ph: (860) 889-4900

### Plant Manager:

Christian Stumpf

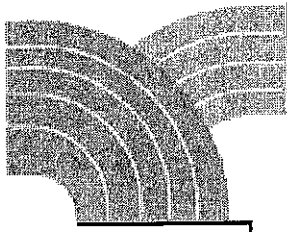
www.ref-fuel.com

American Ref-Fuel Company  
15990 North Barker's Landing, Suite 200  
Houston, TX 77079



**APPENDIX V**

**Pesticide Recycling Information**



# ACRC Agricultural Container Research Council

[SITEMAP](#)

## Welcome

- [HOW TO RECYCLE](#)
- [RECYCLED PRODUCTS](#)
- [RESOURCES](#)
- [IN THE NEWS](#)
- [CALENDAR](#)
- [CONTACT US](#)
- [MEMBERS AREA](#)

The ACRC is a non-profit organization that promotes and supports collection and recycling of properly rinsed HDPE crop protection product containers.

It is also committed to finding end uses for recycled containers. The ACRC is supported by leading companies involved in formulating, producing, packaging, and distributing crop protection products.



### CONFERENCE



Read the latest ACRC newsletter



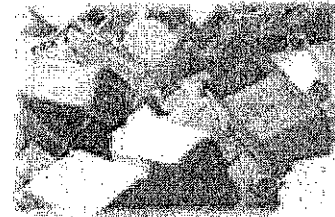
How do you prepare your agricultural chemical containers for recycling? Please see our step-by-step guide to rinsing.

### ACRC UPDATE

Photos of Recycled Plastic Products. NEW!



The ACRC supports a national network of agricultural container recycling partners. Find out who serves your area.



Where do these containers go? Find out how this innovative program works.

[How to Recycle](#) | [Recycled Products](#) | [Promote the ACRC](#) | [In the News](#) | [Calendar](#) | [Contact Us](#) | [Members Area](#)



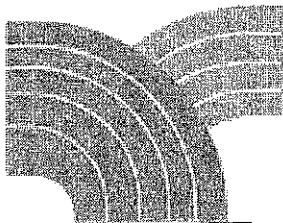
**Email us at [info@acrecycle.org](mailto:info@acrecycle.org) or call toll free at 1-877-952-2272**

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site last updated on September 12, 2000



# ACRC Agricultural Container Research Council



## How to Recycle

### Acceptable Materials

[GO HOME](#)

**HOW TO RECYCLE**

**MATERIALS  
SERVICE AREAS  
WANT TO RECYCLE?**

**RECYCLED PRODUCTS**

**RESOURCES**

**IN THE NEWS**

**CALENDAR**

**CONTACT US**

**MEMBERS AREA**

Non-refillable, high-density polyethylene (HDPE) plastic crop protection and other pesticide product containers\*, that are obtained from agricultural and professional end-users only, are accepted by the ACRC. Home, garden, anti-microbial and veterinary products are not accepted. All of the above-specified containers, up to and including 35 gallons, are acceptable. These must be emptied and rinsed by product users according to the **ACRCs rinsing procedure** before they shall be accepted for recycling. Containers in excess of 35 gallons, but less than 56 gallons are recycled at the sole discretion of the contractor.

Pesticide and other crop protection containers that were never filled, or were filled and never distributed, or were the subject of a recall are not accepted.

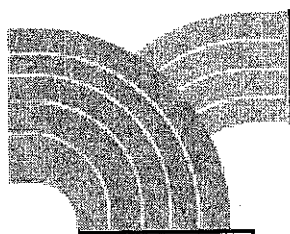
\* EPA registered products to include agricultural, turf, forestry, vegetative management, specialty pest control (excluding consumer packages), as well as adjuvants, crop oils, and surfactants.

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[How to Recycle](#) | [Recycled Products](#) | [Promote the ACRC](#) | [In the News Calendar](#) | [Contact Us](#) | [Members Area](#)

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# ACRC Agricultural Container Research Council

## How to Recycle



### Service Areas

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[MATERIALS  
SERVICE AREAS  
WANT TO RECYCLE?](#)

[RECYCLED PRODUCTS](#)

[RESOURCES](#)

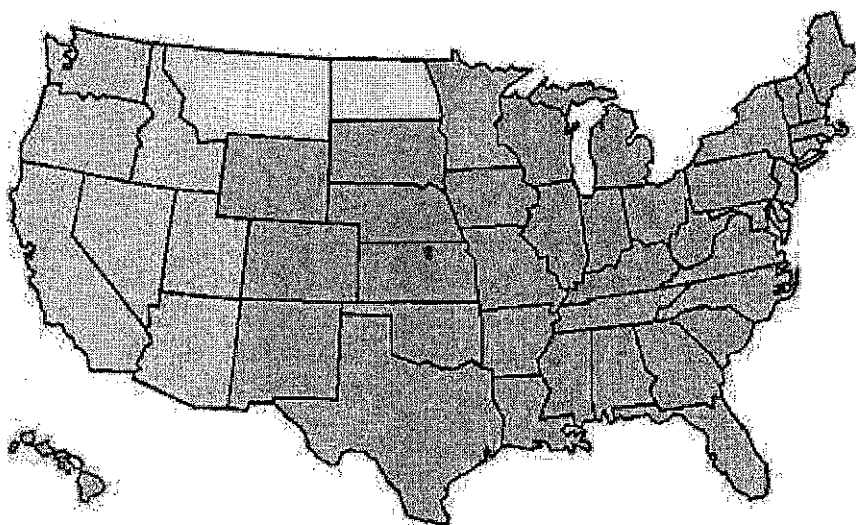
[IN THE NEWS](#)

[CALENDAR](#)

[CONTACT US](#)

[MEMBERS AREA](#)

There are six ACRC contractors responsible for servicing the entire continental USA and Hawaii. Please see our service map below to determine which contractor serves your state. Please contact the contractor responsible for your state directly, to find out where and when they will be in your area to collect your rinsed plastic containers.



View a printable [black and white map](#) of the ACRC service areas.

**Ag Plastics Recycle**  
5099 Stearman Avenue  
Shafter CA 93263  
661-392-7130  
[click here to email](#)

**TRI-Rinse Inc.**  
5200 Manchester Avenue  
St. Louis MO 15191  
314-647-8338  
[click here to email](#)

**UAP Northern Plains**  
1230 40th Street, NW  
Fargo, ND 58102  
701-282-7300  
[click here to email](#)

**UAP Midwest**  
Highway 22 South  
Kasota, MN 56050  
507-931-6660

**USAg Recycling Inc.**  
18330 Perick Road  
Waller, TX 77484  
800-654-3145  
409-372-5428  
[click here to email](#)

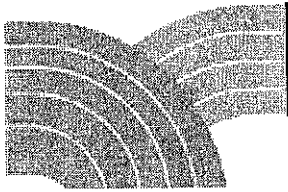
**Washington Pest Consultants Association**  
350 Hoff Road  
Moxee, WA 98936  
509-457-3850  
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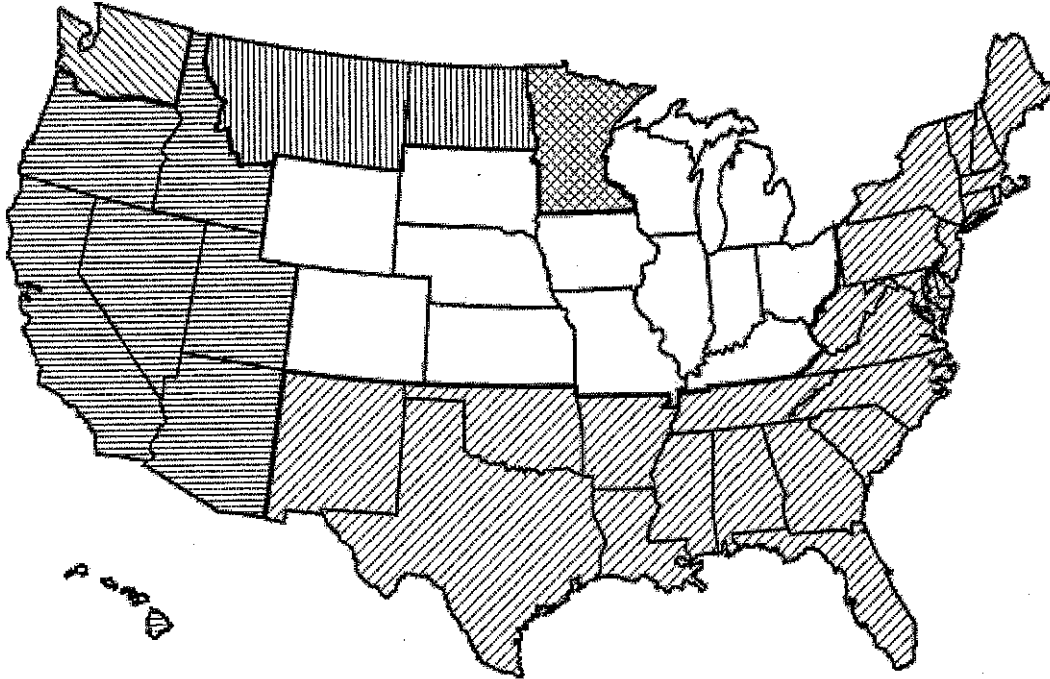
# ACRC Agricultural Container Research Council

How to Recycle



Service Areas

## ACRC Contractors 1999-2000



Ag Plastics Recycle



Tri-Rinse, Inc.



UAP Northern Plains



UAP Midwest



USAg Recycling, Inc.



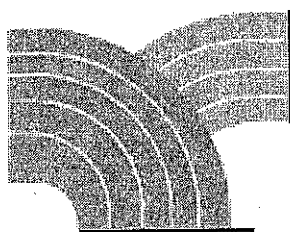
Washington Pest Consultants Assoc.

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# ACRC Agricultural Container Research Council

## How to Recycle



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The ACRC program is designed exclusively for agricultural, professional, and commercial applicators of crop protection and other pesticide products. This program is **not** intended for the recycling of containers resulting from non-commercial consumer household use.

If you are eligible for the program, check to see if your containers are accepted by the ACRC by clicking [here](#). Once you have determined that they are acceptable:

a) See our service map to find the contractor serving your state. Contact each ACRC service provider directly to find the location and hours of operation of collection sites in your area. These can be variable, depending on the season. The ACRC contractors may refer you to a local subcontractor that services your region.

b) Call the collection sites closest to you. Be sure to learn how to prepare your containers for recycling, before taking them to a collection site.

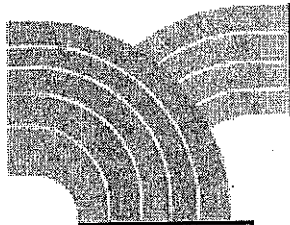
c) Contact your local Cooperative Extension Service office for information on container collection or training materials on container recycling. Also see our list of state ag container recycling contacts.

If, after following the procedure outlined, you have any problems or questions please contact the ACRC office directly.

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# ACRC Agricultural Container Research Council

## Recycled Products



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Currently, more than 6 million pounds of HDPE are collected annually by ACRC—that's a lot of plastic. Where does it all go? In this section, you'll learn about a range of useful products that are made from collected HDPE. There is a list of the approved manufacturers who work with the ACRC to develop and test such products. Manufacturers who wish to develop HDPE products, and brokers interested in finding new uses and outlets for recovered plastic, will find more information on our manufacturers page.

Of course, environmental and health safety is of utmost importance. The ACRC has developed stringent guidelines for handling recovered HDPE, from the moment when containers are rinsed right through the manufacturing process. You can also learn more about safety and public health issues here.

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### [End Products](#)

### [Manufacturers](#)

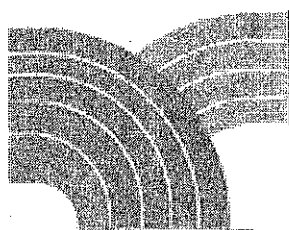
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# ACRC Agricultural Container Research Council

## Recycled Products

## End Products



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One of the objectives of the Agricultural Container Research Council is to evaluate methods of recycling pesticide container resins. Of utmost importance, is that the resin will be utilized in such a way that any residues on or in the resin will have no real or perceived adverse affect on the environment or the user. The ACRC Technical Committee evaluates both processes and uses, the subject of ongoing studies.

**As of May 4, 2000, end-use recycled products deemed acceptable are:**

- Pallets\*
- Construction site mats\*
- Commercial truck/manure spreader decker boards\*
- Field drain tiles\*
- Speed bumps\*
- Parking stops\*
- Fence posts\*
- Hazardous waste drums\*
- Scaffold nailing strips\*
- Commercial truck sub-floor support members\*
- Sub-flooring/supports for outdoor decking, steps, and walks\*
- Marine pilings\*
- Encapsulated wood substitute\*
- Plastic pesticide containers
- Energy recovery

All other processes and products are deemed unacceptable at this time.

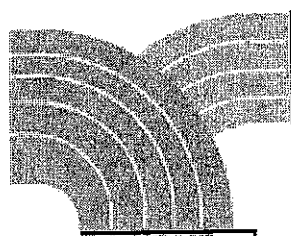
\* Conditional use. This indicates that residue data has been collected which suggests that these products are acceptable. Additional studies are underway to gather enough samples to ensure that statistically significant data supports these end-uses. Manufacture of the end-use product is therefore currently restricted to those facilities inspected and approved by the ACRC Technical Committee.

View [photos](#) of some of the products made from recycled plastic!

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# ACRC Agricultural Container Research Council

**Recycled Products**



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MEMBER'S AREA

The plastic containers accepted by the ACRC for recycling, generally held commercial products that either control some pest, promote or control growth of a plant, or facilitate the action of any of the aforementioned products. Interestingly, the vast majority of HDPE containers subject to this program are filled with professional products that are essentially non-toxic or of extremely low toxicity. For instance, most agricultural users are large consumers of a class of products known as adjuvants. Our collection sites are filled, at any given time, with about 35 % or more containers that are better known as "stickers, spreaders (like detergent), vegetable oils" and other products that make the crop protection chemical work better. Of course, there are some pesticides that are toxic if humans are exposed at sufficient concentrations for biological effect, but surprisingly, the numbers where that concern is present is low, a tiny fraction of the containers that are recycled through this program.

Still, the ACRC is concerned about any potential for harm to workers in a recycling facility, or to the consumer that may come into contact with the post-consumer product made from collected HDPE container. The ACRC has demonstrated to the entire industry that acceptable end-use products can be manufactured in a safe manner as long as certain safeguards and routinely recognized procedures are followed.

The procedures guaranteeing safe use start in the field, wherever the crop protection product container is emptied. Most crop protection products, even with standing liquid, will not trigger "hazardous waste" classification or regulation as defined by EPA. Despite this, the ACRC requires its granulation contractors to enforce a standard that is considerably more restrictive for cleanliness than either the regulations implementing the hazardous waste laws or those regulating pesticides. In fact, the ACRC publishes training videos and literature that prescribe a level of rinsing for containers as restrictive as the rinsing requirements proposed by the EPA office of pesticide programs on Feb. 11, 1994, even though those standards have never been adopted. Eleven studies, summarized in an EPA Report to Congress indicate that over 99.99% of the pesticide residues are removed when our recommended practices, or even less stringent standards, are followed. Observers sometimes doubt this efficacy when stains or odors are detected in the granulate collected from the ACRC program. These false indications are often the result of plastic container exposure to certain intense coloring or odor producing agents, detectable by sight and smell at incredibly small fractions of a percentage point (part per hundred), actually at the part per billion level.

Ultimately, the ACRC has determined a high standard of assurance by utilizing the expertise of its own scientists and industrial hygienists who inspect potential manufacturing sites for safety and regulatory history prior to allowing this plastic to enter into the plant in question. The ACRC has monitored the extrusion process, sampled air from around the machinery, and analyzed the dermal absorption of workers who handle the chipped plastic or finished product. It has also taken these measurements made by a certified, independent laboratory and had these data reviewed by some of the foremost pesticide toxicologists in the US. The net result is that the ACRC has determined that it is unlikely that any harm could come to any worker or handler of plastic materials collected in this program, provided that each entity followed the contractual and specified procedures that the ACRC has promoted.

Through this entire process, neither the plastic containers, nor the plastic chips, nor the collection sites, nor the recyclers are owned, nor are they operated, by the ACRC. Each entity has a responsibility to assure that the conditions for safe handling are met at every level for final product safety to be assured. The ACRC has determined that if ACRC requirements are met, the risks are well within acceptable limits for workers exposed to the recovered plastic and for industrial consumers of the manufactured product.

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**APPENDIX W**

Planning Commission Review

# DALE BUSH



County Executive - Cannon County

WOODBURY, TENNESSEE 37190-1197 • TELEPHONE (615) 563-2320

January 23, 2001

**TO: Planning Commission Members**

The planning commission is required to review the 5-Year Solid Waste Plan. Please sign below indicating that the commission has reviewed the plan.

Sincerely,

A handwritten signature in cursive script that reads "Dale Bush".

Dale Bush

dh

A handwritten signature in cursive script that reads "Boyd Barker".  
Boyd Barker, Chairman

# DALE BUSH



County Executive - Cannon County

WOODBURY, TENNESSEE 37190-1197 • TELEPHONE (615) 563-2320

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Dale Bush

dh

A handwritten signature in cursive script that reads "Boyd Barker".  
Boyd Barker, Chairman

COFFEE COUNTY PLANNING COMMISSION  
JANUARY 23, 2001, 6:00 PM  
COFFEE COUNTY ADMINISTRATIVE PLAZA

Present: Sam Morton  
Austin Anderson  
Forrest Frame  
Lee Duckett  
Frankie Floied  
Ron Cooper - State Planner

Meeting opened 6:00 pm.

Past minutes approved.

Duke - for Tim and Melissa Duke - land cut out for collateral Hickory Grove Road. Survey for the bank. Motion moved to accept, second by Frame. Unanimous.

Scott Hamby - Must have soil work done and plan requires a 50 ft easement. Will be placed on right land on Old Airport Road. Will reconsider when soil analysis is returned. Duckett moved to accept contingent upon soil work. Second by Morton. Unanimous vote.

Morgan's Asbury Road Subdivision No. 1 - Rouk Morgan owner. Request approval on giving an easement for septic system on another lot. Residence on Lot 1 - system on Lot 2. Motion by Floied to approve Lots 1 and Lot 3 for building and identify Lot 2 as a non building lot. Second by Morton. Unanimous.

Note: Lot 1 can only be used if Lot 2 is used for the septic system only for Lot 1 and not to be built on.

The Commission reviewed the Five Year Update for the Central TN Solid Waste Regional Plan.

Zoning Plan - Motion made by Morton, seconded by Floied, to send it to the Full Commission for review and consideration. Unanimous.

**XI. C. RIVERWALK, SECTION II, PHASE I - FINAL (00-55)**

The project located off Jefferson Pike, contains 20 lots on 9.97 acres, is being developed by Tom Reed; Huddleston-Steele Engineering, Inc. is project engineer. Approved for Step System. Preliminary approval was granted June 12<sup>th</sup>. Development Tax in the amount of \$15,000.00 and bonds in the amount of \$121,986.00 are required prior to recording of the final plat. Zoned for Walter Hill and Oakland High School, Ed Shirley stated no impact with the new school under construction. The County engineer stated compliance with the regulations. The Development Review Committee recommended approval.

Mr. Stroop moved, seconded by Mr. Peay to grant final approval. The motion carried by voice vote (13 for).

**XI. D. JIM THOMPSON SUBDIVISION - FINAL (00-128)**

The project located on Jackson Ridge Road, contains 1 lot on 4.04 acres, Huddleston-Steele Engineering, Inc. is project engineer. A variance from the Minimum Soils requirement had been requested; therefore, the plat is submitted for review. The Development Review Committee sent forward without recommendation. The county engineer stated that the plat meets requirements.

Mr. Stroop moved, seconded by Mr. Kelley to grant approval, including the variance from the soils requirement. The motion carried by voice vote (13 for).

**XII. DARRELL SCARLETT** of the County Attorney's office was scheduled to report his findings and give his recommendations regarding: a **VARIANCE REQUEST** by **EDWARD BRILEY** to develop on a private easement off an existing private easement. At the November meeting the request was deferred to the County Attorney for review. The director reported that Mr. Scarlett was to recommend to the Planning Commission not to consider the request, since there appears to be a cloud involving the easement which needs to be addressed.

Dr. Fullerton moved, seconded by Mr. Gentry to deny the request. The motion carried by voice vote (13 for).

**XIII. A.** Since there was not time to send the next item to the Future Development Committee, Mr. Kelley moved, seconded by Dr. Fullerton to suspend the rules in order to consider the Five Year Update to Solid Waste Plan. The motion carried by voice vote (13 for).

**XIII. B.** The Director noted that the Planning Commission should make a recommendation to the Board of Commissioners. Dr. Fullerton moved, seconded by Mr. Richmond to recommend approval of the Five Year Update to the Solid Waste Plan. The motion carried by voice vote (13 for).

**XIV. NORTH AREA STUDY:**

The Future Development Committee recommended accepting the North Area Study as presented with the requested change to expand commercial node at Dover Downs. A presentation was not available at the Planning Commission meeting. Mr. Farris moved, seconded by Mr. Kelley to accept the North Area Study as recommended by the Future Development Committee. The motion carried by voice (13 for). The process will move forward to the public hearing stage.

The meeting was adjourned at 7:00 p.m.

\_\_\_\_\_  
Craig Lynch, Chairman

  
\_\_\_\_\_  
John R. Davis, Secretary

Bobby Smith  
Clerk - Cannon County  
Woodbury, Tennessee, 37100

**ROLL CALL**

JANUARY 13

**TERM, 19** 2001

**COUNTY COMMISSION - CANNON COUNTY, TENNESSEE**

**RESOLUTION RE:** APPROVAL FOR A 5 YEAR SOLID WASTE PLAN

**BY COMMISSIONER** *Mark Barker*

**SECONDED BY COMMISSIONER** *C.B. Hollandsworth*

| DISTRICT | COMMISSIONERS      | AYE | NAY | ABSENT | PRESENT         |            |
|----------|--------------------|-----|-----|--------|-----------------|------------|
|          |                    |     |     |        |                 | NOT VOTING |
|          | MARK BARKER        | ✓   |     |        |                 |            |
| FIRST    | LOFTON D. BARRETT  | ✓   |     |        |                 |            |
| SECOND   | DANNY NICHOLS      | ✓   |     |        |                 |            |
| SECOND   | JIMMY WILLIAMS     | ✓   |     |        |                 |            |
| THIRD    | JIMMY FANN         | ✓   |     |        |                 |            |
| THIRD    | JOE YOUNG          |     |     | ✓      |                 |            |
| FOURTH   | MIKE GANNON        | ✓   |     |        |                 |            |
| FOURTH   | BILLY YOUNGBLOOD   | ✓   |     |        |                 |            |
| FIFTH    | C.B. HOLLANDSWORTH | ✓   |     |        |                 |            |
| FIFTH    | FAY PITTS          | ✓   |     |        |                 |            |
|          |                    |     |     |        | MOTION CARRIED. |            |

Bobby Smith  
 Clerk - Cannon County  
 Woodbury, Tennessee, 37100

**ROLL CALL**

**JANUARY 13**

**TERM, 19** 2001

**COUNTY COMMISSION — CANNON COUNTY, TENNESSEE**

**RESOLUTION RE:** APPROVAL FOR A 5 YEAR SOLID WASTE PLAN

**BY COMMISSIONER** *Mark Barker*

**SECONDED BY COMMISSIONER** *C.B. Hollandsworth*

| DISTRICT | COMMISSIONERS      | AYE | NAY | ABSENT | PRESENT |            |
|----------|--------------------|-----|-----|--------|---------|------------|
|          |                    |     |     |        |         | NOT VOTING |
|          | MARK BARKER        | ✓   |     |        |         |            |
| FIRST    | LOFTON D. BARRETT  | ✓   |     |        |         |            |
| SECOND   | DANNY NICHOLS      | ✓   |     |        |         |            |
| SECOND   | JIMMY WILLIAMS     | ✓   |     |        |         |            |
| THIRD    | JIMMY FANN         | ✓   |     |        |         |            |
| THIRD    | JOE YOUNG          |     |     | ✓      |         |            |
| FOURTH   | MIKE GANNON        | ✓   |     |        |         |            |
| FOURTH   | BILLY YOUNGBLOOD   | ✓   |     |        |         |            |
| FIFTH    | C.B. HOLLANDSWORTH | ✓   |     |        |         |            |
| FIFTH    | FAY PITTS          | ✓   |     |        |         |            |

Thea Prince gave a report to the Commission concerning the Five Year Solid Waste Plan stating that the state mandated in 1991 to reduce our solid waste by 25% and we had accomplished this thru recycling. Cannon County being the only county in its region to reach a 68% reduction while other counties have not met the 25% goal. Approval was made by Mark Barker and seconded by C B Hollandsworth, to approve the 5 yr solid waste plan.

MOTION CARRIED.

Bobby Smith  
 Clerk - Cannon County  
 Woodbury, Tennessee, 37100

ROLL CALL

JANUARY 13

TERM, 19 2001

## COUNTY COMMISSION — CANNON COUNTY, TENNESSEE

RESOLUTION RE: APPROVAL FOR A 5 YEAR SOLID WASTE PLAN

BY COMMISSIONER

*Mark Barker*

SECONDED BY COMMISSIONER

*C.B. Hollandsworth*

| DISTRICT | COMMISSIONERS      | AYE | NAY | ABSENT | PRESENT<br>NOT VOTING  |
|----------|--------------------|-----|-----|--------|--|
|          | MARK BARKER        | ✓   |     |        | Thea Prince gave a report to the Commission concerning the Five Year Solid Waste Plan stating that the state mandated in 1991 to reduce our solid waste by 25% and we had accomplished this thru recycling. Cannon County being the only county in its region to reach a 68% reduction while other counties have not met the 25% goal. Approval was made by Mark Barker and seconded by C B Hollandsworth, to approve the 5 yr solid waste plan. |
| FIRST    | LOFTON D. BARRETT  | ✓   |     |        |  |
| SECOND   | DANNY NICHOLS      | ✓   |     |        |  |
| SECOND   | JIMMY WILLIAMS     | ✓   |     |        |  |
| THIRD    | JIMMY FANN         | ✓   |     |        |  |
| THIRD    | JOE YOUNG          |     |     | ✓      |  |
| FOURTH   | MIKE GANNON        | ✓   |     |        |  |
| FOURTH   | BILLY YOUNGBLOOD   | ✓   |     |        |  |
| FIFTH    | C.B. HOLLANDSWORTH | ✓   |     |        |  |
| FIFTH    | FAY PITTS          | ✓   |     |        |  |
|          |                    |     |     |        | MOTION CARRIED.  |



MINUTES  
WARREN COUNTY REGIONAL PLANNING COMMISSION  
JANUARY 8, 2001

The regular meeting was held at the County Highway Department on January 8, 2001 at 6:00 P.M. Members present were Robert Collier, Greg Brock, George Smartt, Nester Stewart, Gordon McGee and Brent Foster. Keith Bouldin was absent. Staff Planner Joe Barrett, County Executive Carol Hamblen, Harold Glenn, Road Supervisor; and Levi Glenn were also present.

Chairman Robert Collier called the meeting to order and the December Minutes were reviewed. Motion by George Smartt and seconded by Gordon McGee to approve the December Minutes. Motion passed unanimously.

FINAL SITE PLAN FOR WAYSIDE MOBILE HOME PARK EXPANSION

There was not a representative present to submit the site plan. No further action taken at this time.

REVIEW OF 5-YEAR SOLID WASTE PLAN

The members reviewed the 5-Year Regional Solid Waste Plan. After further discussion, a motion was made by George Smartt and seconded by Gordon McGee to provide the required letter stating that the Planning Commission has reviewed the plan. Motion passed unanimously.

GROWTH PLAN DISCUSSION

The members reviewed the proposed PGA's and RA's of the county on a working map that was drafted. The map is a product of a joint session of Subcommittees "B" and "C" of the Coordinating Committee in which the areas were discussed and depicted on the map. Members were satisfied with the proposals and did not propose any changes to the boundaries at this time.

With no further business the meeting was adjourned at 7:25 P.M.

\_\_\_\_\_  
Chairman

\_\_\_\_\_  
Date

\_\_\_\_\_  
Secretary

\_\_\_\_\_  
Date

**APPENDIX X**

**County Commission Resolutions**

**January 16, 2001**

Be it remembered that the Coffee County Legislative Body met on January 16, 2001 at the Coffee County Administrative Plaza in Manchester at 7:00 p.m. There were 20 members present with Rick Garner being absent. The Sheriff opened the meeting.

The Invocation was given by Carl Russell and the Pledge to the Flag was led by Lee Duckett.

Mr. Wilhelm set the agenda by moving 10d before 10c. Also, by inserting Resolution 2001-04 under other unfinished business.

Motion made by Berry and seconded by Murray the minutes of the previous meeting were approved by voice vote.

Sympathy was extended to Commissioner Bard Fisher in the loss of his Father, Convenience Center Employee Rex Pinegar in the loss of his Sister, County Clerk Teresa McFadden in the loss of her brother, Carole Willis & Commissioner Lee Duckett in the loss of Step-Son & Nephew. Motion made by Mansfield and seconded by Bell for the adoption of Resolution 2001-03 in honor and recognition of Paul Stockton (deceased) for his devotion and dedication to the citizens of Coffee County, Tennessee. Motion was approved by voice vote. Recognition of commendation was extended to Mary Furlong and James Murray (Mr. & Mrs. Democrat).

Motion made by Alford and seconded by Murray the following notaries were approved by voice vote: Yolanda A. Arguelles, Rodney Howard Ballard, Virginia B. Boyd, James D. Bratcher, Jr., Fay R. Brown, Cathie E. Bryan, Roger H. Dotson, Karen D. Grimes, Valerie Smith Gulledge, Pamela J. Hawkersmith, Steve D. Lynn, Cynthia R. McAlister, J. Sam Miller, Charlotte O'Kelley, Barbara J. Suits, Carlene Smith, Tammy B. Spry, Jerry Lee Tawwater, Billie Terry, Signe L. Wheeler, Rita J. Wilkerson, Tommy E. Glisson, Debra Carol Musall, Nancy Vickers and Curtis Neal Vickers, Sr.

Motion made by Murray and seconded by Berry to elect James Wilhelm as Chairman. Motion was approved by voice vote.

Motion made by Bryan and seconded by Alford to elect Bobby Bryan as Chairman Pro Tem. Motion was approved by voice vote.

Motion made by Murray and seconded by Berry to elect Mary Furlong as Parliamentarian. Motion was approved by voice vote.

There were no changes on the Salary Review, Purchasing/Property Sales, Beer Committee, County Coroner. Motion made by Bryan for Rennie Bell to replace Nathan

Cunningham on the Rural Roads and Bridges Committee. Motion was approved by voice vote. Sam Morton's term expires on the Agriculture Committee to which he was re-nominated. Service Officers had no change. Gary Cordell's term expires on the Planning Commission but is re-nominated if he is willing to serve. Rural Solid Waste had no changes. Nominations to the Industrial Board were as follows: Carl Russell nominated Carol Russell, Bobby Bryan nominated Ray Johnson and James Murray nominated Marvin L. McKee replacing Buford Woosley. The Industrial Board nominees were approved by voice vote. The Judicial Commissioners, Investment Committee, County Records and County Historian had no changes. Motion made by Bryan and Alford for Rennie Bell to replace Sam Morton on the Central Tennessee Solid Waste Committee. Motion was approved by voice vote. Bryan stated that Mary Jo Brinkman was on the Solid Waste Advisory Board and not only did she make contributions on that committee, but throughout all the community. Motion made by Alford and seconded by Duckett for Sam Morton to replace Mary Jo Brinkman. Motion was approved by voice vote. The Adult Oriented Establishment Board had no changes. Motion made by Duckett and seconded by Bryan to ask the legislative committee to change the 911 Board from 7 to 9 members, with a Fire Fighter as a representative and the Sheriff as a representative. Motion was approved by roll call with all members present voting yes, except Wilma Thomas voted no. Mr. Murray, Chairman of the Legislative Committee said they would take this matter up at their next meeting and it would become effective then. Motion made by Berry and seconded by Murray to appoint all appointees that were not already confirmed. Motion was approved by voice vote..

Mark Allen, Director of Accounts & Budgets presented the Financial Report. Also, he presented a new County Purchasing, Policies and Procedures manual that Mr. Allen along with the Purchasing Committee adopted. Mr. Allen wanted all the Commissioners to look at it and give him any feedback. He said it will not be strictly enforced until 3-1-01. Mr. Jacobi presented a brief report on the Coffee Medical Center.

Motion made by Russell and seconded by Murray to approve the General Fund Budget Amendments. Motion was approved by roll call unanimously.

Motion made by Murray and seconded by Hines to approve Resolution 2001-04 authorizing extended limit of time for filing proposed charter for metropolitan government for Coffee County, Tullahoma and Manchester. The motion was approved by voice vote unanimously.

Mr. Wilhelm read a letter from Mrs. Thadra Duke that stated plans were being made to put the quilt in the County Clerks Office.

Motion made by Murray and seconded by Hightower to approve Resolution 2001-01 setting the minimum distance from schools and churches that beer can be sold. The motion passed with Steve Cline, Wilma Thomas, Nathan Cunningham, Bard Fisher, Rennie Bell and Michael Bradley voting no and Don Northcutt, Carl Russell, Bobby Bryan, Frankie Floied, Sam Morton, Lee Duckett, Virgil Alford, Harold Daniel, Bobby

Stewart, Robin Hines, Tim Mansfield, John Berry, James Murray and Pete Hightower voting yes.

Motion made by Murray and seconded by Russell to appeal the Judge decision to allow 2 bear permits to be issued. Upon roll call the motion was approved with Wilma Thomas, Nathan Cunningham, Bard Fisher, Rennie Bell, Michael Bradley and Robin Hines voting no, Don Northcutt, Carl Russell, Bobby Bryan, Frankie Floied, Sam Morton, Lee Duckett, Harold Daniel, Bobby Stewart, Tim Mansfield, John Berry, James Murray and Pete Hightower voting yes, Virgil Alford passed and Steve Cline left the meeting early.

Motion made by Murray and seconded by Hightower to approve Resolution 2001-02 a trust agreement with Chase Manhattan. Motion was approved by voice vote unanimously.

Motion made by Morton and seconded by Duckett to approve the changes to the 5 year update Central TN Solid Waste Regional Plan. The recommended changes are as follows: Amend first and second bulleted sections under #1 (Obtain Accurate Disposal Data) to read: Coordinate with disposal companies to obtain accurate data by weight and volume, limited to Manchester and Rural Coffee County. Data must be maintained and furnished upon request to Coffee County Rural Solid Waste. Failure by disposal company to maintain and furnish accurate data may result in termination of contract. Amend second bulleted section under #2 (Establish Education Campaign) to read: Education campaign should be continued with existing staff with emphasis on increased public awareness to recycling. Amend first bulleted section under #3 (Expand Waste Reduction Activities) by eliminating the exact number of bins to be added. It is the consensus of the committee that bins will be added as needed, when needed, but the exact number cannot be known. Amend seconded bulleted section under #3 to read: Negotiate with disposal company to accept Class IV waste and haul this waste to a Class IV landfill. Delete fifth bulleted section (Add bins for collection of textiles, fencing and yard clippings at the recycle center [2 bins @ \$6,000 per bin]). The motion was approved by roll call with everyone present voting yes except Rennie Bell passed.

Motion made by Murray and seconded by Russell to accept the lease agreement as amended between Coffee County, Tennessee and Manchester Area Senior Citizens, Inc. A friendly amendment was offered by Mansfield and accepted by both Murray and Russell that if the Senior Citizens did not agree to sign the lease agreement then they turn the key back over to the County. Discussion was held with concerns on how they are to pay for utilities with one part of the lease agreement being that they are responsible for them. Bobby Stewart stated that in Tullahoma, the city pays the seniors utility bill. "We think the seniors ought to go to their mayor and alderman." Jim Kennedy of Manchester says his group will not be able to pay for all the utilities and will be luck if they can pay liability insurance, as specified in the lease agreement. After discussion motion made by Alford and seconded by Thomas to postpone. Upon roll call the motion to postpone failed with Don Northcutt, Wilma Thomas, Frankie Floied, Nathan Cunningham, Lee Duckett, Virgil Alford and Rennie Bell voting yes, Harold Daniel passed and Carl Russell, Bobby Bryan,

Sam Morton, Bard Fisher, Bobby Stewart, Michael Bradley, Robin Hines, Tim Mansfield, John Berry, James Murray and Pete Hightower voting no. Upon roll call the original motion passed as amended with Don Northcutt and Harold Daniel passing, Wilma Thomas, Frankie Floied, Nathan Cunningham, Lee Duckett, Virgil Alford and Rennie Bell voting no and Carl Russell, Bobby Bryan, Sam Morton, Bard Fisher, Bobby Stewart, Michael Bradley, Robin Hines, Tim Mansfield, John Berry, James Murray and Pete Hightower voting yes. After the vote Mr. Wilhelm asked the members from Manchester if they are open to talking this out? Mr. Berry stated they are willing if its in a good faith effort. Manchester agreed they would get with Tullahoma and Pocahontas and try to reunite. Hines stated he was on the metro committee which is trying to consolidate the county and I am observing a split totally unnecessary. He suggested they make an effort to work these differences out, leave all deceptions out and become 1 unit again.

There being no further business the County Legislative Body adjourned.

Respectfully submitted this the 16<sup>th</sup> day of January, 2001.

  
\_\_\_\_\_  
Teresa H. McFadden, Coffee County Clerk

STATE OF TENNESSEE, COFFEE COUNTY  
I CERTIFY THAT THE ABOVE IS AN EXACT  
COPY OF THE Resolution FILED IN MY  
OFFICE ON 1-16-01 PAGES IN BOOK  
12  
ATTEST: Teresa H. McFadden COUNTY CLERK  
1/20 2001

RESOLUTION APPROVING THE FIVE YEAR UPDATE TO THE SOLID WASTE  
REGION'S TEN YEAR PLAN

WHEREAS, the Rutherford County Commission is committed to meeting State and Federal mandates on economic and safe disposal of solid waste; and

WHEREAS, the Rutherford County Commission desires to meet the requirements of the Tennessee Solid Waste Management Act of 1991 including the development and submittal of the Five Year Update to the Rutherford County Solid Waste Region's Ten Year Plan in accordance with Tennessee Code Annotated 68-211-814(a)(2); and

WHEREAS, the Rutherford County Commission has developed, reviewed and conducted a public hearing on the Five Year Update in accordance with Tennessee Code Annotated 68-211-814(b)(6).

NOW, THEREFORE, BE IT RESOLVED by the Rutherford County Board of Commissioners that it hereby approves the Five Year Update to the Rutherford County Solid Waste Region's Ten Year Plan and recommends submission of the Plan to the State of Tennessee Department of Environment and Conservation, Division of Community Assistance.

RESOLVED this 11th day of January, 2001.

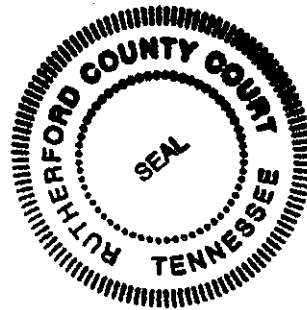
RUTHERFORD COUNTY, TENNESSEE

ATTEST:

BY:

*Nancy R. Allen*  
NANCY R. ALLEN, Chairman

*Ed Elam*  
ED ELAM, County Clerk



STATE OF TENNESSEE, COUNTY OF RUTHERFORD

The undersigned County Clerk of said County and State, hereby certifies that the foregoing is a true and correct copy of the original document filed in the office of the County Clerk.

This 17<sup>th</sup> day of Jan, 19-2001

ED ELAM, RUTHERFORD COUNTY CLERK

BY: *Jennifer Harper*  
DEPUTY CLERK

**A RESOLUTION TO APPROVE THE FIVE-YEAR UPDATE TO  
THE WARREN COUNTY SOLID WASTE REGION'S TEN YEAR  
PLAN**

**WHEREAS**, the Warren County Commission is committed to meeting State and Federal mandates on economic and safe disposal of solid waste; and

**WHEREAS**, the Warren County Commission desires to meet the requirements of the Tennessee Solid Waste Management Act of 1991 including the development and submittal of the Five-year Update to the Warren County Solid Waste Region's Ten-year Plan in accordance with Tennessee Code Annotated 68-211-814(a)(2); and

**WHEREAS**, the Warren County Commission has developed, reviewed, and conducted a Public Hearing on the Five-year Update in accordance with Tennessee Code Annotated 68-211-814.

**NOW, THEREFORE, BE IT RESOLVED** by the Board of Commissioners of Warren County, Tennessee, meeting in regular session on this 22<sup>nd</sup> day of January, 2001, a majority or more of the membership concurring that the Warren County Commission does hereby approve the Five-year Update to the Warren County Solid Waste Region's Ten-year Plan and does hereby recommend submission of the Plan to the State of Tennessee Department of Environment and Conservation, Division of Community Assistance.

**DULY PASSED AND ADOPTED** this 22<sup>nd</sup> day of January, 2001.

  
CAROL LEE HAMBLÉN  
WARREN COUNTY EXECUTIVE

ATTEST:

  
H. DAVID SMARTT  
WARREN COUNTY CLERK



08  
**CENTRAL TENNESSEE SOLID WASTE PLANNING REGION**

C/o Rural Coffee County Solid Waste  
1110 Madison Street  
Manchester, TN 37355



January 30, 2001

Mr. Ron Graham  
Director  
Tennessee Department of Environment and Conservation  
Division of Community Assistance  
8<sup>th</sup> Floor L & C Tower  
401 Church Street  
Nashville, TN

RE: Five-Year Update for Regional Solid Waste Plan  
Central Tennessee Solid Waste Planning Region

Dear Mr. Graham:

Please find enclosed two copies of the Five-Year Update. As you will note in Appendices W and X, some of the county commission resolutions and planning commission reviews are missing. Finally, the signature pages are included at the end of Chapter 10 of the report.

Should you have any questions regarding this report, please call me at (615) 563-4443 or Ms. Ilia Jefferson of Southern Consulting at (615) 740-8777.

Sincerely,

A handwritten signature in black ink, appearing to read "Thea Prince".

Thea Prince  
Chairwoman  
Central Tennessee Solid Waste Planning Region

Cc: Members, Central Tennessee Solid Waste Planning Region

Enclosure

**CENTRAL TENNESSEE SOLID WASTE PLANNING REGION**  
C/o Rural Coffee County Solid Waste  
1110 Madison Street  
Manchester, TN 37355

January 30, 2001

**Mr. Ron Graham**  
Director  
Tennessee Department of Environment and Conservation  
Division of Community Assistance  
8<sup>th</sup> Floor L & C Tower  
401 Church Street  
Nashville, TN



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**Thea Prince**  
Chairwoman  
Central Tennessee Solid Waste Planning Region

Cc: Members, Central Tennessee Solid Waste Planning Region

Enclosure

**APPENDIX P**

Electronics Reuse and Recycling  
Article by EPA



# WasteWise Update

## INSIDE

What You Need to  
Know ... 4

Improving Future  
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Managing Used  
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Opportunities for  
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Actions Governments  
Are Taking ... 14

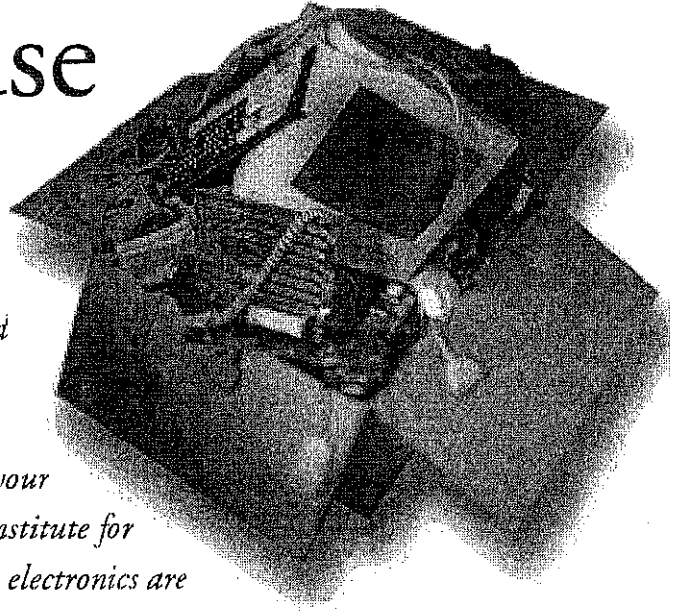
## ELECTRONICS REUSE AND RECYCLING



Preserving Resources  
Preventing Waste

# Electronics Reuse and Recycling

**D**o you have old, outdated electronic products (e.g., personal computers and peripherals, laptops, fax machines, copiers, televisions, telephones, and audio/visual or CAD equipment) in your office or home? If so, you're not alone. According to the Institute for Local Self-Reliance, approximately 75 percent of obsolete electronics are currently being stored or warehoused until there is agreement on the best way to manage this material. As stockpiling continues, there is growing concern about the volume of used or obsolete electronic equipment that will need to be managed responsibly when it emerges from storerooms or attics.



## Why Are Used Electronics a Concern?

Besides taking up space in empty cubicles and store-rooms, end-of-life electronics pose several issues regarding proper disposal and potential environmental consequences. Discarded electronics:

- **Represent a rapidly growing waste stream.** Technological advances are rapidly rendering formerly cutting-edge electronics obsolete. An estimated 20 million personal computers became obsolete in 1998. Most of these are in storage. Of the remainder, the bulk were disposed of; probably fewer than 6 percent were recycled. Currently, the useful life of a computer is only 3 to 5 years and shrinking. In 2005, more than 63 million personal computers are projected to be retired according to a recent study by the National Safety Council.
- **Waste valuable resources.** Electronic products are made from valuable resources, including precious and other metals, engineered plastics, glass, and other materials, all of which require energy to source and manufacture. Many electronic products also contain parts that could be profitably refurbished and reused with little effort. When we throw away old electronic equipment, we're throwing away these resources and generating additional pollution associated with the need to access virgin materials and manufacture new products.

- **Contain hazardous or toxic substances.** Some electronic products (notably those with cathode ray tubes or CRTs, circuit boards, batteries, and mercury switches) contain

## What Can You Do With Used Electronics?

### 1. Assess the Equipment You Have.

- What type of equipment is it? How old is it? Is any of it still working?

### 2. Explore Your Reuse Options.

- If your equipment is working, is there a nonprofit organization or school district in your area that could use it?
- Do you qualify for a tax break for donating equipment? (See box on page 5.)

### 3. Consider Repair or Upgrade.

- If your equipment doesn't work, can it be repaired, refurbished, or used for parts to build or repair other systems?
- If your equipment can't be repaired, will the servicer send unsalvageable parts to be recycled?

### 4. Select a Recycler.

- What is the recycler's disposal policy?
- Does the recycler have (or need) a permit to operate in your state?
- Who pays for transportation—you or the recycler?

hazardous or toxic materials such as lead, mercury, cadmium, chromium, and some types of flame retardants, and do so in amounts that may cause them to test hazardous under Federal law. In particular, the glass screens, or CRTs, in computer monitors and televisions can contain as much as 27 percent lead. Some estimate that since many batteries (such as car batteries) have started to be removed from waste, electronic products represent the largest remaining contributor of heavy metals to the solid waste stream. There is concern, particularly at the state and local levels, that products containing these constituents might pose some environmental risks if they are not properly managed at end-of-life.

## What Are the Benefits of Electronics Reuse and Recycling?

The most environmentally sound management of solid waste is achieved when approaches are implemented according to the U.S. Environmental Protection Agency's (EPA) preferred order: waste prevention first, recycling second, and disposal last. There are numerous environmental and societal benefits to reusing or recycling used electronics. Proper end-of-life management of electronics:

- **Diverts materials from disposal.** Electronics reuse and recycling divert bulky equipment from landfills and incinerators. Massachusetts bans CRT disposal in municipal landfills, and a few other states might consider doing the same.
- **Provides social benefits.** Reuse and donation of electronic products extends their useful life and affords individuals or organizations that could not buy new equipment the opportunity to make use of secondhand equipment.
- **Conserves natural resources and reduces pollution.** Products reconfigured or redesigned to reduce materials and use greater recycled content use fewer virgin resources and require less energy to produce. When less virgin material and energy is used, pollution is reduced. These energy savings also translate into reduced greenhouse gas emissions. When reuse is not an option, recycling electronic products creates a supply of parts and materials that can be used to refurbish older products or manufacture new ones. Many WasteWise manufacturers recycle used or off-spec electronic products internally through asset recovery programs.

This issue of *WasteWise Update* explores:

- **What you need to know before donating or recycling end-of-life electronics**, especially the need to assess and move retired products quickly into the donation stream, as well as issues surrounding recycling and disposal.

### Management Phases Defined

There are several components used to define management phases in the management of used electronics and other electronic equipment. Each phase has specific characteristics that relate to the degree of responsibility the equipment user has.

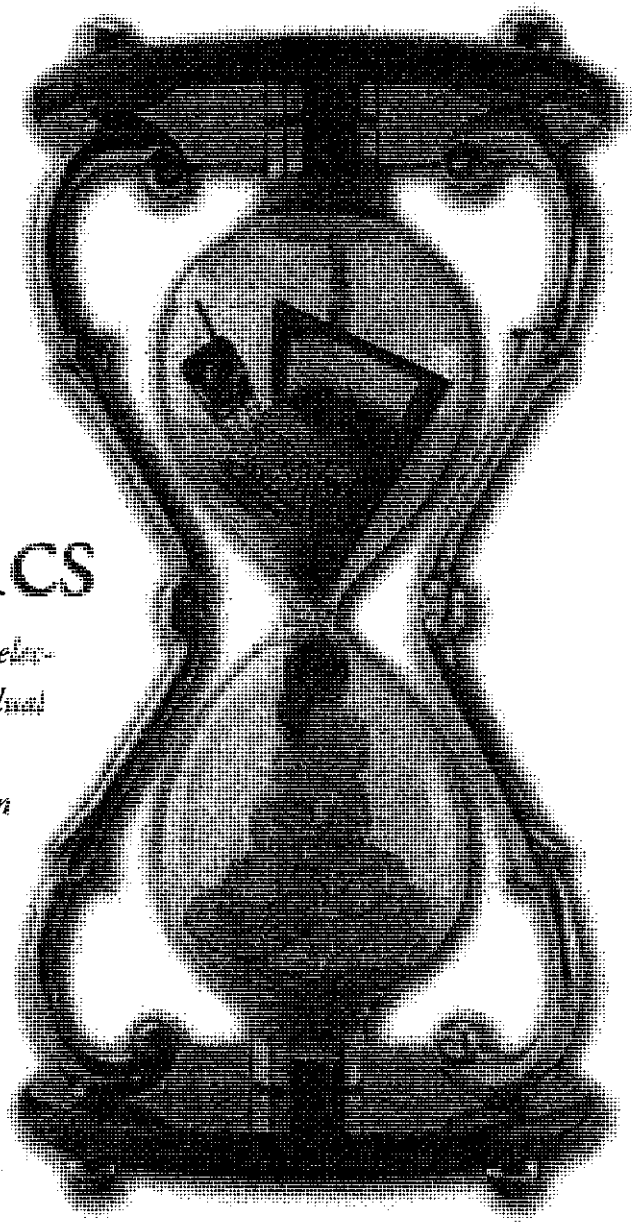
- **Asset recovery approach** refers to a manufacturer's internal program that recycles or reuses products or components to manufacture new products or to use in new products.
- **Rebuilding and reuse** means fixing and making an existing used electronic equipment for its original intended purpose. This often involves repairs or replacement parts. Rebuilding is usually done by the manufacturer or a third party. Reuse means using a product for a purpose other than the one for which it was originally intended. Reuse can be done by the manufacturer or a third party.
- **Donation** means giving a product to a charitable organization or a person who can use it. Donation can be done by the manufacturer or a third party.
- **Recycling** means breaking down a product into its component parts and reusing those parts to make new products. Recycling can be done by the manufacturer or a third party.
- **Disposal** means getting rid of a product. Disposal can be done by the manufacturer or a third party.

- **Recommendations for improving future electronics acquisitions** through leasing or take-back programs and evaluating the environmental attributes of electronics before you purchase.
- **Methods for managing used electronics** through reuse (including repair, upgrade, and donation) and recycling.
- **Opportunities for manufacturers to minimize electronics waste**, including internal asset recovery programs and product redesign for ease of repair and upgrades, improved recyclability, or inclusion of greater recycled content.
- **Actions governments are taking to manage electronics waste** such as making computer donation and recycling easier from a regulatory standpoint and helping to encourage electronic product collection programs for households and small businesses.

The mention of any company, product, or process in this publication does not constitute or imply endorsement by the U.S. Environmental Protection Agency.

# What You Need to Know Before Donating or Recycling End-of-Life Electronics

**M**any have the impression that retired electronic products have substantial residual value. This is probably why so much older electronic equipment remains in storage—most of us just can't believe it isn't worth something to someone. In fact, the older equipment gets, the more quickly its value fades—and the more we spend in wasted storage space and costs to hang onto it. Once you decide to retire electronic equipment, move quickly to identify potential donees or resellers to maximize the value of transferring the equipment and the potential tax write-offs you might qualify for.



## Check Your Regulatory Obligations

If no one is interested in taking your electronics for reuse or refurbishing, recycling these products for their parts or material value is the next best option. Be aware, however, that in many cases, the material value of retired electronic equipment does not cover the cost of dismantling or preparing the component materials for market. Prices for recycling old electronic products vary widely, depending on geographic area, quantities, and other issues. For example, stripping proprietary data and

recording destruction methods for each individual machine might be an additional expense. Still, recycling can be the better course of action financially for many organizations when compared with disposal. Several Web sites listing recyclers, as well as organizations arranging for donations, are listed in the Resources section at the end of this *Update*.

The cathode ray tubes (CRTs) in color computer monitors and televisions are often hazardous when discarded because of the presence of lead. Although the lead is probably not an environmental problem while the monitor or television is intact, the lead might leach out under condi-

## Get Your Tax Breaks Here!

When you consider the mass of computer equipment for schools, the U.S. Congress responded by incentives for private citizens to purchase computer technology, equipment, or software to schools by passing the 21st Century Incentives for Private Citizens Act, which is a provision in the Tax Year Relief Act of 1997. Since the Act took effect in January 1998, corporations, partnerships, trusts, and related entities (not public or private schools, grades K-12, have been able to deduct their 50% purchase of computer equipment. A clause in that provision prevents the shipping of computer equipment to schools that first shipping it into the receiving school's curriculum needs. The equipment must be used for the first 12 months of the year of purchase.

The Act also allows for a 30% deduction for individuals for non-commercial, only home computer equipment. The Act also allows for a 30% deduction for individuals for non-commercial, only home computer equipment. The Act also allows for a 30% deduction for individuals for non-commercial, only home computer equipment.

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tions typical of municipal landfills. Federal regulatory requirements applicable to handling these materials vary.<sup>1</sup> Facilities disposing of or recycling used CRTs should always check their state regulatory requirements, which might be different from federal regulatory requirements.

- **Households:** Used computer monitors or televisions generated by households are not considered hazardous waste and are not regulated under federal regulations.
- **Donation or Resale:** Monitors and televisions sent for continued use (i.e., resold or donated) are not considered hazardous waste.
- **Small Quantities Exempt:** Businesses and other organizations are not regulated under most federal requirements if the facility discards less than 100 kilograms (about 220 lb.) of hazardous waste, including used CRTs, per month. (These wastes must still go to a facility authorized to receive solid waste.)

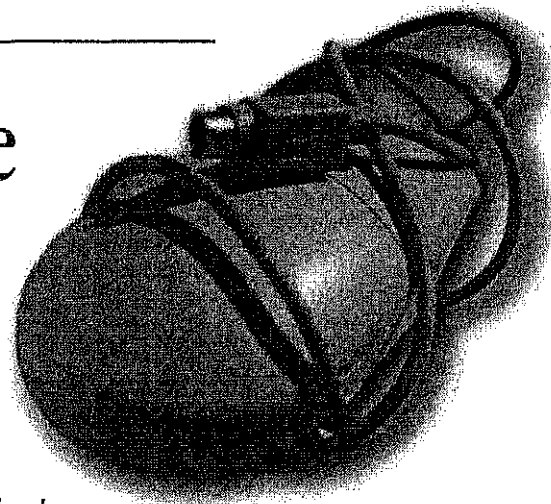
- **Large Quantities:** Wastes from facilities that generate more than 100 kilograms of hazardous waste per month are regulated under federal law when disposed. CRTs sent for disposal from such facilities must be manifested as "hazardous waste" and sent to a permitted hazardous waste landfill. CRTs sent for recycling from such facilities are also currently subject to federal regulation; however, EPA is in the process of streamlining requirements to make it easier and less costly to send CRTs for recycling. A proposed rule to this effect will be issued shortly. In the meantime, some states are addressing this issue, for example, by handling these materials as "universal waste," thereby reducing the management requirements applicable to the recycling of CRTs. Therefore, organizations should consult with their state governments.

<sup>1</sup> This discussion summarizes relevant federal regulatory requirements. For the complete federal hazardous waste requirements for generators, consult 40 CFR Parts 260-262.



# Improving Future Acquisitions

**T***o minimize the environmental impacts of electronic products, consider various product attributes before purchasing. Choose products that have reduced toxics content (i.e., reduced lead, mercury, and other heavy metals), greater recycled content, higher energy efficiency, longer life expectancy, and ease of upgradability, and contain features that facilitate recycling at end-of-life. Consider whether leasing electronic equipment is appropriate for your organization. Also, consider purchasing refurbished or remanufactured electronic equipment.*



When evaluating electronic equipment to determine if it can be upgraded or repaired, purchasers should look for products that:

- Have modular designs that allow for easy installation and service of hardware or memory upgrades.
- Utilize latches or snap construction to enable quick access to internal components.
- Are manufactured without glue and/or fixing tape, because they are difficult to remove.
- Do not require special tools for removing or replacing parts or batteries.

## Giving Electronics a New Lease on Life

Purchasers who don't want the responsibility of dealing with end-of-life equipment, but still prefer to use the most up-to-date products, should consider leasing instead of purchasing. This option allows them to return old equipment to the vendor for upgrades or credits toward future purchases. Leasing also eliminates consumer responsibilities for proper product disposal or management because they do not own the equipment. Another option involves selecting a dealer, retailer, or manufacturer that operates a product take-back program and allows consumers to return old equipment when purchasing new products or system upgrades.

For a case study showcasing a leasing agreement between WasteWise partners Monsanto and Dell Computer Corp., see the October 1998 WasteWise Update: *Extended Product Responsibility* at <[www.epa.gov/wastewise/pub\\_c.htm#ten](http://www.epa.gov/wastewise/pub_c.htm#ten)>.

Purchasers also should look for product attributes that will, when the time comes, facilitate recycling through ease of dismantling and sorting. Select products that:

- Minimize the use of different types of materials (e.g., plastic resins) because products containing diverse materials are more difficult and time-consuming to sort.
- Use screws and fasteners that are made of the same type of material as the parent part so that they may be recycled together.
- Don't contain foams, coatings, or paint that can contaminate parts and prevent recycling.
- Have connections, such as breakaway joints and panels, that allow plastic housings to be removed easily.
- Eliminate labels by molding information directly onto parts, avoiding the need to use additional materials or chemicals that could contaminate plastic.
- Use internationally recognized symbols for coding plastic parts for easy sorting.

Other questions to consider when selecting new electronic equipment include:

- Is the product or its battery rechargeable?
- Does the product use replaceable parts that are readily available from the manufacturer or retailers?
- Does the product use remanufactured parts?
- Does the product contain recycled-content material?

These characteristics can help extend the life of your electronic equipment, delay the need to purchase newer equipment, and reduce the cost of recycling at end-of-life.

# Managing Used Electronics

## Repair and Donation—Extending Product Lifespans

**R**apid strides in electronics technology have improved products and increased consumer convenience. But they also have heightened desire to have the newest, fastest equipment. If your company has recently acquired—or is getting ready to acquire—new equipment, consider donating old equipment to schools, nonprofits, and charitable organizations. Some organizations even accept nonworking equipment to repair for resale or to use the parts to refurbish other systems. Understand that not all used equipment is welcomed by schools and nonprofits, however. Newer equipment is more attractive to these users than older equipment. This raises the importance of getting equipment out of storage and into the hands of potential users quickly. The longer you hang onto used electronics, the quicker they lose any potential value they might have to others.

## Aspen Skiing Company Lifts Students' Classroom Experience

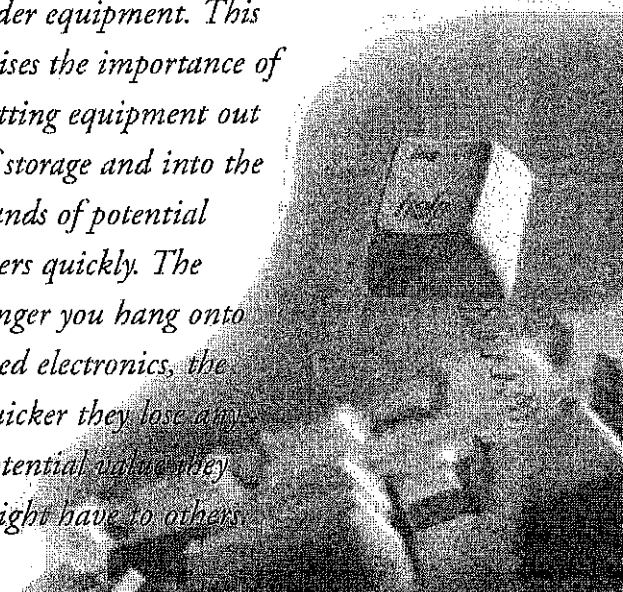
In a small town, word spreads fast. When WasteWise partner Aspen Skiing Company's Environmental Affairs Director Chris Lane heard that local schools needed computers, he says "it was an easy decision." After a recent computer upgrade, the company found itself with 60 perfectly good 486-microprocessor computer systems. "It wasn't practical to sell them because we wouldn't get much in return," says Information Systems Manager Joe Zazzaretti. "So we donated them, and the feedback from that was great."

Basalt Elementary School was one of the benefactors of the company's donation, receiving 12 computers. In October 1999, the school received a small grant from a local educational foundation to create the *Basalt Bugle*, a student magazine aimed at improving and showcasing students' creative writing skills. The students now use the computers to write and edit the publication. "The addition of the computers donated by the Aspen Skiing Company will enable a greater number of students to participate in publishing the *Basalt Bugle*," says former Basalt Elementary School Principal Bill Vitany.

The local press wrote about the donations, and soon Aspen Skiing began receiving requests from other organizations, including a local police department. Currently, Aspen Skiing is partnering with a local Internet service provider to refurbish the computers and make them available to the community's low-income residents to help their children compete in school. For more information on Aspen's donation program, contact Chris Lane at <clane@skiaspen.com>.

## Donation Done Right at Public Service Enterprise Group

What began as a small component of the lifecycle management program at WasteWise partner Public Service Enterprise Group's (PSEG) Resource Recovery Center in Paulsboro, New Jersey, has grown into an award-winning operation. Over a 3-year period, this large power company has donated more than \$1 million worth of computers, equipment, and training to urban educational facilities and organizations in New Jersey. In 1999 alone, PSEG's computer



## Getting Over the Software Hurdle

Over the past few years, recycling software such as WordPerfect and Microsoft Windows has become a major hurdle for many companies and individuals. The software is often sold in bulk and is difficult to recycle. In fact, many companies are now turning to software recycling services to help them deal with their software. One such service is provided by New Jersey's PSEG, which has a program to help companies and individuals recycle their software. PSEG's program is designed to help companies and individuals recycle their software by providing them with a list of software recycling services. PSEG's program is designed to help companies and individuals recycle their software by providing them with a list of software recycling services.



recovery operations prevented nearly 120,000 pounds of electronics, or the equivalent of more than 1,500 desktop computer systems, from entering the waste stream. Of this amount, PSEG donated \$220,000 in equipment to more than 80 organizations and sold \$105,000 in equipment to more than 300 customers, avoiding almost \$57,000 in disposal costs. This program earned PSEG the New Jersey Department of Environmental Protection's Environmental Excellence Award in the Safe and Healthy Communities category in June 2000.

### DETERMINING WHETHER AND WHEN TO DONATE

How does a company determine whether a computer should be reused internally, donated, or sold? The Information Technology (IT) group at PSEG tests all "retired" equipment to see if it meets the company's corporate standard. If not, the group looks at whether the equipment might meet the needs of less technology-intensive businesses, educational facilities, or personal residences. PSEG has committed a large space to evaluate and test its equipment. Equipment that does not meet the corporate standard for reuse within the company is considered for resale or donation. PSEG tries to sell enough high-end computers to balance the cost of refurbishing computers prior to donation. This effort provides used computers that are still

high in value, so recipients do not feel they are getting second-tier products. The cost of reconditioning and donating computers is roughly \$160 per system, while the sale of one high-end computer might generate as much as \$500. Proper demanufacture and recycling, on the other hand, would have cost \$35 per system in processing and recovery fees.

### DONATION DO'S AND DON'TS

According to Tom Costantino of PSEG's Resource Recovery Center, the key steps in implementing a solid computer recovery and donation program include:

- Establishing criteria for determining how equipment will be handled (i.e., upgraded, remanufactured, donated, sold, or demanufactured and recycled).
- Removing all sensitive information and personal files from the hard drives.
- Finding recipients with whom you are comfortable.

A common mistake companies make, Costantino says, is dropping equipment off at a donation site without making sure it will function and be reused properly. PSEG goes to some effort to make sure its computers are reused to their fullest potential. At the Resource Recovery Center, the company cleans the hard drives, removes sensitive and personal

information, and adds Microsoft Windows® operating software through a cooperative agreement with Microsoft Corp. Microsoft provides older versions of software that will not be competitive on the market. (See box on page 8.) At the donation site, PSEG technicians evaluate whether the recipients are able to accommodate and make use of the equipment, then finally set up and test the computers to ensure they are operating properly before releasing them.

“A financial commitment is vital to implementing a successful computer donation program, but that financial commitment will pay dividends,” Costantino says. Bulk sale is a tempting option because it requires less of a capital investment. But, Costantino cautions, “It has its environmental perils. PSEG avoids compromising its environmental ethic by selling quality equipment and by not selling to people who are not going to properly recycle the equipment.”

For more information on PSEG’s electronics donation program, contact PSEG’s Manager of Resource Recovery Al Fralinger at 856 224-1638 or by e-mail at <Albert.Fralinger@pseg.com>.

## Electronics Recycling— Going for the Gold (or Silver, or Platinum...)

Electronics recycling is a new industry emerging to manage the growing volumes of discarded electronics. In the past, scrap dealers collected used or discarded electronic products to recover precious metals such as gold, silver, platinum, and palladium contained within. Today, electronic products contain fewer precious metals, but electronics recyclers are finding ways to repair, reuse, and recycle more of the materials in used electronics. Many use innovative techniques and high-tech instruments (coupled with old-fashioned manual labor) to pinpoint malfunctions and repair products, to dismantle electronic equipment into component parts for reuse or recycling, and to separate commodities for further processing or recycling.

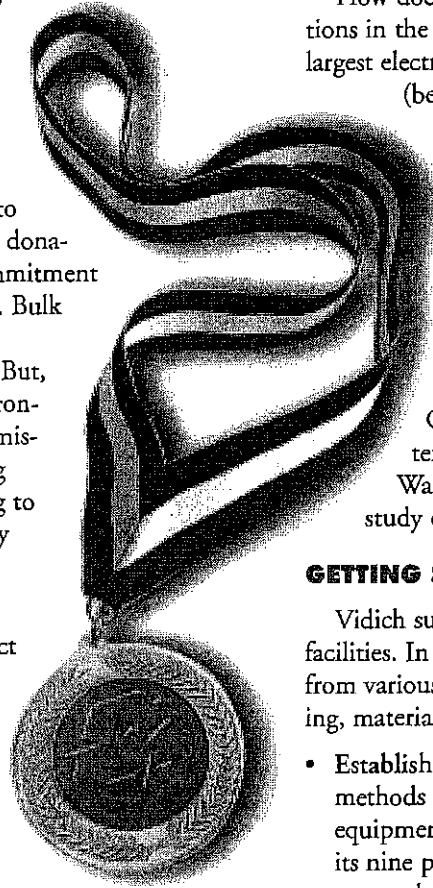
## Recycling Electronics in Large Organizations: The USPS’s First-Class Plan

How does an organization with more than 35,000 locations in the United States, each connected to the second largest electronic communications network in the world (behind the Internet), deal with the sheer volume of electronic equipment arising from rapid turnover in technology? The U.S. Postal Service (USPS) found that an organization-wide approach to recycling outdated electronic products made economic sense. Used equipment in storage represents frozen assets. “The longer it sits out of use, the more value it loses,” says USPS—Northeast Area Environmental Compliance Coordinator Charlie Vidich. Two years ago, USPS headquarters selected the USPS—Northeast Area, a 1999 WasteWise Partner of the Year, for a feasibility study on electronics recycling.

### GETTING STARTED

Vidich suggests a team approach to evaluating recycling facilities. In the case of USPS, this means drawing input from various departments, such as environmental, purchasing, materials management, and information technology.

- **Establish a baseline.** First, the USPS cataloged existing methods of collection, storage, and disposal. Most of its equipment was being taken to storage facilities in each of its nine postal districts. Districts reused or donated equipment whenever possible, but the system was not centrally coordinated.
- **Determine reuse and recycling strategies.** During the second phase, USPS established reuse and recycling strategies for various types of electronics equipment, including PCs, keyboards, laptops, integrated retail terminals, fax machines, and telephones.
- **Screen potential recyclers.** USPS hired a firm to study the electronics recycling industry in the Northeast. To help standardize evaluation of the companies, the USPS team required potential recyclers to complete an audit questionnaire. The team then evaluated the recyclers’ compliance records; pollution prevention and recycling practices; potential Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) liabilities; and environmental management systems.
- **Conduct site visits.** Vidich advises site visits to electronics recyclers. “It’s not possible to fully evaluate the liabilities of doing business with these companies without



visiting their facilities, and in some cases, visiting their subcontractors or affiliated businesses that manage their waste streams," he says. One concern for many organizations is that some companies might landfill the materials that cannot be reused, resold, or recycled.

### HOW THE USPS RECOVERY SYSTEM WORKS

Empty mail trucks deliver the outdated equipment to a central collection facility in each of the nine Northeast postal districts. Recycling companies under contract to the USPS collect the equipment from these warehouses for recycling. The USPS pays recyclers for their services based on the costs to pick up, transport, and recycle the equipment. If the recycler successfully resells valuable parts or materials, it shares the revenue with the USPS, which has a special account to track these transactions.

For more information about the USPS—Northeast Area's electronics recovery efforts, contact Charlie Vidich at <cvidich@email.usps.gov>.

## Electronics Recycling Means Business for DMC

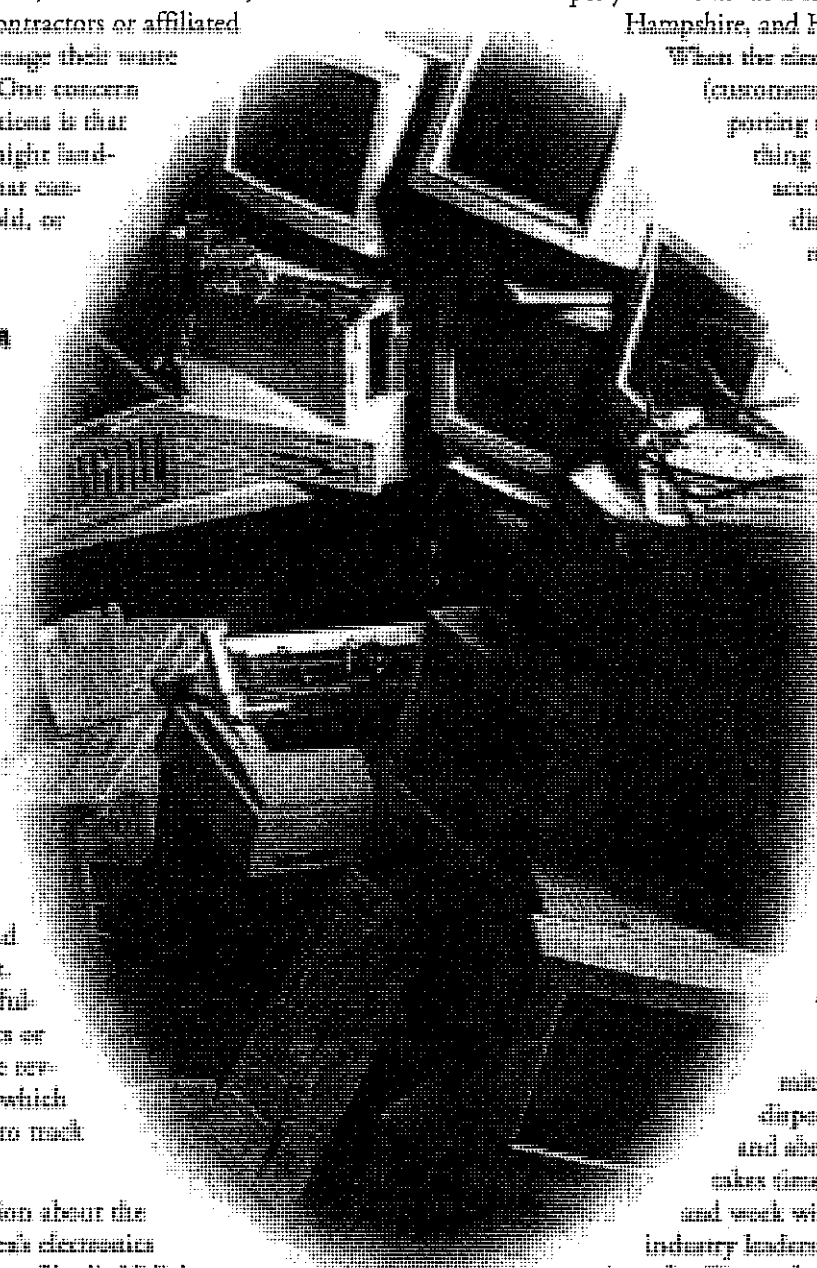
Every week, WasteWise partner DMC The Electronics Recycling Company receives truckloads of outdated electronics—ranging from televisions and personal computers to mainframes—from *Fortune* 500 companies, government agencies, manufacturers, and service companies. DMC processes 750,000 pounds (375 tons) of equipment per week—that's equivalent to 39 million pounds (19,500 tons)

per year—at its facilities in Newfields, New Hampshire, and Hagerstown, Maryland.

When the electronics arrive at DMC (customers are responsible for transporting used equipment), everything is weighed and separated according to the appropriate disposition method for that material. While DMC can refurbish approximately 10 to 15 percent of the components for resale, everything else is demanufactured to its original parts and sold to the appropriate materials dealer. "DMC has a buyer for every type of material except batteries, which are managed as hazardous waste," says Rick Campbell, DMC's director of corporate relations. "DMC continually strives to improve our service to ensure that we reuse what we can and recycle the rest without landfilling."

DMC has a strong commitment to end electronics disposal in the United States and abroad, so the company takes time to educate the public and work with environmentalists and industry leaders to avert the accumulation of millions of tons of scrap and surplus electronic equipment. "We participate in many speaking engagements to educate corporations about the importance of recycling electronics," Campbell says. The company is also ISO 14000-certified.

The electronics industry shows no sign of slowing production, and consumer demand is expected to grow, so the market for electronics recycling will most likely continue, keeping demand for DMC's services humming for some time to come. Contact Rick Campbell at 603 772-7236, or send e-mail to <rcamp@dmcrecycling.com>. For more information on electronics recycling or selecting an electronics recycler, visit DMC's Web site at <www.dmcrecycling.com>.



# How Are Computers Recycled?

## CIRCUIT BOARDS

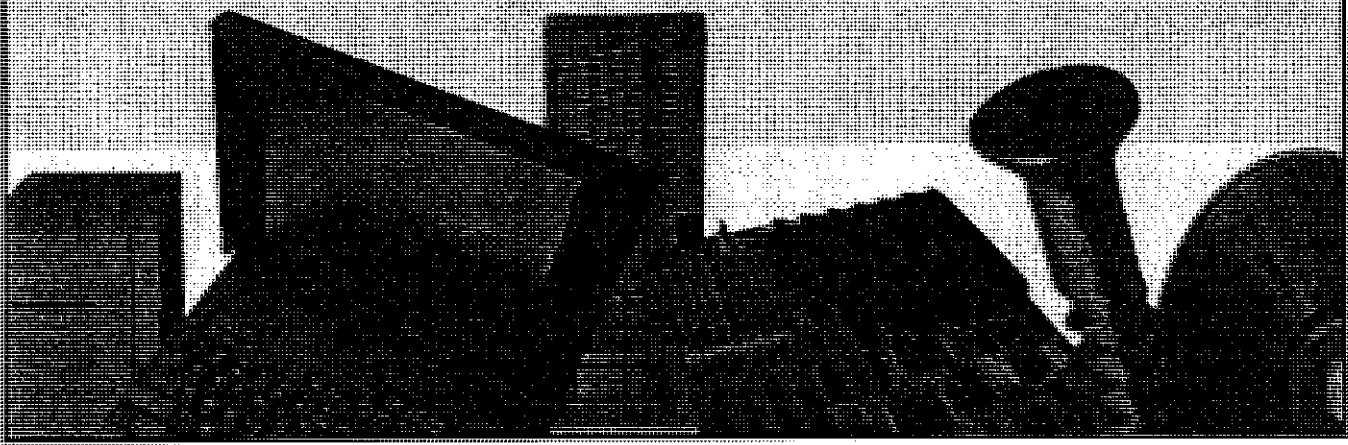
## PLASTIC HOUSINGS

## SMALL PLASTIC COMPONENTS

## SCREWS, CLIPS, SMALL METAL PARTS

## MONITORS

As the number of computers in use continues to grow, the amount of computer waste is also increasing. Computer waste includes circuit boards, plastic housings, small plastic components, screws, clips, small metal parts, and monitors. These items are often discarded in landfills, where they can leach toxic substances into the soil and groundwater. Recycling computer waste is important to protect the environment and conserve resources.



# Opportunities for Manufacturers to Minimize Electronics Waste

**M**ost older electronic equipment is difficult to upgrade and hard to disassemble for reuse and recycling because it was never designed with these ends in mind. But public policy trends and industry initiatives are increasingly promoting “greener” products—those with lower lifecycle environmental impacts, including impacts at product end-of-life. As a result, more manufacturers are designing for the environment (DfE). This includes reducing toxic constituents in products, using more recycled materials, and designing products to be more easily upgraded and recycled. Some manufacturers are also beginning to offer “asset management services” to their clients, including product take-back and recycling.

Producers of high-tech products face multiple challenges in the design process. In this fast-paced and highly competitive field, they must meet consumers’ performance and cost expectations at the same time they strive to minimize lifecycle environmental impacts. Some manufacturers are addressing this challenge by taking environmental considerations into account at the earliest stages of product design. What follows are some of the design changes that are making a difference:

- **Standardization of material types.** Standardizing material types not only facilitates product recycling by minimizing the different types of plastics and parts that need to be sorted, but also reduces manufacturing costs. WasteWise partner Sharp Electronics Corp. incorporated material reduction techniques into a number of its products, including televisions that use 50 percent fewer types of plastics and 33 per-

cent fewer parts than traditional sets.

Similarly, Sharp reduced the product weight of its VCRs by 27 percent and the number of parts by 15 percent.

- **Use of recycled-content materials.** Who will use all the materials recovered from end-of-life electronics? Some manufacturers are helping to boost the market for these materials by looking for ways to use recycled content in their new products. WasteWise partner Pitney Bowes Inc.’s plastic injection operations integrate an average of 5 percent preconsumer plastic into its components, and purchases of components from outside vendors contain up to 3 percent recycled content.
- **Use of refurbished/reconditioned parts.** Voluntary asset recovery programs reuse or refurbish equipment that may no longer serve the needs of the original customer, but that retains value and might be beneficial to other users. For example, WasteWise

## Leading by Example

The **Electronic Industries Alliance (EIA)**, a trade association representing the electronics industry and a WasteWise endorser, is encouraging its members to design for the environment (DfE). EIA’s Environmental Issues Council has published a summary of steps its members are taking to improve the environmental attributes of their products and processes. See EIA’s Website at [www.eia.org/download/eic/21/dfe\\_comp.html](http://www.eia.org/download/eic/21/dfe_comp.html) for more information. Other organizations active in electronics recycling and DfE are listed in the Update’s Resources Section.

## From Drawing Board to Circuit Board

WasteWise partner **Motorola, Inc.**, is making efforts to design its products with the environment in mind. In addition to manufacturing products, Motorola has braved new territory—electronics demanufacturing.

Motorola's Plantation, Florida, facility is the company's main center for electronics demanufacturing and reuse. The demanufacturing program started in 1993 when the company faced a semiconductor shortage. The company decided to recycle assembled, pre-consumer circuit boards. Four years in the making, Motorola's asset recovery program relies on engineering overruns of preconsumer circuit boards as a principal source of valuable components.

Numerous rounds of rigorous tests were performed to prove that products made with recovered components perform just as well as products made with virgin components. The success of Motorola's semiconductor recovery and reuse program prompted the company to extend recovery efforts, reaching out to manufacturing facilities worldwide and encompassing reuse and recycling of all product components.

For more information, contact Jaime A. Santiago, manufacturing manager at Motorola's Material Demanufacturing Center, at 954.723-4744, or e-mail him at <ejis020@email.mof.com>.

- **Remanufacturing.** Used electronics can be disassembled and remanufactured into new products, thereby reducing production costs and minimizing waste generation. In 1999, WasteWise partner **Xerox Corp.** remanufactured equipment and parts from more than 30,000 tons of returned machines, reducing energy consumption and diverting valuable equipment from disposal. Because products are designed with remanufacturing in mind, the company offers the same guarantees for remanufactured equipment as for all-new equipment. The company reports that the financial benefits of these efforts amount to several hundred million dollars each year.
- **Recyclability.** Labeling materials (such as plastic resins) used in products and reducing reliance on paints and coatings (which can contaminate secondary materials streams) help make sorting and recovering secondary materials more cost-effective. WasteWise partner **Hewlett Packard Company**, for example, uses material identification codes and marks all plastic parts according to ISO 11469. Additionally, the company molds user instructions into the plastic rather than using a paper label.

For a more detailed discussion of DfE, see the October 1998 *WasteWise Update: Extended Product Responsibility* (EPA530-N-98-007) at <[www.epa.gov/wastewise/pub\\_c.htm#ten](http://www.epa.gov/wastewise/pub_c.htm#ten)>.

partner **Sun Microsystems, Inc.**, has a comprehensive reuse program that accepts used systems from customers and separates materials according to a "save list" that outlines key components for reuse. Returned systems that are unsuitable for remanufacture or components not included on the "save list" continue to circulate and perform other useful functions.





▼  
**"The leasing option"  
Governing. May 1998.**

This article highlights how leasing office equipment and computers is becoming a popular choice for governmental organizations. Because computers quickly become outdated, it is more cost-effective to replace the technology by renewing a lease rather than purchasing new equipment. Another benefit of leasing is the warranty support and services that are included.

▼  
**"Electronics recycling  
collection: Targeting the  
commercial sector"**

**Resource Recycling. December 1998.**

The Rhode Island Department of Environmental Management conducted a study to determine the feasibility of recyclable electronics collection among commercial enterprises. The study highlights collection options and strategies for improving collection efficiency and effectiveness among various commercial sectors. Recyclable electronics collectors can use the study to maximize efficiency among different sectors.

▼  
**"What to do when comput-  
ers pile up"**

**Recycling Times. November 1998.**

Many organizations accept old computers and fix them for reuse. This article highlights what some organizations are doing with used computers and includes a list of nationwide organizations that accept old equipment.

▼  
**"The Conundrum of  
Computer Recycling"  
Resource Recycling. May 1999.**

This article discusses personal computer (PC) disposal and the effect of increased PC use and rapid technological advances on computer recycling. It also describes processing methods for used computers, regulatory issues surrounding PC disposal, local and state government activities, and strategies for reducing the number of discarded PCs in the waste stream.

<<http://vista.simplenet.com./conundrum.html>>



▼  
**COMPAQ Computer Asset  
Recovery Services  
[www.digital.com/das039hm.html](http://www.digital.com/das039hm.html)**

COMPAQ Computer Asset Recovery Services (CARS) serves as a single convenient, responsible source for disposition of any brand of computer-related equipment. Call the CARS access line at 800 580-7370 to learn more.

▼  
**Dell Financial Services  
(DFS) Asset Recovery  
Services**

[www.dell.com/us/en/hied/services/asset\\_000.htm](http://www.dell.com/us/en/hied/services/asset_000.htm)

DFS offers two asset disposition services—Value Recovery Services for functional equipment and PC

Recycling Services for nonfunctional or outdated equipment—to help customers manage used electronic equipment. For additional information or a quote on your equipment, e-mail Dell at <[US\\_DFS\\_AssetRecovery@Dell.com](mailto:US_DFS_AssetRecovery@Dell.com)> or call 800 955-3355, ext. 36634.

▼  
**IBM Product End-of-Life  
Management (PELM)  
Service**

[www.pc.ibm.com/www/healthycomputing/envreport/end.html](http://www.pc.ibm.com/www/healthycomputing/envreport/end.html)

IBM's PELM Service offers a convenient and affordable way for customers to return unused and unwanted IBM and non-IBM equipment for refurbishment and recycling. Customers in the U.S. are advised to contact their IBM representative for additional information.

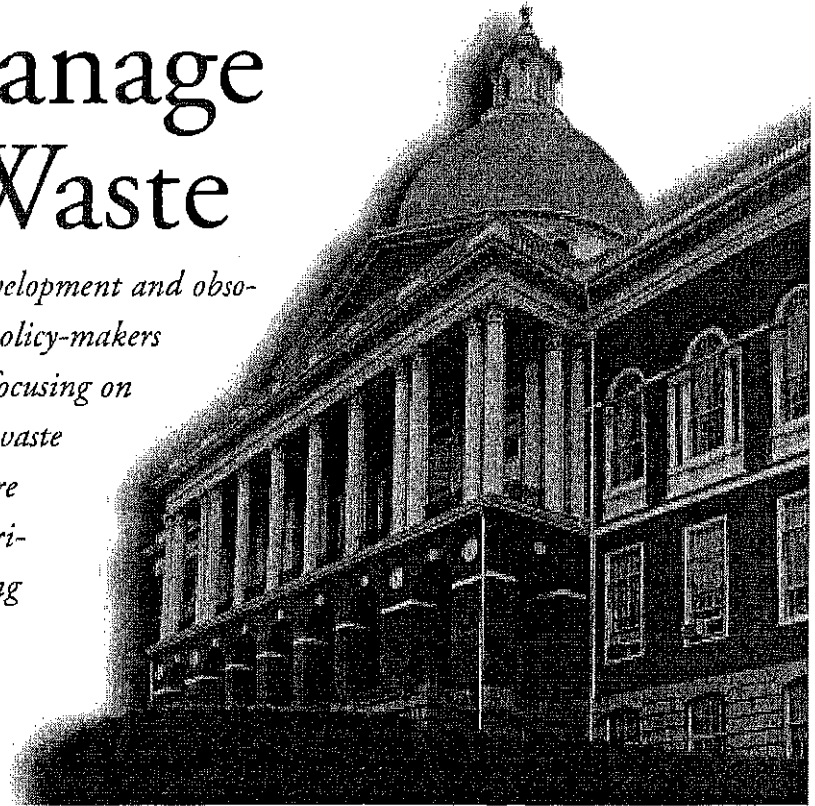
▼  
**Micron Green Recycling  
Program**

[www.micronpc.com/programs/mpower/ind\\_recycle.html](http://www.micronpc.com/programs/mpower/ind_recycle.html)

Micron's Green Recycling Program allows customers purchasing new Micron equipment to return old equipment for recycling. A \$75 per system disposal fee is charged for returns of fewer than five systems—companies might qualify for a rebate on quantities of five systems or more. Customers must purchase at least as many new Micron systems as the number of systems returned.

# Actions Governments Are Taking to Manage Electronics Waste

**A**s the pace of new product development and obsolescence steadily accelerates, policy-makers across the United States are focusing on how to manage the growing waste from electronic products. More and more state and local governments are experimenting with collection, donation, and recycling of used electronics products, as well as ways to involve producers of electronics in helping to recover these products at end-of-life. Some states, as well as the federal government, are working to make their policies less burdensome for generators of used electronic products to encourage donation and recycling instead of disposal. Businesses and others who are considering donation, recycling, or disposal of electronic products should check their state regulations and policies. These policies vary widely from jurisdiction to jurisdiction. Some of the major initiatives are summarized below:



- **Streamlining regulatory status of cathode ray tubes (CRTs) bound for recycling.** Most CRTs (especially color monitors for computers or televisions) are considered hazardous under federal and state regulations because of the presence of lead. To encourage more collection and recycling of CRTs, EPA will be proposing rulemaking changes to streamline existing federal management requirements, which currently add expense and paperwork to CRT recycling. EPA has already made similar rule changes to encourage the recycling of certain batteries, thermostats, hazardous waste lamps, and pesticides. Several states currently have or are considering changes to do the same for CRTs.
- **Banning disposal of CRTs.** WasteWise partner the Commonwealth of Massachusetts recently banned disposal of CRTs in its municipal waste landfills. For program details, visit the Massachusetts Department of Environmental Protection's CRT Reuse and Recycling Web site at <[www.magnet.state.ma.us/dep/recycle/crt/crthome.htm](http://www.magnet.state.ma.us/dep/recycle/crt/crthome.htm)>. Florida also might consider doing the same, but only after ensuring that an adequate recycling infrastructure exists. Information on Florida's strategy for end-of-life electronics is available at the Florida Department of Environmental Protection's Web site at <[www.dep.state.fl.us/dwm/programs/electronics](http://www.dep.state.fl.us/dwm/programs/electronics)>.
- **Setting up local collection sites.** In recent years, an increasing number of communities have experimented with various ways of collecting end-of-life electronics. There are now periodic or ongoing electronics collection and/or drop-off programs in many states. Some of these experiences are profiled in an EPA report called *Analysis of Five Community Consumer/Residential Collections of End-of-Life Electronic and Electrical Equipment*. This report is available on USEPA-New England's Web site at

<[www.epa.gov/region01/steward/electcol/index.html](http://www.epa.gov/region01/steward/electcol/index.html)>. For information on additional collection pilots, check the National Recycling Coalition's Web site at <[www.nrc-recycle.org/Programs/electronics](http://www.nrc-recycle.org/Programs/electronics)> and EPA's Extended Product Responsibility Web site, under Electronics, at <[www.epa.gov/epr](http://www.epa.gov/epr)>.

- **Charging a recycling fee at point of sale.** South Carolina's Recycling Market Development Advisory Council (RMDAC) is seeking industry input and legislative support for an electronic equipment recycling program in that state. The council has proposed a fee on the purchase of new electronic equipment containing CRTs, such as televisions and computer monitors, to help develop a state infrastructure for scrap electronic equipment recovery and recycling. The monies would provide grants and loans to local governments and businesses that collect, transport, process, and recycle discarded electronics. South Carolina continues to pursue this initiative by gathering information and additional support from industry allies. Watch the RMDAC Web site at <[www.callsouthcarolina.com/recycling/Default.htm](http://www.callsouthcarolina.com/recycling/Default.htm)> for the latest developments.
- **Labeling products containing hazardous substances.** Vermont requires manufacturers of certain mercury-containing products to label these products for sale in the state. To discard labeled mercury-added products, consumers must drop them off at a designated collection point or a facility authorized to accept such items. The Northeast Waste Management Officials Association's (NEWMOA's) "Model Mercury Legislation" calls for this type of labeling as well as other requirements, including producer take back, for mercury-containing products. For more information on this model legislation, see <[www.newmoa.org/Newmoa/htdocs/prevention/mercury/](http://www.newmoa.org/Newmoa/htdocs/prevention/mercury/)>.
- **Investigating extended product responsibility.** Some states are looking at ways to engage producers of electronic products in the collection and recycling of these products at end-of-life. New York has proposed take-back legislation for electronic equipment that would require manufacturers to establish collection and/or disassembly centers for recovery of at least 90 percent of the waste equipment. Manufacturers would be required to accept such equipment at no charge to consumers.<sup>2</sup> Minnesota's Office of Environmental Assistance (OEA) initially proposed a product stewardship policy that would mandate producer responsibility for CRTs and some other products.<sup>3</sup> The state, however, is currently investigating the

degree to which voluntary assistance partnerships with industry can address this waste stream (see article below for details on this initiative). For more information on OEA's product stewardship efforts in general, go to <[www.moea.state.mn.us](http://www.moea.state.mn.us)>. The NEWMOA states are considering model legislation to mandate producer take back of mercury-containing products (see the previous bullet).

## Public-Private Partnership Proves Positive for Recycling

Growing concern over the disposal of electrical and electronic products in the municipal solid waste stream prompted the Minnesota OEA to sponsor a recycling demonstration project targeting residential and small business electronic discards. WasteWise partner Matsushita Electric Corporation of America (Panasonic) and WasteWise endorser the American Plastics Council partially funded the demonstration project along with Sony Electronics, Inc., and the Waste Management-Asset Recovery Group (WM-ARG). The pilot compared various collection techniques and costs and assessed collection and recycling infrastructure development needs. It encompassed 65 recycling centers serving approximately one-third of Minnesota's residents. Recognizing that no single collection strategy (e.g., curbside, dropoff, or retail collection centers) could provide the solution, the project partners tested several strategies to see which were most successful at capturing material or reducing costs. During a

(Continued on Page 16)

### King-Size Local Effort

One of the national programs of WasteWise Partner King County, Washington Department of Public Utilities is an electronic waste recycling program. The program is designed to help consumers dispose of their electronic waste properly. The program is currently processing...

2 Kadas, Madeleine Boyer, and Paul E. Hagen. Beveridge & Diamond, P.C. Electronics Take-Back and Recycling Update on Recent U.S. State Initiatives. February 29, 2000. p. 11.

3 Ibid. p. 8

## Government (continued from page 15)

3-month timeframe from July 31 to October 31, 1999, centers collected nearly 700 tons of used electronic products. WM-ARG spent the next 3 months processing the collected materials. After segregating the electronics into five broad product categories (TVs, monitors, PC units, consumer electronics, and mixed electronics), WM-ARG identified eight scrap materials to be extracted from the products. Project partners chose to evaluate the secondary markets for glass and plastics, which are the two materials that retain the most value at the end-of-life.

Initial evaluation of the pilot indicated the following needs: 1) improvements in recycling technologies; 2) increased procurement of secondary materials for the manufacture of new products; and 3) regulatory relief for legitimate electronics recyclers. The study concluded that these changes will help facilitate expansion of electronics recycling.

For more information, contact Mark Sharp, assistant general manager of Panasonic's Corporate Environmental Department, at 202 223-2575 or <sharpm@panasonic.com>. To contact Minnesota regarding this project, call Tony Hainault, Minnesota OEA, at 612 215-0298; e-mail him at <tonyhainault@moea.state.mn.us>; or go to <www.moea.state.mn.us/plugin/index.cfm>.

If you have received this publication in error or want to be removed from the WasteWise Update mailing list, please call the WasteWise Helpline at 800 EPA-WISE (372-9473) or send a copy of this page, with the mailing label, back to WasteWise at the address below. Many WasteWise publications, including the WasteWise Update, are available electronically on the WasteWise Web site at <www.epa.gov/wastewise>.

## A New WasteWise Challenge for Today's Technology—Electronics

To help partners reduce the growing waste stream of used electronics, WasteWise designed a new initiative—the WasteWise Electronics Challenge. This is

the second in a series of WasteWise Challenges. The Transport Packaging Challenge, introduced last year, focused on items such as pallets, wraps, and totes, and resulted in substantial cost savings and waste reduction for participating partners. Here's an opportunity to extend the life of electronic products and perhaps qualify for tax write-offs. In addition, WasteWise will offer Challenge participants technical assistance and opportunities for recognition and networking.

Some examples of electronics waste reduction activities include:

- Refurbishing and/or upgrading existing electronics equipment instead of buying new equipment.
- Buying remanufactured or recycled equipment.
- Contracting with suppliers to lease electronics or to take back and reuse/recycle equipment that is no longer needed.
- Donating reusable electronics equipment (e.g., to schools or other nonprofit groups).

Call the WasteWise Helpline at 800 EPA-WISE (372-9473) to request a pledge card, or sign up electronically on the Partner Network section of the WasteWise Web site at <www.epa.gov/wastewise>.



United States  
Environmental Protection Agency  
(5306W)  
Washington, DC 20460

Official Business  
Penalty for Private Use \$300

# R E S O U R C E S

## for Electronics Waste Management



▼  
**International Association of Electronics Recyclers (IAER)**

[www.iaer.org/search](http://www.iaer.org/search)

The trade association for the electronics industry has several resources available electronically, including a comprehensive list of electronics recyclers. The Web site also contains information about the Electronics and the Environment Summit, held May 2000.

▼  
**National Recycling Coalition's Electronics Database**

[www.nrc-recycle.org/programs/electronics/search/getlisting.asp](http://www.nrc-recycle.org/programs/electronics/search/getlisting.asp)

This section of the National Recycling Coalition's Web site hosts a database of electronics recyclers, reuse organizations, and municipal programs that accept old electronic equipment.

▼  
**National Safety Council's Electronic Product Recovery & Recycling (EPR2) Directory**

[www.nsc.org/ehc/epr2/recycler.htm](http://www.nsc.org/ehc/epr2/recycler.htm)

This Web site contains a list of electronics recycling and donation organizations.

▼  
**Parents-Educators-Publishers (PEP) National Directory of Computer Recycling Programs**

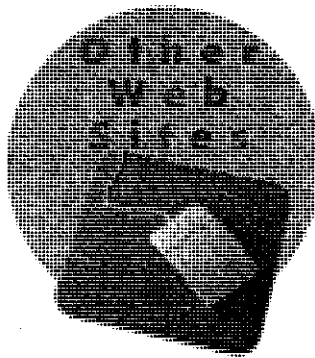
[http://microweb.com/pepsite/Recycle/recycle\\_index.html](http://microweb.com/pepsite/Recycle/recycle_index.html)

This directory lists organizations throughout the U.S. and the world that accept and prepare computers for donation.

▼  
**Share the Technology**

<http://sharetechnology.org/>

This nonprofit corporation's national database lists computer donation offers and requests from all over the United States and from other countries.



▼  
**Carnegie Mellon Green Design Initiative**

[www.ce.cmu.edu/GreenDesign/index.html](http://www.ce.cmu.edu/GreenDesign/index.html)

This Web site provides a comprehensive international resource list for information about end-of-life options for electronic products. It includes links for computer, software, component, and diskette recycling; federal, state, and local recycling/donation programs; electronics manufacturers' programs;

dealers of used and refurbished equipment; school and charity donation coordinators; and academic and research institutions.

▼  
**CompuMentor**

[www.compumentor.org/cm/resources/articles/108.html](http://www.compumentor.org/cm/resources/articles/108.html)

This volunteer computer training and support organization's Web site provides a list of electronics recycling and reuse organizations nationwide.

▼  
**Computers for Learning**

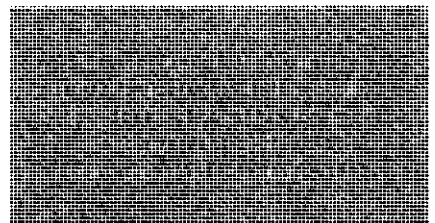
[www.computers.fed.gov](http://www.computers.fed.gov)

This Web site allows schools and educational nonprofits to register to request surplus federal computer equipment. Federal agencies use the Web site to donate computers based upon indications of need.

▼  
**Electronic Industries Alliance (EIA)**

[www.eia.org](http://www.eia.org)

EIA's Environmental Issues Council serves as a forum for industry executives. The site has information about various environmental issues, including end-of-life management of products. Read about Design for the Environment examples in "Addressing End-of-Life Electronics Through Design."



▼  
**Goodwill Industries International, Inc.**

[www.goodwill.org/](http://www.goodwill.org/)

Gateway Country stores will give a \$100 discount off a new PC to anyone who donates a functioning, 386-class or better computer of any brand to Goodwill. Goodwill might take 286 or newer computers, but you need to check with your local Goodwill chapter for complete details.

▼  
**National Cristina Foundation**

<http://cristina.org>

This organization brings donated computers to the disabled, economically disadvantaged, and students at risk. The Web site contains donation instructions and answers to tax benefit questions.

▼  
**National Recycling Coalition's Electronics Recycling Initiative**

[www.nrc-recycle.org/programs/electronics/index.htm](http://www.nrc-recycle.org/programs/electronics/index.htm)

This Web site contains information about electronics recycling and donation, policies and programs, reports and publications, and transcripts from past online chats about electronic product recovery.

▼  
**National Safety Council's Electronic Product Recovery and Recycling (EPR2) Project**

[www.nsc.org/ehc/epr2.htm](http://www.nsc.org/ehc/epr2.htm)

This section of the EPR2 Project Web site includes EPR2 conference summaries and an order form for the *EPR2 Baseline Report: Recycling of Selected Electronic Products in the United States*. The report provides results of the first large-scale survey and analyses of end-of-life electronics recycling and reuse.

▼  
**Recycler's World**  
[www.recycle.net/computer](http://www.recycle.net/computer)

This Web site lists computer and telecommunications equipment recyclers and refurbishers, and hosts a worldwide electronics materials exchange.

▼  
**Southern Waste Information eXchange**

[www.wastexchange.org](http://www.wastexchange.org)

This Web site is a clearinghouse for information about recycled products, market development, and current legislation and regulations. It contains a resource guide about used televisions and computer recycling management in Florida. This site will soon link to an electronics equipment exchange program.

▼  
**U.S. EPA's Extended Product Responsibility (EPR) Page**

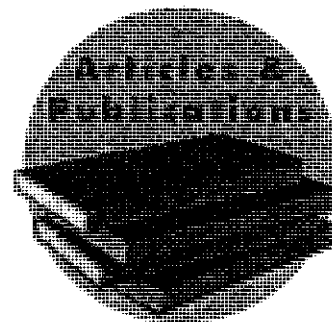
[www.epa.gov/epr](http://www.epa.gov/epr)

This site is dedicated to EPR, a product-oriented approach to sustainable development. Currently, it features examples of public and private sector initiatives to promote EPR in electronic and packaging products.

▼  
**The Wireless Foundation**

[www.wirelessfoundation.org](http://www.wirelessfoundation.org)

This organization collects and distributes cellular phones for neighborhood crime prevention, domestic safety, and education programs.



▼  
**Analysis of Five Community Consumer/Residential Collections: End-of-Life Electronic and Electrical Equipment**

U.S. EPA. 1999.

This publication is a collection of data from five electronics recycling pilots and ongoing programs.

<[www.epa.gov/region01/programs/csifinal.pdf](http://www.epa.gov/region01/programs/csifinal.pdf)>

▼  
**Designing for the Environment: A Design Guide for Information and Technology Equipment**

American Plastics Council. 1999.

This guide provides a synopsis of basic environmental design considerations applicable to computers and other information technology equipment.

<[www.plasticsresource.com/reading\\_room/reports/report\\_enviro\\_design.html](http://www.plasticsresource.com/reading_room/reports/report_enviro_design.html)>

▼  
**Eco-Design Checklists**

Surrey Institute of Art and Design—The Centre for Sustainable Design. 1999.

This is a guide for electronics manufacturers, "systems integrators," and suppliers of components and sub-assemblies in planning for environmental design.

<[www.cfsd.org.uk/nepd/etmuel/checklist.htm#ecodcheck](http://www.cfsd.org.uk/nepd/etmuel/checklist.htm#ecodcheck)>

▼  
**End-of-Life Computer and Electronics Recovery Options for the Mid-Atlantic States**

Mid-Atlantic Consortium of Recycling and Economic Development Officials.  
March 2000.

As computers quickly become outdated, electronics disposal is becoming a major issue. This report discusses electronics recovery options and models, plus markets and economic development. It identifies key issues to consider for policy development and makes recommendations for further investigation.

<[www.libertynet.org/macredo/eprprj.htm](http://www.libertynet.org/macredo/eprprj.htm)>

▼  
**Plug into Electronics Reuse Institute for Local Self-Reliance. 1997.**

This report provides contact information on 150 computer recovery facilities as well as indepth profiles of the operating experiences of 13 that focus on computer reuse. Operations profiled are all replicable and many are interested in starting similar enterprises in other cities. \$15.

<[www.ilsr.org/pubs/pubswtow.html](http://www.ilsr.org/pubs/pubswtow.html)>

▼  
**Residential Collection of Household End-of-Life Electrical and Electronic Equipment Pilot Collection Project**

U.S. EPA. 1998.

This report features results from two EPA-sponsored residential collection pilot programs held in 1996 and 1997 in Binghamton, New York, and Somerville, Massachusetts. Copies are available by contacting Fred Friedman with the USEPA-New England RCRA Research Library at 617 918-1807 or

<[friedman.fred@epa.gov](mailto:friedman.fred@epa.gov)>.

▼  
**San Jose Computer Collection and Recycling Pilot**

EPA & Vista Environmental.  
July 1998.

Prepared by Vista Environmental for EPA's Common Sense Initiative, this document discusses a pilot project that examined the potential for collecting used computer equipment at retail stores for recycling. The report identifies potential barriers and examines economic feasibility. It concludes that while the cost of recycling computer monitors is substantial, it is nevertheless lower than costs associated with landfilling used computer equipment.

<[www.vista.simplenet.com/downReport.htm](http://www.vista.simplenet.com/downReport.htm)>

**The following is a list of articles from various trade publications that cover the topic of electronics recycling and reuse. Call the WasteWise Helpline at 800 372-9473 for information on contacting the trade publications.**

▼  
**"Demanufacturing: The emergence of an urban industry"**

*Resource Recycling*. February 2000.

As technology advances, many computers once considered top-of-the-line are now technological relics. To electronics demanufacturers, however, piles of obsolete computers can turn into virtual gold mines. Each computer contains valuable components such as gold, silver, and copper that can be salvaged and recycled. This article discusses the challenges demanufacturers face and offers projections for this industry's future expansion.

▼  
**"Reach out and touch someone: Cellular telephone refurbishers foresee expanding global market"**

*Waste News*. October 18, 1999.

Two Michigan-based companies, ReCellular and Telesource, found a profitable niche market in refurbishing cellular telephones. Industrywide, an estimated \$500 million worth of cell phones will be refurbished and resold this year—more than twice the amount 5 years ago. This article discusses how the market for refurbished cellular phones works.

▼  
**"Making electronic recycling connections"**

*Recycling Today*. September 1999.

Of the estimated 14 to 20 million computers that become outdated each year, only 30 percent are resalable. The remaining 70 percent are usually thrown away if they are not recycled. This article answers the following questions: what are the benefits of recycling computers; what are some of the best electronics recycling methods; how can computer recycling become profitable; what are the dangers in recovering materials; and where is electronics recycling headed?

▼  
**"Electronic product discards"**

*Resource Recycling*. June 1999.

This article highlights public and private programs that promote electronics reuse and recycling. Topics include a "Computers for Learning" program, electronic product reuse organizations and collections, and how manufacturers handle electronic product discards. The article also includes a list of Internet resources.

## APPENDIX Q

### Grasscycling/Landscape Waste Reduction



## Keeping Green Landscapers Guide

# Managing a Waste-Efficient Landscape

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Realistically, every landscape requires some degree of maintenance that will produce trimmings, no matter how carefully it was designed or installed to prevent waste. These trimmings can be managed in many ways, including composting. However, from an efficiency perspective the best way to manage landscape trimmings is to simply leave them in place! Nowhere is this practice easier than on those green areas that make up a huge part of California's landscapes—lawns.

## Lawns/Turf

As we continually note, yard trimmings make up the largest single component of California's municipal waste. It is estimated that grass clippings make up about half of all yard trimmings over the course of the year, and much more in areas with expansive suburban lawns.

University studies have shown that the average California lawn generates 300 to 400 pounds of grass clippings per 1000 square feet annually. This can be as much as eight tons per acre each year! Significant quantities of water, fertilizer, and labor go into producing all those clippings, and it is a shame to see that all go to waste if the clippings are thrown away. By practicing responsible turf management, including "grasscycling," a landscaper can both reduce those inputs, and at the same time eliminate the waste.

### What Is Responsible Turf Management?

Responsible turf management refers to installing and maintaining a lawn in an environmentally sound and cost effective manner. By doing it right from the start, turf can be managed with only moderate water and fertilizer requirements, and the headaches of thatch removal and disease control can also be minimized.

**Installation.** By preparing the area correctly before laying turf or seeding, long term management can be eased significantly. Make sure that the area has good drainage, achieved through proper grading and underground conduits. Avoid installing turf on berms or severe slopes unless necessary. Other drought resistant ground covers might serve the purpose better than turf. Whether native soils are sandy or clay, the turf will benefit from the addition and deep tilling of well composted organic material. This helps the soil and grass plants better manage water and nutrients. Allowing for deep root growth will contribute to overall turf health and resilience.

**Watering.** Turfgrasses vary in their need for water. Most grasses in California need about one inch of water every five to seven days in the growing season and much less during

slow growth months. Lawns watered too frequently tend to develop shallow root systems which may make them more susceptible to stress and disease. Deep, infrequent watering produces a deeper, extensive root system which enables turf to resist disease and stress. Overwatering not only is wasteful, it also causes lawns to grow faster and require more mowing.

It is a good idea to regularly check irrigation systems for even coverage. A simple audit can be performed by placing empty containers in a number of locations around a lawn, and then run the system. (Empty tuna cans work great, and are just about two inches deep.) See if the containers fill evenly, and how much water is delivered during a regular watering. Adjust sprinkler heads to avoid dry or soggy spots.

The best time to water is early morning, as less water is lost due to evaporation, and water pressure is at its peak. Try to avoid watering in the evening because prolonged damp conditions may encourage disease development.

**Fertilizing.** Proper fertilization is essential in maintaining a healthy lawn. However, over-fertilization can weaken a lawn by causing excessive and succulent top growth. For moderate, even growth, use a combination of fast acting fertilizers (ammonium nitrate, ammonium sulfate, or urea) and slow release nitrogen sources such as sulfur-coated urea, urea formaldehyde, IBDU or organic fertilizers. Avoid using large quantities of fast acting fertilizers. These fertilizers produce very fast growth for short periods.

Check with a local turf specialist to determine the fertilization rates for your grass type. Chances are you can get by with less than the recommended amount of fertilizer and still have a beautiful lawn.

Regardless of the grass type and its fertility needs, as a general rule, it is better for the lawn, and grasscycling, to apply smaller quantities of fertilizer more frequently rather than larger amounts less frequently.

**What Is "Grasscycling"?** Grasscycling is the natural practice of leaving clippings on the lawn when mowing. It is obvious how this practice can save resources like landfill space, but there are additional benefits as well. The clippings quickly decompose, returning nutrients to the soil. Grasscycling, in conjunction with the practice of reducing water and fertilizer inputs, can reduce mowing time in addition to disposal costs.

#### **State Capitol Demonstration Area**

A cooperative effort between the California Integrated Waste Management Board, the Office of Buildings and Grounds (OBG), and the Toro Company resulted in a demonstration program within the Capitol's grounds. The fountain circle on the west side of the Capitol is part of the demonstration. This area used to take over two hours to mow with a conventional bagging mower, but now only takes 45 minutes. The initial limited scope of the demonstration has been well received and OBG is now converting its entire fleet of mowers to mulchers.

Many people treat their lawns like a "crop"--they (over) water and (over) fertilize their lawns to encourage excessive growth. The harvested "crop" (those grass clippings) is then bagged and transported to a landfill. What a waste! Proper mowing, watering, and fertilizing practices result in more moderate turf growth yet still produce a healthy, green

lawn. Grasscycling can be practiced on any healthy lawn as long as responsible turf management guidelines are followed.

The nitrogen contained in grass clippings removed from a lawn almost equals the recommended application rate for healthy turf (about 5 pounds of nitrogen per year per 1000 square feet). While some of this nitrogen is lost through the decomposition of the clippings, leaving the clippings on the lawn by grasscycling can have the overall impact of reducing fertilization requirements by 15 to 25 percent or more. Similar savings on water use are possible.

**Mowing.** Proper mowing is required for successful grasscycling. It is best to cut grass when the surface is dry (no drops of moisture on the grass), and keep mower blades sharp. Follow the "1/3 rule": mow the lawn often enough so that no more than 1/3 of the length of the grass blade is removed in any one mowing.

### Mowing Guide For Common California Turfgrass

| Grass Type           | Mower Setting (inches) | Mow When Grass Reaches This Height (inches) |
|----------------------|------------------------|---|
| Bentgrass            | 1/2 - 1                | 3/4 - 1 1/2                                 |
| Bermudagrass(common) | 1 1 1/2                | 1 1/2 - 2 1/4                               |
| Kentucky Bluegrass   | 1 1/2 - 2 1/2          | 2 1/4 - 3 3/4                               |
| Kikuyugrass          | 1 - 1 1/2              | 1 1/2 - 2 1/4                               |
| Perennial Ryegrass   | 1 1/2 - 2 1/2          | 2 1/4 - 3 3/4                               |
| Tall Fescue          | 1 1/2 -3               | 2 1/4 - 4 1/2                               |
| St. Augustine        | 1 - 2                  | 1 1/2 - 3                                   |
| Zoysia               | 1/2 - 1 1/2            | 3/4 - 2 1/4                                 |

Proper mowing will produce short clippings that will not cover up the grass surface. You may have to cut the lawn more frequently, or double cut, when the lawn is growing fast, such as in the spring, but much less when the turf is growing slowly. Additionally, in many areas of California, raising the mowing height in the summer encourages deeper roots and protects grass from drought and heat damage.

You can grasscycle with most any mower. The mower collection bag can be removed to allow clippings to drop on the lawn. However, if your mower does not have a safety flap covering the opening where the bag fits into the chute, or a plug for the chute, contact your local retailer to purchase a retrofit kit. A bit of experimentation might be needed to keep clippings from clumping when using a conventional mower. Please be sure not to compromise your mower's safety systems.

Additionally, most lawnmower manufacturers have developed mulching or recycling mowers which cut grass blades into small pieces and force them into the turf. Mulching or recycling mowers make grasscycling easy. Studies have shown that seasonal mowing time can be reduced by 50 percent or more since the bagging and disposal of clippings is eliminated. Cost savings can even be realized in hidden ways. By not handling heavy bags of clippings, back injuries and other physical maladies can be avoided—a real savings on

workers compensation!

Clearly there are times when collecting the clippings is necessary, such as when there are excessive leaves on the turf, or when the grass is too wet. This guide will discuss options for managing those clippings by composting later. In the meantime, note that several brands of recycling mowers are available in California to help landscapers grasscycle. If you are thinking of replacing some of your mowers soon, seriously consider purchasing mowers with grasscycling capabilities.

The State has worked closely with the University of California Cooperative Extension in the development of informational materials to educate the public as well as the landscaping industry about grasscycling. Close cooperation with the California Landscape Contractors Association (who officially endorse grasscycling), the Northern California Turf and Landscape Council, and the Southern California Turfgrass Council has resulted in widespread interest and increasing conversion to this time, money, and landfill-saving practice.

## **Common Questions About Grasscycling**

### **Does grasscycling cause thatch build-up? NO!**

Research has shown that grass roots are the primary cause of thatch, not grass clippings. Thatch is composed mainly of roots, stems, rhizomes, crowns, and stolons. These plant materials contain large amounts of lignin (wood) and decompose slowly. Grass clippings are approximately 80-85 percent water with only small amounts of lignin, and decompose rapidly. Some grasses such as bermudagrass and kikuyugrass are more thatch-prone than others.

A small amount of thatch (approximately 1/2 inch) is actually beneficial to a lawn, providing insulation to roots and serving as a mulch to prevent excessive water evaporation and soil compaction. It may also create a cushioning effect for lawn play.

### **Does grasscycling spread lawn disease? NO!**

Improper watering and fertilizing are the primary cause of disease spread. If an accommodating environment for turfgrass disease is present, infestation will occur whether or not clippings are collected.

### **Will grasscycling make my lawn look bad? NO!**

If a lawn is properly mowed, watered, and fertilized, grasscycling can actually produce a healthier-looking lawn. It is important to cut the lawn frequently to produce small clippings that will fall between the standing blades and decompose quickly. However, if a lawn is not cut frequently enough and long clippings are left on the lawn, it may produce a "hay-like" look which can be unsightly.

Many golf courses and parks have practiced grasscycling for years. Ninety-eight percent of the residential participants in a grasscycling study conducted by Texas A&M reported that they will never bag their clippings again!

### **Just remember, grasscycling:**

- Saves time (no more bagging)

- Saves money (less water and fertilizer are needed, no landfill fees)
- Encourages a healthier lawn (clippings contain valuable nutrients)
- Saves energy (mowing time, hauling to the landfill)
- Saves valuable landfill space

### **Are there alternatives to grasscycling? YES!**

Grasscycling is not feasible in every situation. Prolonged wet weather, mechanical breakdown of mowers, or infrequent mowing are situations where grass clippings should probably be bagged since an excessive volume of clippings may be generated. But do not throw the clippings away!

Grass clippings are an excellent addition to a backyard compost pile. Clippings can also be used as mulch to provide weed control and prevent moisture loss around flower beds, trees, and shrubs. Mulching with clippings should be avoided, however, if they are of an invasive variety, such as bermudagrass, or if herbicides have been applied recently to the lawn.

[More grasscycling information.](#)



## **Trees/Shrubs/Flowers**

While managing grass clippings can be as simple as leaving them where they fall, clearly there are trimmings and other debris that come from trees, shrubs, and flowers that require a bit more attention. However, the concepts discussed in the preceding section on grasscycling—proper establishment, water, fertilization, and trimming—hold true for the waste efficient care of large plants. Basically, the more natural and moderate a plant's growth, the less waste producing maintenance will be required in the long run. Additionally, the trimmings that are produced can be used on the spot, as a mulch, to encourage the desired plant health and growth patterns.

The easiest way to manage trees is by natural neglect—that is, let a tree develop and grow in its most natural manner possible rather than fighting it with loppers. Hopefully, the trees of a landscape were selected and planted with consideration to location (e.g. not under powerlines, or too close to each other or structures) so that they could mature without excessive trimming. Of course, early life shaping of a tree is important to ensure a safe structure, but once established all that is usually necessary is vigilance—watching for any injury or disease, or unsafe branch development.

Branches that must be removed can be chipped or shredded and used as a mulch around the tree. Since most trees do best with minimal disturbance within their drip line, the designation of this area as a natural mulch repository can be very beneficial. The leaves of deciduous trees, as well as the ongoing drop of evergreens, can also be used as a mulch within this zone. Through the work of beneficial bacteria, fungus, and earthworms, most organic mulches will be "consumed" over the course of a few seasons, slowly feeding the trees while conserving moisture, suppressing weeds, and moderating ground temperature. Shrubbery can be treated in much the same natural way as trees. Careful selection and placement of larger woody perennials will result in minimal maintenance and waste generation. Often, though, shrubs must be pruned to encourage bloom production or to achieve a desired shape. Care should be given to the timing of such pruning since many

shrubs set flowers on second year growth. Also, new growth in the spring provides a shrub with a fresh set of energy-producing leaves. Continued removal of this growth by excessive pruning can lead to plant stress and ill health. If unsure of the best pruning time for a particular plant, consult your nursery expert or the University of California Cooperative Extension horticultural advisor.

The trimmings from most shrubbery can also be chipped or shredded and used as a mulch underneath the plants. Not only does this help conserve moisture and suppress weeds, but it can be an attractive alternative to other decorative mulches commonly used, and it can be far less expensive to produce your own mulch rather than buy.

Try to avoid using diseased or seed bearing material directly as a mulch under trees or shrubs. This material can be processed by first composting (see [Composting section](#)) in a hot pile to kill pathogens and seeds before use as a mulch.

Perennial flowering plants may or may not produce much waste, depending on whether the plant dies back in the winter, or simply goes semidormant before blooming the following year. Most "color" perennials require some maintenance to keep their shape, control unsightly spread, or to clean up dead portions. These materials can be added to a compost operation for processing into an amendment or mulch.

Aesthetic life extended by "dead-heading," or picking off spent flowers to encourage continuing bloom. When annuals must be pulled due to client demand, consider a donation to a community garden so that the plants can be put to continued good use, and kept out of the landfill. Annuals that have expired can also be composted. For a long term, lower-waste option, consider replacing some annual color with a mixture of perennials that will bloom in succession throughout the year.

As noted in the previous section on landscape establishment, healthy soil, appropriate plant selection, proper design and placement, and controlled irrigation will go a long way toward producing a healthy, attractive landscape that requires minimal waste producing maintenance. The subsequent use of the leaves and trimmings that are produced, as a mulch or compost, will contribute to the landscape's health, and your time and money savings.



## Checklist

Use this list to help you do your part by reusing clippings and trimmings by grasscycling and mulching. It's good for your lawn, your plants, and your community.

- Turf areas have been installed properly, with adequate soil preparation and appropriate grass variety.
- Turf is being deep watered evenly at a rate appropriate for the grass variety, climate, and time of year.
- Turf is being fertilized moderately with slow release fertilizers only as needed.
- Turf is being mowed at a height and frequency that allows for grasscycling, the natural recycling of clippings by leaving them on the lawn.
- Any clippings that must be collected are being used as a mulch, composted or delivered to an organic material recycler.

- Trees and shrubs are allowed to grow in natural shapes with minimal pruning.
- Trimmings from trees and shrubs are chipped and used as a mulch, composted, or delivered to an organic material recycler.
- Annual and perennial color is managed to extend bloom, maintain plant shape, and minimize waste.
- Weeds are controlled with mulch layer, fabric, cultivation, or water management to prevent nutrient loss and waste generation.

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Last updated: August 07, 2000

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**Keeping Green Landscapers Guide**

# Closing the Loop: Buying Recycled

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The landscaping of a front yard, backyard, or business grounds is a long-term investment. With a little forethought, this investment can be managed to reduce the additional costs of ongoing maintenance while reducing the amount of waste produced by such projects. Furthermore, the establishment of a landscape provides the opportunity to use environmentally and economically sound products.

Coincidentally, current recycling efforts underway throughout California have made available many new products that contain or use recycled materials. By using "recycled-content" landscaping products, virgin natural resources are conserved, markets for the collected recyclable materials are strengthened, and residents and professionals can save money. This section gives an overview of landscaping materials that help to "close the loop" of recycling, and prevent waste.

## **Organics**

### **Soil Amendments and Mulches**

There are many soil enhancement products on the market that contain up to 100 percent recycled content. The CIWMB Compost Market Development section maintains an informal recycled-content Compost and Mulch Source List. These enhancements can improve soil health, which improves plant health, necessitating less maintenance.

Compost, which has been used by farmers for centuries, is a ready-to-use soil enricher that looks and feels like dark, crumbly soil. It is made from recycled organic matter, and has numerous beneficial effects both before and after planting as a soil conditioner and fertilizer. Compost enhances soil structure, texture, and aeration as well as improves moisture regulation. Compost loosens clay soils to improve drainage, and helps sandy soils retain water. Adding compost to soils aids in erosion control, promotes soil fertility, and stimulates healthy root development in plants. It also provides slow-release nutrients that feed plants on a constant basis, in contrast to many synthetic fertilizers that cause spurts of growth, often increasing the need for pruning, trimming, and mowing.

Compost can also be applied to established turf area and planting beds. There are two ways to add compost to lawns—by aerating and applying compost into the holes made by the aerator, or simply by sprinkling a layer on top, called top dressing. In the planting bed areas a top dressing of compost once or twice a year will help to ensure a beautiful garden. Additional applications throughout the year could benefit the garden and will not damage the plants. You can either leave the compost on the soil surface as a mulch or work it into the soil.



Mulch is any material (wood chips, compost, paper, shredded tires, rocks) placed over the soil surface to reduce evaporation and erosion, prevent weed growth, and insulate plants from extreme temperature changes. There are many sources of recycled-content mulch in California. Organic mulches can be applied 3-6" deep on top of your soil. Do not bury or dig in the mulch; just keep it on the surface. It is also best to keep mulch a few inches away from the trunks of trees to prevent fungal infections. Mulching provides ideal, moist conditions for healthy micro-organism and macro-organism populations. These two populations will work together to "rototill" the soil and increase the overall health and structure of the soil.



## **Other Products**

### **Landscaping Supplies--Purchasing and Packaging**

The first step in waste reduction takes place when a product is purchased. Look for landscaping supplies that are available without excess packaging, such as in bulk form. Consumers can influence manufacturers to produce products with minimal packaging or packaging containing recycled content by "voting with their dollars," or even contacting manufacturers directly and expressing purchase preferences.

As many large scale landscapers know, some fertilizers and pesticides can be purchased in bulk quantities, reusable containers, or watersoluble packages. Bulk packaging reduces the amount of waste per unit of product, and usually costs less. Reusable packages are designed to be returned to the manufacturer or distributor to be refilled. Some manufacturers produce water-soluble packaging that is incorporated into the final product.

In the landscape industry, the reuse or recycling of plant containers can have a dramatic impact on the waste stream from landscape operations. Nurseries may accept certain empty plastic flats, as well as plastic and wood plant containers, for reuse. Wood containers can be reused as decorative planters, cut up into stakes, or ground up for mulch. Plastic containers that are not reused can be recycled and incorporated into products such as plastic lumber for landscaping timbers, benches, or playground equipment. Both large and small generators of used containers should consider "material exchange" services, such as CALMAX™, and trade to find individuals interested in reusing these materials. For more information on CALMAX™, see the References and Resources section of this guide.

### **Landscape Edging**

Landscape edging helps to separate one spreading or invasive plant from another, or simply defines areas within a landscape. The requirements of a given landscape make selection and installation of edging materials relatively important. Small differences in products can result in long-term savings for the property owner and maintenance contractor. Effective containment and durability save maintenance dollars in the future.

Begin by considering what type of edging material is best to use. Available materials include poly/vinyl, aluminum, steel, wood, and even concrete. By asking your landscape supplier you should be able to find materials that are either 100 percent recycled or have some recycled content. Other materials that can be reused as edging include old bricks,

broken chunks of concrete, rocks dug up during the prepping of a yard, or other materials that fit into your designed landscape.

### Used Tires

Californians generate approximately 30 million used tires each year. Old fashion tire "dumps," aside from being illegal, are a real environmental hazard, posing extreme fire risk as well as being a breeding ground for mosquitos and other disease carrying organisms. Landfill disposal of tires is very difficult. State law does not allow disposal of whole tires since they tend to "float" to the surface. They must be first cut, chipped, or shredded. New technologies can turn waste tires into a variety of products, including stylized "pavers"—colored bricks used in patio and pathway construction.

Another new and innovative product for high traffic turf areas is "crumb rubber," made by reducing scrap tires into very small pieces which then can be combined with composted organic materials and used as an amendment. The main benefit of using ground tires as a soil amendment is the reduction in soil compaction. The incorporation of crumb rubber during soil preparation can promote earlier turf growth, build stronger and healthier root systems, promote drainage, grow turf that will bounce back after continued hard use, and lower maintenance cost.



### Checklist

Use this checklist to help you do your part to help California close the loop by buying and using recycled-content products.

- New products made from recycled materials are used.
- Composts and mulches are made from recycled organic material to help prepare and enhance landscapes.
- Material exchanges, such as CALMAX™, have been checked for reusable items like plant pots, wood, and equipment.
- Recycled-content hardscaping, such as edging, decking, and patios, are used where possible.

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**Keeping Green Landscapers Guide**

# Composting

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## On Site

**What Is Composting and Why Do It?** Composting, nature's own way of recycling, is the controlled decomposition of organic material such as leaves, twigs, grass clippings, and vegetable food waste. Compost is the soil amendment product that results from proper composting. Whether it's done on site, at the point of waste generation, or in a large scale, centralized facility, composting helps to keep the high volume of organic material out of landfills and turns it into a useful product. Onsite composting reduces the cost of hauling materials and is generally exempted from solid waste regulations. Large scale facilities can handle more material and potentially produce a more consistent product, but may be faced with regulatory issues.

The following sections provide information to get you started composting at any scale. The principles of composting are the same if you have one cubic yard or many hundreds. Recent regulatory developments may allow landscapers to process materials they generate without excessive state-level, solid waste regulatory burden as discussed under the offsite section. However, since composting involves the decay of organic wastes, people who choose to compost need to be sensitive to the impacts their operations could have on others. Noise, dust, and odor are common complaints about poorly run operations. It's best to be as good a neighbor as possible, to insure minimal impacts.

However you go about doing it, composting can be very cost effective, and compost is great for your gardens and landscaping, saving money spent on purchasing soil conditioners, mulch, and fertilizer.

### Composting—Small and Easy

Composting can be done in most backyards in a homemade or manufactured composting bin or an open pile (some cities do require enclosed bins). Businesses, schools, and other facilities with adequate yard area can also easily compost. Professional landscapers should consider offering the service of maintaining a compost bin or pile for their clients. This could save trips to the dump, and produce compost for use at that account.

Consider contacting your city or county government for information about free composting workshops and discounted composting bins. You can obtain many ready-to-use bins through retail or mail-order establishments. Even an old garbage can may be used for composting if you punch holes in the sides and bottom. For a description of how to build your own bin or a list of manufactured home composting bins, call the California

Integrated Waste Management Board at (800) CA-WASTE or visit our [online compost bin shopping guide](#).

### **Recipe for Composting**

While a multitude of organisms, fungus, and bacteria are involved in the overall process, there are four basic ingredients for composting: nitrogen, carbon, water and air. Composting is a lot like cooking, and the easiest compost recipe calls for blending roughly equal parts of green or wet material (which is high in nitrogen) and brown or dry material (which is high in carbon). Simply layer or mix these materials in a pile or enclosure; chop or shred large pieces to 12" or shorter. Water and fluff to add air. Then leave it to the microorganisms which will break down the material over time.

**Nitrogen.** Grass clippings, landscape trimmings, and green garden waste are ideal sources of nitrogen for composting. Vegetable and fruit trimmings and peels can also provide nitrogen. To reduce the potential for pests or odors, it is best to avoid meat or dairy scraps and bury any food scraps deep within the compost pile.

**Carbon.** Dry yard and garden material such as dry leaves, twigs, or hay can provide the carbon balance for a compost pile. Untreated wood chips and sawdust are a powerful carbon source which may be useful if the pile contains excess nitrogen.

**Water.** One of the most common mistakes in composting is letting the pile get too dry. Your compost pile should be moist as a wrung-out sponge. A moisture content of 40 to 60 percent is preferable. To test for adequate moisture, reach into your compost pile and grab a handful of material and squeeze it; if a few drops of water come out, it's probably got enough moisture, if it doesn't, add water. When you water, it is best to put a hose into the pile so that you aren't just wetting the top. You can also water as you are turning the pile. During dry weather, you may have to add water regularly. A properly constructed compost pile will drain excess water and not become soggy.

**Air.** The bacteria and fungus that are in your compost pile need oxygen to live and work. If your pile is too dense or becomes too wet, the air supply to the inside is cut off and the beneficial organisms die. Decomposition will slow and an offensive odor may arise. To avoid this and speed the process, turn and fluff the pile with a pitchfork often, perhaps weekly. You can also turn the pile by just re-piling it into a new pile; many composting bins make this easy to do by coming apart so you can easily re-pile the old pile back into the bin.

### **Time, Temperature, Style, and Size**

Composting can be done in a hot, fast, "gourmet" fashion by the active gardener or in a more casual manner. Both ways will have a positive effect on the environment and produce useable compost. It just depends on how much time you want to spend with your compost pile and how fast you want the compost.

"Gourmet" compost piles that have the right blend of nitrogen (greens) and carbon (browns) and are kept moist and fluffed regularly, will heat up to temperatures of 120 to 140 degrees Fahrenheit. These high temperatures will kill most weed seeds and speed up the process so that the "compost" could be ready in just a few months.

"Casual" compost piles are also quite workable since compost will "happen" even if you just pile on yard and food waste, water sporadically, and wait. The pile won't get as hot,

so it won't decompose as quickly and may not kill weed seeds. Casual composting can take more time.

Ideally, the compost pile should be at least three feet wide by three feet deep by three feet tall (one cubic yard). This size provides enough food and insulation to keep the organisms warm and happy and working hard. However, piles can be larger or smaller and work just fine if managed well.

### **How to tell when it's done**

Your compost is finished when the original material has been transformed into a uniform dark brown, crumbly product with a pleasant earthy aroma. There may be a few chunks of woody material left; these can be screened out and put back into a new pile.

You may want to stop adding to your compost pile after it gets to optimal size (see above) and start a new pile so that your first pile can finish decomposing (during which time the temperature will drop).

Composting is best learned while doing. Through practice and observation you will find what works best for your situation, and you can modify the process to suit your needs. There are also a number of books written on small scale composting; check your local library or bookstore. Also, remember to check with your local government for workshops, handouts, or guides on composting.



## **Off Site**

### **Composting—Medium to Large**

California law currently defines a composting facility as a solid waste facility. Until recently, that meant any composting activity of significance (i.e., larger than a backyard pile) required complicated permitting. New regulations have approached the issue of composting as an activity to encourage, and present a structure that allows medium-sized operations to site and operate with minimal solid waste permitting requirements. For more information, please refer to [Composting Operations Regulatory Requirements](#).

### **Regulations**

However, regardless of the recent reforms in compost regulations from a solid waste perspective, there are other environmental agencies that may also have requirements for composting operations, such as the Regional Water Quality Control Board, the Air Quality Management District, the local planning department, and even the local fire district.

Information on how a composting activity of given size and feedstock fits into regulation, and what other licenses or permits are required, can be obtained by contacting your [local enforcement agency](#) (usually the county environmental health department) or the CIWMB's Permitting and Enforcement division.

### **Equipment and Cost**

From a purely technical perspective, medium scale composting offers opportunities and efficiencies over smaller scale operations. However, while the fundamentals of composting remain the same whether it's one cubic yard or 1000, certain management issues become more critical as volumes increase. Managing a small home compost pile requires little

more than a pitchfork. However, managing many hundreds of cubic yards at a time may require some heavier equipment. Small motorized loaders with a front bucket or blade, sometimes called skip loaders, are useful tools for moving and lifting composting materials. Preprocessing larger trimmings will facilitate decomposition, so a chipper or grinder may be useful. In the end, screening the compost separates larger pieces from the finer compost and creates a higher quality product. The larger pieces can be returned to the composting process, or further refined and used as a mulch.

Clearly, the larger the operation, the more expensive it becomes. However, larger piles will decompose more rapidly than small, and larger volumes produce a large quantity of consistent product. The marginal costs of production—the dollars spent per ton of material—generally decreases as an operation grows. Additionally, the avoided disposal costs and avoided soil amendment costs may justify the investment in equipment to manage large amounts of material.

### **Size and Temperature**

Caution, however, must be taken to avoid piling materials too high, or getting too hot. While a hot pile is desirable to kill weeds and pathogens, temperatures should be managed and kept below 150 degrees Fahrenheit to avoid destroying beneficial organisms and control fire danger. With the right combination of ingredients and weather conditions, the danger of spontaneous combustion is very real if compost piles are allowed to stack much over ten feet high. The heat from microbes consuming the composting material will build up through a "chimney" effect. Once temperatures reach approximately 170 degrees, the microbes are killed off, but a biochemical reaction takes over that can eventually result in flames. Nevertheless, the water vapor or steam released from an active, healthy compost pile should not be mistaken as fire.

Perhaps your landscaping activities generate more trimmings than you are able to managed yourself or doing your own composting isn't feasible. There are two good reasons to deliver materials to an organics recycler or composter instead of a landfill: (1) the "tipping fee" is usually less at a recycler's operation than at disposal and (2) the recycler has a supply of soil amendments that your accounts can use.

If your local government doesn't know of one, the CIWMB can probably help you find an organics recycler who will process your trimmings, and also be a source of soil amendments for your landscaping projects (see reference section for contact number.)



### **Checklist**

Use this checklist to help you do your part by composting organic materials for yourself or your clients, or deliver your trimmings to a commercial organics recycler.

- Compost piles or bins are located in an area with easy access that is aesthetically acceptable.
- Compost "ingredients" are added and blended to balance the carbon and nitrogen ratios. The right mix is easy to do mixing equal parts "green" and "brown."
- The compost is kept sufficiently moist, like a wrung-out sponge, to keep the microbes happily decomposing.
- The compost pile is turned, fluffed, or otherwise "aerated" to provide oxygen to the

microbe and prevent odor.

- The finished compost is used as a soil amendment or mulch to naturally return nutrients to the landscape and save money on amendment purchases.
- Diseased plant material and mature weeds with seeds should only be added to a "hot" pile to be sterilized.
- Larger-scale composting must be performed in a responsible, good-neighborly manner.
- State and local laws may require permitting or licensing of larger composting facilities.
- Take excess material to local, commercial-scale composters will likely accept clean landscape trimmings and sell quality organic soil amendment for landscaping uses.

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Last updated: April 13, 2000

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Landscape Waste Prevention <http://www.ciwmb.ca.gov/Organics/Landscaping/>

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**Keeping Green Landscapers Guide**

## An Overview of Solid Waste Issues

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California is known for its landscapes, both natural and created. The expansive yards and "Sunset" gardens of the state's urban and suburban communities are nearly as famous as the coastline, oak-dotted rolling hills, and the grand Sierra. But while the natural beauty of the Golden State has been gifted to its fortunate residents by Nature, the created beauty comes at a price.

To develop and maintain the cherished landscapes that frame our homes and buildings requires significant inputs. Water, soil amendments, fertilizer, hardscaping, and other natural and manufactured resources come together to give us the greenery we surround ourselves with. And out of these landscapes come the trimmings—grass, leaves, branches, and weeds—that need to be managed. Conventionally this has meant disposal: stuffing yard waste into garbage cans, piling it in the street, or hauling it to the dump. For many reasons this convention needs to change.

California generated over 40 million tons of municipal solid waste in 1990. At over eight pounds per person per day, Californians produce more waste than any other population. Official numbers derived from mandated studies put yard waste at about 15 percent of the total, or close to six million tons each year. Many believe that these numbers may be artificially low because the waste studies were performed during drought years when plant and weed growth was slowed by water restrictions.

Compounding concerns about the burden on California's disposal systems were studies performed in the late 1980s, which indicated that the state was running out of landfill capacity. While some communities did have access to landfills that would, at current rates of filling, last for decades, 70 percent of the state's population lived in counties that would face a capacity shortage within only 15 years. More frightening, the studies indicated 40 percent of the state's population lived in ten counties with less than five years of remaining permitted landfill capacity. Without a decrease in filling rates or the development of new capacity, it was feared that many communities would soon have no place to put their waste.

Recognizing the urgency of this situation, the California Legislature passed the Integrated Waste Management Act of 1989. Often referred to by its Assembly Bill (AB) number, 939, this Act created programs and modified existing laws to better manage the state's residues. One of the most notable components of AB 939, and certainly that which gets the most public attention, is the waste reduction goals it sets. California cities and counties are required to plan for and implement programs to reduce the amount of generated waste that goes to landfills, or other disposal, 25 percent by the year 1995, and 50 percent by the turn of the century.

Additionally, AB 939 set out a preferred approach, or management hierarchy, for dealing with this waste. In order of preference this is: source reduction (also known as waste



prevention), recycling and composting, transformation (which includes incineration), and lastly landfilling. The plans and programs developed by communities should follow this hierarchy in addressing waste issues. Finally, AB 939 created the California Integrated Waste Management Board (CIWMB) to coordinate the development and implementation of programs.

Other states in the U.S. have recognized similar waste management concerns within their borders and have reacted in a variety of ways. Many states have set waste reduction goals, though few are as aggressive as California's 50 percent. On the other hand, some states have gone much further and simply banned the disposal of selected materials, most commonly yard waste. In 1994, nearly half the states had some form of yard waste disposal restriction in place, either at the state or local levels.

So far, legislative measures to restrict the disposal of any nonhazardous waste have not gone far in California. Preferring to leave the decision to local governments who best know what programs are feasible in their communities, the State has simply set goals to achieve. However, these goals should not be taken lightly. To achieve them will require the participation of every waste generator, public and private, and communities will be looking to those that produce the larger portions of the waste stream to help the most.

Practicing waste prevention doesn't just make landscapers good citizens, it also can reduce their costs. Landscapers can save money by not paying to dispose of yard waste and by making their own mulch or compost.

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**Keeping Green Landscapers Guide**

# Establishing a Waste Efficient Landscape

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## Landscape Design and Plant Selection Soil Preparation and Irrigation Systems Checklist

Just as the State of California instituted a hierarchy of preferred waste management practices, with prevention at the top, so too can a landscape be designed from the beginning to prevent or reduce the amount of resources needed to maintain it and the amount of waste it produces. Each region of California has different resource conditions, such as available water, soil type, temperature ranges and lighting. By designing a landscape in an appropriate manner, selecting compatible plants, and installing efficient irrigation systems, a balance can be achieved that fits both the aesthetic needs of the landowner or client, and the resource availability of the region.

Many times a landscape is "inherited"—it is already established and you are simply charged with maintaining it. A transition to a more resource efficient landscape may be a possibility. However, long term resource efficiency improves when planning and preparation can be given attention ahead of time.

### **Landscape Design and Plant Selection**

The first question to ask in considering a landscape is "Why?" Why have a landscape? Why install plants and a lawn instead of decking or pavement? What is it to be used for? Will it be an active recreational space or a quiet, contemplative area for meditative toiling? Whatever the intended use, proper design and plant selection can reduce the amount of waste a landscape generates through maintenance. In the end, that means time and money savings.

Today's waste efficient landscapes use "unthirsty" plants—California natives and drought tolerant exotics. Proper soil preparation, garden layout, and planting time assures that plants can mature into beautiful specimens with minimal trimming. In a word, the modern approach to California landscaping is xeriscaping.

#### **What is xeriscaping?**

Literally, the word xeriscaping comes from a combination of two other words: "xeri-" derived from the Greek word "xeros" for dry; and "-scape," meaning a kind of view or scene. While xeriscape translates to mean "dry scene", in practice xeriscaping means simply landscaping with slow growing, drought tolerant plants to conserve water and reduce yard trimmings.

The practice of xeriscaping will vary from region to region in California. Plants which are appropriate in one climate may not work well in another. The moist northwest may even be considered inhospitable to sturdy plants of the desert south. Landscapes need to be

planned to be compatible with locally available resources, including water, soil types and sunlight.

California's limited supply of water, subject to ever increasing demands, is just one resource saved by xeriscaping. This results in immediate cost savings through lower water bills. Xeriscaping can reduce the amount of plant trimmings which must be disposed of or otherwise managed, thereby helping your community, and ultimately you, to save resources. A reduction in plant trimmings can reduce the amount of labor needed to maintain a given landscape. Or, put another way, reduced plant maintenance allows more time to be spent on other aspects of landscape maintenance, or on another landscape account.

Xeriscapes generally require less fertilizer and pest control measures than traditional landscapes. Because pesticides and fertilizers can inadvertently harm beneficial organisms, as well as impact air and water quality, reducing their use is a good idea. And, of course, using less of these materials saves money.

While indigenous plants are naturally accustomed to local climates and therefore good choices for water and waste efficient landscapes, xeriscaping doesn't mean planting California native plants only. For example, one could draw from many available colorful drought tolerant plants native to other "Mediterranean" climates such as Southern Europe, North Africa, Western Asia, South Africa, and Australia. There are many excellent books that provide further information on this subject (please refer to References and Resources section), as well as a growing number of nurseries that specialized in xeriscape plants.

### **Remember, xeriscaping:**

- Conserves water
- Provides lots of attractive planting options
- Presents minimal pest and disease problems
- Thrives with little fertilization
- Requires low pruning and maintenance
- Saves valuable landfill space
- Saves landscapers time and money

*Landscapes need to be planned to be compatible with locally available resources, including water, soil types, and sunlight.*



## **Soil Preparation and Irrigation Systems**

### **Healthy soils grow healthy plants**

A well drained soil, generally defined as one that can absorb 1/2 inch of water or more per hour, creates a good environment for grass, plants, and trees to set deep roots and take advantage of deep water and nutrients. In the long run this makes for healthy, steady growth with reduced fertilization and irrigation needs. Of course a soil can be too well drained, such as a sandy soil, and need some help to better hold water and nutrients for plants.

The addition of the proper soil amendments can either help a soil drain faster or slower. Well-composted organic material is an ideal amendment that can serve both these purposes. Additionally, a good compost provides a source of slow release nutrients for plants. The balanced growth encouraged by these conditions can reduce pruning maintenance as well as disease and pest pressures.

Having a soil tested for organic and nutrient content is a good idea before the addition of any amendment. The test results can indicate what nutrients are lacking in addition to how much compost or other organic material should be added. Additionally, knowing the attributes of the compost or amendment is wise. Ask the producer of the product for an analysis, or have the material tested by a soils lab. Finally, obtain advice from a horticultural expert regarding the soil types in your area and the needs of specific plants.

For amendments to effectively enhance soil properties, thorough blending or tilling is important in any area that roots will initially grow. The deeper that amendments can be blended into the soil, the better. For lawns, a minimum of six inches is recommended. For most shrubs, digging a donut-shaped ring approximately three or four times the width of the root ball which extends down an additional six inches below the bottom of the root ball is a good idea. The root ball itself should sit on an intact or well-stabilized soil platform.

For most trees, the planting hole preparation is the same as for shrubs, except that minimal amending of native soils is recommended. After planting, start a program of nutritious surface mulching to slowly improve all soil within the trees drip line. Stake a tree on either side and loosely tie it as low as possible for support during its first year to protect and help the tree get established.

Water efficient irrigation systems are also waste efficient. By providing water in moderation, and only to where a landscape requires moisture, excessive plant and weed growth can be avoided. Recent advances in irrigation technology allow for precise delivery of water with very little waste. Drip systems and micro-emitters have become very cost effective when evaluated against water restrictions and rising water costs. The real solid waste benefit of these systems is that water and fertilizer go toward growing the plants desired, preventing nutrient-consuming and waste-generating weed growth in other areas. Always amend and blend a soil prior to installing the irrigation systems to avoid damage to the system.



## Checklist

Use the following list to do your part by designing, installing, or converting landscapes to be low waste, water efficient, easily maintained xeriscapes.

- New landscape has been planned and designed in consideration of use, aesthetics, and resource requirements.
- Plants have been selected and placed with thought given to growth patterns and long term maintenance requirements.
- Soil has been analyzed and prepared for planting using appropriate amendments and tillage.
- Irrigation systems are designed and installed to efficiently water desired plants,

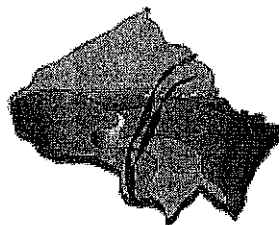
minimizing weeds, waste, and costs.

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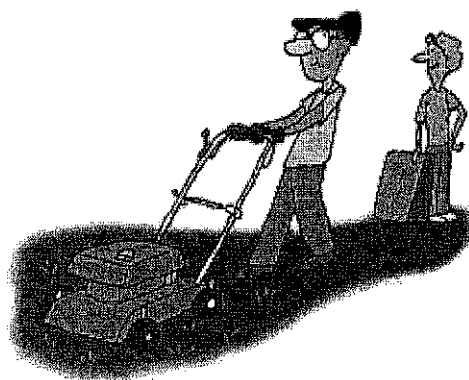
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# DEPARTMENT OF ENVIRONMENTAL PROTECTION

Montgomery County, Maryland



## Grasscycling Guidelines

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[Mowing Schedule](#)

[Basic Mowing Strategy](#)

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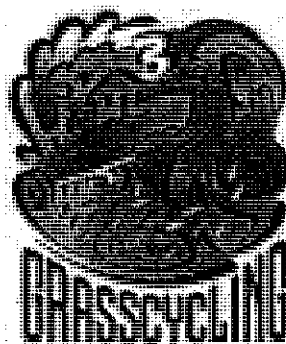
[A Proper Diet](#)

[Soil Testing](#)

[Aeration](#)

[Weeds & Pests](#)

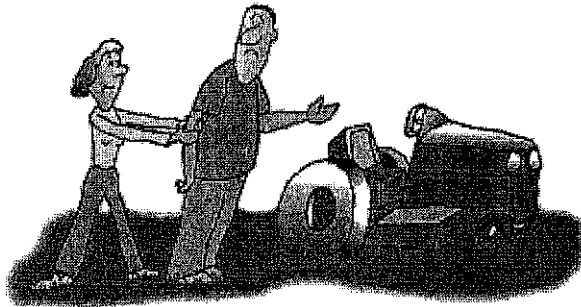
[More Information](#)



Grasscycling is the easy way to a healthy lawn and a great way to recycle valuable nutrients for free. It combines a mowing plan that calls for cutting turf areas with greater frequency *without removing the clippings*, and low-input watering and feeding.

|  |   |
|--|---|
|  | <p>After about two years, many grasscyclers find that they can reduce their nitrogen fertilizer use by 25%.</p> |
|--|---|

## A Proper Mowing Schedule



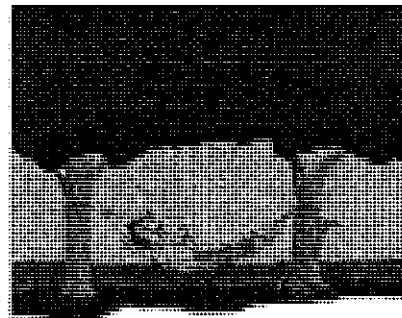
Many homeowners mistakenly cut their lawns once a week. *Grass should be cut when it needs cutting, rather than mowing on an artificially imposed schedule.*

stepped up to once every five to six days.

Decades of field research and experience have demonstrated that mowing frequency should generally be

Cutting more often means that the grass particles are shorter, and filter down to the soil surface, where they quickly break down and release a surprising amount of nutrients -- up to 40 pounds of nitrogen per half-acre lot (average N-P-K analysis of 4-.5-2), in addition to providing micronutrients and organic matter which serves as a mulch to conserve soil moisture and modify temperature extremes.

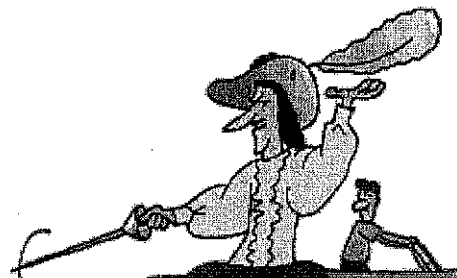
Grasscycling trades off mowing more frequently with actually spending less time and energy on lawn care. For example, by grasscycling, you are not stopping every five-ten minutes to empty the mower bag, putting clippings into a bag or container, and dragging heavy clippings to the curb. In fact, grasscycling typically saves 40 percent of the time traditionally spent on lawn chores.



|  |  |
|--|--|
|  | <p>Grasscycling means mowing less often during the summer when growth slows down. Avoid mowing on Code Red Ozone Days, you'll spare yourself exposure to smog and avoid contributing to unhealthy air quality.</p> |
|--|--|

## Basic Mowing Strategy

- Always mow your lawn when the grass is dry.**  
Wait for your grass to dry before attempting to cut it. Wet grass cuts poorly: damp clippings will cling to the blade causing ragged cuts; the mower deck (the blade housing) will become clogged, interfering with overall mowing; grass will form unsightly clumps; clippings won't be able to filter to the soil surface; and disease organisms are easily spread through a moist environment.
- Keep your mower's cutting blades sharp.**  
Sharpen mowing blades at least once or twice a year. Sharp blades provide a clean, safe, and efficient cut. Dull mower blades will tear and shred the tips of the grass which can provide an entry point for disease organisms and weaken the grass plant. If your lawn looks gray or dull after mowing -- and turns a straw-brown a day or two later, your mower



brown a day or two later, your mower blade is dull and causing damage. Sharpen it at once.

- **Cut at the correct height for your type of grass.**

Different types of grass require different mowing heights. The following guidelines provide information for some of the most popular turfgrass varieties:




**Recommended Mowing Heights\***

| Turfgrass Variety     |                    | Set Mower to this Height | Mow at or before this Height |
|-----------------------|--------------------|--------------------------|------------------------------|
| Cool Season Varieties | Kentucky Bluegrass | 2.5-3"                   | 4"                           |
|                       | Fine Fescue        | 2.5-3.5"                 | 4"                           |
|                       | Tall Fescue        | 2.5-3.5"                 |                              |
|                       | Perennial Ryegrass | 2.5-3"                   | 4"                           |
| Warm Season           | Bermudagrass       | .5-1"                    | 2"                           |
|                       | Zoysia             | .5-1"                    | 2"                           |

\*Cool weather grasses can be cut approximately a 1/2" shorter in fall and winter; warm weather grasses a 1/2" taller.


The above heights are generally taller than those traditionally used. Taller grass blades provide more "energy" for the plant's deepening root system, leading to a healthier, more drought-tolerant lawn. Taller grass helps shade the soil, which can keep soil cooler during hot weather. It also provides natural weed suppression by blocking out the sunlight many weed seeds need to germinate and by overshadowing many broadleaf weeds, like dandelions, which will contribute to their eventual decline and chemical-free eradication.



Allowing grass to grow at its proper height can reduce weed problems by 50 to 80 percent without chemicals.

Generally, lawns will require cutting every five or six days during active growing season, slowing down to about once every ten days when growth slows down. Measure your lawn's height and let that determine when you should mow.

If grass is excessively tall, either slowly work it back its proper height by mowing several times within a week or two, or bag those clippings and use as a thin mulch around shrubs, flowers, or vegetable plants -- or add as an excellent nitrogen source for your backyard compost pile.



Sweep up clippings on driveways, sidewalks, and in street gutters (add them to your compost pile). Stormwater can carry those materials into streams, polluting them with nutrients and sediment.

You can also double-cut your lawn by mowing twice: the second cut should be perpendicular to the first cutting direction. The second pass will further cut up longer



clippings and break up any clumps which may have formed.

It is always best to avoid shocking your grass by severe cutting -- removing more than a third of the turf height. Think of mowing as a form of frequent pruning.

**Lawnmower Options**

There is a large variety of lawnmowers available, many of which are generically called "mulching mowers." These mowers, available in self-propelled, push, ride-on, and garden tractor models, all work in much the same way. A new blade configuration is designed to pull clippings up into the mower deck, where the blades (and sometimes


extra blades) can repeatedly cut them into progressively smaller particles. Most of these mowers also have deeper decks to improve the effectiveness of this process.



However, you do not need a mulching mower to grasscycle. Any conventional mower can do the job by simply removing the bag. In the case of rear discharge mowers, the exhaust chute must be shut off. Side discharge mowers do an excellent job of grasscycling. So do the

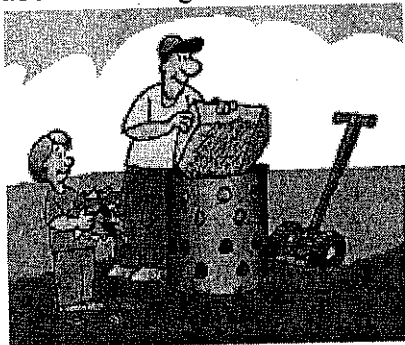
increasingly popular reel mowers, which provide the best possible cutting action for mowing (like a pair of scissors), and are ideally suited for smaller sized lawn areas. Reel mowers also provide other resource-savings, which provide exercise rather than air and noise pollution.






**Eco-tip** Tune-up your lawnmower every year: an efficient engine will provide a cleaner, healthier cut while reducing emissions.

In selecting a new mower, look into the wide array of mulching mowers and think about selecting a model that allows some flexibility: changing from mulching to side discharge to bagging. Many do this with the insertion of a plug or by simply removing the mower bag. Bagging is handy for those occasions when the grass might be too tall to leave behind, and handily doubles as a leaf shredder, which you will find especially useful for leaf pick-up in the fall: the mower can shred and collect those leaves, allowing you to use them as a mulch or add them to your compost pile.





**Eco-tip** Reduce the size of a lawn by expanding planting beds, creating new mulch "islands," mulching under and around trees and shrubs, and replacing grass with ground covers, especially under trees and on steep slopes.

**Thatch Considerations**

One of the common concerns raised about grasscycling by homeowners, as well as

uninformed lawn care companies, involves thatch. People are afraid that clippings left behind will cause thatch build-up.

However, thatch is composed primarily of grass roots. Clipping residues add only 1/300th of an inch annually of organic material to the thatch layer -- material that is frequently broken down in naturally healthy lawns by earthworms and other decomposer microorganisms.

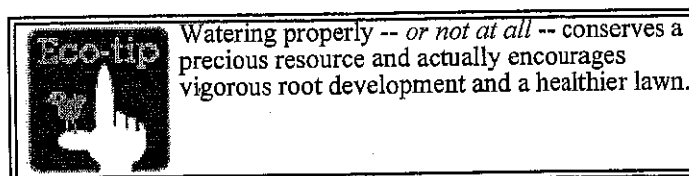
A modest thatch layer (1/2 inch or less) is natural and can actually be beneficial to lawn health -- acting both as a shock absorber for lawn traffic to prevent soil compaction and as a mulch layer to conserve moisture. Harmful, excessive thatch development (more than 1/2 inch) arises from short, frequent watering which encourages root systems to remain shallow -- where the moisture is. The same situation applies to the over-frequent, quick release fertilizer treatments used by many commercial lawn care services. The quick once-a-day watering and weekly or monthly fertilizer application creates an artificial environment for your grass, like a hydroponic system. When hot, dry days roll around, those shallow root systems are stressed or killed by the heat and loss of moisture, which results in brown, dead lawns.

### A Better Watering Plan

Homeowners often water their lawns improperly. Light, frequent watering encourages roots to reach up for moisture, not to grow down where they belong. These shallow root systems make lawns sensitive to temperature extremes, drought, and soil compaction. Frequent watering also encourages the germination of troublesome weed seeds.



Overwatering results in faster leaf growth, which then creates more lush grass to cut. This excessive growth depletes a lawn's energy reserves and disease resistance, often aggravated by the presence of high moisture and surface humidity conditions ideal for fungal pathogens. Also, waterlogged soils can reduce soil aeration, and lead to compaction and problems injurious to the plant's roots.



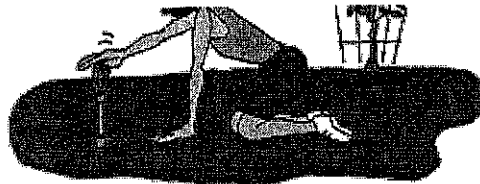
For the healthiest possible lawn, water only when absolutely necessary: when grass starts to wilt, usually indicated by losing color, becoming dull, or not straightening up after being walked on. Signs of drought stress are normally first observed near sidewalks, driveways, and roads, or at the top of a sloped area.

Proper watering, especially for newly established turf areas, should also ensure that moisture soaks into the soil sufficiently to moisten the root zone. You can check water penetration by simply inserting a screwdriver.



penetration by simply inserting a screwdriver.

During hot, dry weather, lawns may require up to one inch of water every five to seven days. The key to proper irrigation is the following:



Try to water only during the morning: midday watering can lead to scalding and wasteful evaporation; late-day or evening water invites disease organisms.



Apply approximately one inch of water to each area of your lawn and overlap the watering patterns: set up one or more one inch high containers (tuna fish cans are perfect) under the sprinkler to measure application. Generally, most hoses provide one-third to one-quarter inch of water per hour.

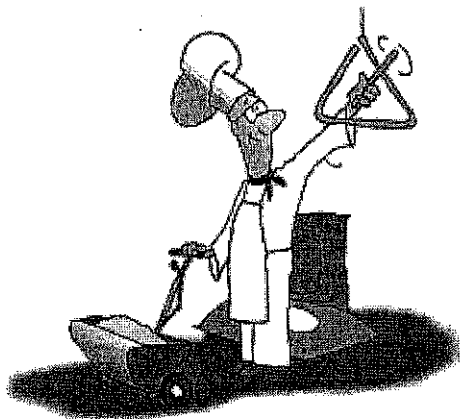
Stop watering whenever runoff occurs, especially on slopes or on compacted, dry soils. That may mean turning the water on and off in cycles to allow moisture to soak into the ground,

but it beats watching the water flow down the street.

Stay off grass while the lawn is wet. Wet turf is easily compacted, and you might potentially spread disease organisms.

|  |  |
|--|--|
|  | <p>During dry spells, you can allow established lawns (except bluegrass) to go dormant. This will save money and resources and your lawn will recover when rainfall returns.</p> |
|--|--|

A Proper Diet



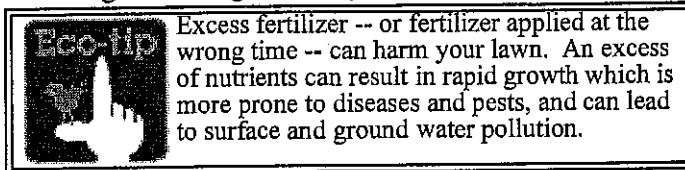
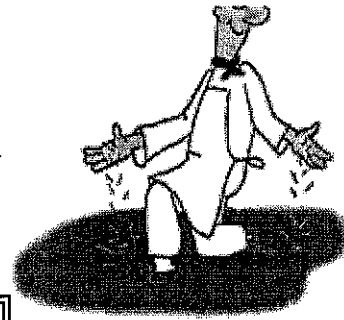
Different lawns and different turf varieties will require specific fertilization rates (normally provided as pounds per 1,000 square feet) and schedules. Please check with the Cooperative Extension Service for exact details. Don't rely solely on displays in nursery centers, recommendations printed on products, or the advice of newspapers, neighbors, or sales clerks. Here are some important guidelines to keep in mind:

Before feeding your lawn, have your soil tested (see below). Your lawn has specific needs for nitrogen, phosphate, and potash. Let a simple

- \$5 soil test help you determine your exact needs.
- Strive for a balanced growth rate in your lawn. For your nitrogen source, consider natural organic sources like compost or composted manure, or select other slow-release fertilizers such as IBDU, sulfur-coated urea, ureaformaldehyde, or methylene urea. Quick, water-soluble fertilizers generally produce fast foliar growth and do little for roots and overall plant vigor.
- Keep your fertilizer application on the light side -- remember that grasscycling replenishes many of the



- remember that grasscycling replenishes many of the key nutrients by "recycling" those valuable elements.
- Avoid fertilizing during peak foliar growth periods, such as springtime for the typical cool weather grasses. One slow-release nutrient application in the fall, for some varieties, is all you'll need for rich, even growth all year long.
  - Concentrate on feeding the soil for strong long-term root development rather than just feeding the plant, resulting in taller grass for you to cut.



- Keep fertilizer off paved surfaces. Sweep spilled granular fertilizer onto the lawn or collect it for later use.
- Use a drop spreader instead of a rotary spreader when working near water, driveways, or sidewalks.
- Calibrate the spreader properly to ensure that you are not over-applying nutrients.
- Fill and wash spreaders over grassy areas, not on driveways or other paved surfaces. Avoiding getting fertilizer into natural drainage areas.

## Soil Testing

There are several nutrients that are essential for a healthy lawn. A soil test is used to determine the amount of these nutrients in the soil and test results are used to make a soil test report. In addition to indicating the level of nutrients in your soil, the report will also tell you the pH value or how acidic or basic your soil is, and it will make a recommendation for the amount and type of fertilizer and/or lime you need to add to the soil for optimum turf growth. This will allow you to customize your soil fertilizer and lime applications to your lawn's needs. Following the recommendations will help prevent problems with nutrient deficiencies (in the case of under-fertilization) or problems associated with over-fertilization, such as excessive vegetative growth, delayed maturity, salt burn and wasted money. In addition, it can protect against any environmental hazards resulting from excessive fertilizer applications. Visit [Soil Information & Testing](#) for more information.

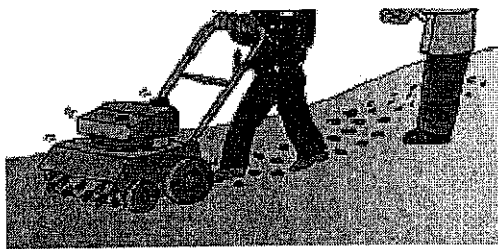
## Aeration

Lawns which receive heavy use or were established on heavy clay soils can become compacted, leading to bald patches and weeds (plantain is an excellent indicator of compacted soils). Periodic aeration (every two to three years) can solve this problem by loosening the soil and prompting deeper root development. In some cases, excessive thatch build-up can also cause compaction; aerating will help break up the thatch layer *without raking*.

Aeration opens up passages for oxygen to enhance earthworm and microbial activity, which, in turn, help make nutrients available to root systems. These organisms also help break down useful organic matter in the lawn, including leaf particles, clippings, and thatch. Aeration also helps necessary atmospheric gases, nutrients, moisture, and organic matter penetrate deep into the root zone.



You can rent either a motorized or manually powered machine to extract plugs from the soil,



powered machine to extract plugs from the soil, although aeration is often best left to professional lawn care services, which can be more cost-effective in the short run. Smaller lawn areas can be manually aerated using a spading fork inserted into the soil at a 45 degree angle. Insert tines to approximately four inches and push down -- or rock back and forth a bit -- loosening the soil, and then pull out. Repeat this

process every 12-16 inches until the entire lawn area is covered.

|  |  |
|--|--|
|  | <p><b>Eco-tip</b> Insert a screwdriver into your lawn. If you cannot push it in up to the handle without using a hammer, the soil is compacted and will be prone to weed infestation and other problems.</p> |
|--|--|

Plugs removed from your soil are a form of topdressing and will quickly break down on top of your lawn, providing nutrients "mined" from the soil as a slow-release fertilizer. Aeration can be performed anytime during the year, but there are advantages to aerating in the fall, when shredded leaf particles and late summer or autumn fertilizers can filter into the holes. It is recommended to water your lawn immediately after aerating.

**Weeds & Pests**

Thick, healthy lawns will almost always out-compete weeds. Proper mowing, fertilizing, watering, and soil conditioning (liming and aerating) will easily eliminate or prevent up to 95 percent of weeds. Other minor weed problems can generally be removed by pulling them by hand. A last, less desirable course of action is spot-treating. However, before resigning yourself to a potentially-dangerous herbicide fix, it is best to consider whether you are more willing to tolerate a little clover in your lawn, or would prefer exposing your family, pets, environment, and self to toxic compounds. Even lawns with significant weed infestations can be restored through proper, chemical-free management in several years. In



addition, within recent years, significant progress has been made to identify organic weed control compounds, such as corn gluten.

|  |  |
|--|--|
|  | <p><b>Eco-tip</b> Grasscycling can help eliminate weeds like dandelions simply by lopping off their flowers. No flowers, no seeds, no weeds!</p> |
|--|--|

Pests are also less likely to try munching or attacking a healthy, well-established lawn. Most pests and diseases are "drawn" to stressed conditions in turf caused by poor soil or improper cultivation practices. However, if pest control is absolutely necessary, it is important to implement an Integrated Pest Management (IPM) strategy. First concentrate on improving soil, improving grass health, and then and only then look at pest control products. Again, look for organic controls, usually botanically-derived from naturally-occurring flower and fruit extracts.



naturally-occurring flower and fruit extracts. Find out more about pesticides and pesticide alternatives before reaching for cans, bottles, or bags of synthetic toxins.

### More Information



There are numerous additional sources for information on grasscycling and many of the principles cited above. A fine overall book is Warren Schultz's *The Chemical-Free Lawn* (Rodale, 1989). Also, check with the Cooperative Extension Service for specific turfgrass information by calling 301.590.9638. The Environmental Protection Agency publishes *Healthy Lawn, Healthy Environment*, available from EPA, Dept. H7506C, Washington, DC 20460.

If you have any questions about grasscycling, the **Recycling Hotline** is your free connection to expert advice. Trained volunteers can help you reap the benefits of grasscycling in your own backyard, call 301.590.0046. You can also contact the University of Maryland Home and Garden Information Center at 1.800.342.2507.

*Illustrations in this publication by Tony Fitch, Fitch & Co. Inc.*

[DEP Home](#) || [Contents](#) || [Lawn & Landscape Page](#) || [Grasscycling Homepage](#)

Page last updated:08/25/00



# Environmental Fact Sheet

## RECYCLING GRASS CLIPPINGS

*Nationwide, State and local governments, lawn equipment manufacturers, lawn care professionals, and others are working to divert yard trimmings from municipal solid waste. The U.S. Environmental Protection Agency (EPA) recommends leaving grass clippings on lawns, rather than collecting and bagging them. Leaving grass clippings on the lawn (1) enhances the natural health of lawns by improving the soil and turf growth, and (2) reduces the amount of waste that must be collected and managed.*

### Clippings Enhance Your Lawn

EPA recommends leaving grass clippings on lawns to reduce the amount of waste that must be collected and managed and to enhance the natural health of lawns. As short grass clippings filter to the ground and naturally decompose, nutrients return to the soil and support further turf growth by supplying part of the lawn's fertilizer needs. This practice can save about one fertilizer application per year.

Grass clippings increase the soil's organic matter content, along with its ability to retain moisture and nutrients, to

resist erosion, and to maintain cooler temperatures during the summer.

The Texas A & M University System and the Texas Agricultural Extension report that clippings usually contain about four percent nitrogen, 0.5 percent phosphorous, and two percent potassium, as well as essential minor elements.\*

### Why Be Concerned About Grass Clippings?

Nationwide, state and local governments, lawn equipment manufacturers, lawn care professionals, and others are working to divert yard trimmings—including grass clippings, leaves, brush, and tree prunings—from municipal solid waste.

By mid 1995, 20 states will have banned landfill disposal of yard trimmings, the second largest component of the solid waste stream. Nationally, yard trimmings account for nearly 20 percent (over 31 million tons) of municipal solid waste generated each year. Grass clippings account for over half of all the yard trimmings generated.

The amount of yard trimmings generated varies considerably by region, season, and even from year to year. During peak months (primarily, summer and fall), yard trimmings can represent as much as 25 to 50 percent of municipal solid waste.



### Clippings and Thatch

Grass clippings do not cause thatch when left on lawns. Thatch, rather, is a layer of organic material comprised of grass roots, not the grass blade that is mowed. Grass roots contain lignin, a substance that is very slow to decompose and causes thatch. Grass clip-

pings, however, which are up to 90 percent water (wet weight) and contain little lignin, decompose quickly.

### Making the Switch

To foster healthy standing grass, do not cut more than one third of the blade off, and no more than one

inch total, at any one time (the exact mowing height depends on grass type and climate). In making the switch, participants in a Fort Worth, Texas, pilot project found that, since bagging the clippings was no longer necessary, they spent an average of 38 percent less time on each mowing.\*

### Looking For More Information on Yard Trimmings Management or Other Municipal Solid Waste Issues?

EPA's Office of Solid Waste offers a number of fact sheets and pamphlets on municipal solid waste management for citizens and community leaders. One such fact sheet, *Yard Waste Composting*, takes a general look at the whys, whats, and hows related to backyard composting.

Publications are available by contacting the RCRA Hotline, Monday through Friday, 8:30 a.m. to 7:30 p.m., EST, at (800) 424-9346. For the hearing impaired, the number is TDD (800) 553-7672. Or write to:

**RCRA Information Center (RIC)**  
U.S. Environmental Protection Agency  
Office of Solid Waste (OS-305)  
401 M Street SW., Washington, DC 20460.

Another EPA publication, **Yard Waste Composting: A Study of Eight Programs**, is available for a fee from the National Technical Information Service (NTIS). To order, call (703) 487-4650 and ask for publication number PB90-163 114.

### Yard Trimmings Management for Homeowners

EPA, in cooperation with the Colorado State University Cooperative Extension, developed a brochure on yard trimmings recycling/composting, entitled "EASY" (**Environmental Action Starts in your Yard**). This brochure provides more detailed information on advantages of mulching, composting, and other beneficial home uses for yard trimmings. To receive a copy, write to:

George Donnelly  
U.S. Environmental Protection  
Agency, Region 8  
999 18th Street  
Denver, CO 80202



\* Dr. Bill Knoop, Texas Agricultural Extension Service. The Texas A & M University System, College Station, TX.



**APPENDIX R**

**Waste Wise Information**

United States Environmental Protection Agency  
Waste Management  
Waste Management, Resource Conservation, and Recycling Division  
Waste Management Administration



# WasteWise Sixth-Year Progress Report



*Sixth Year*

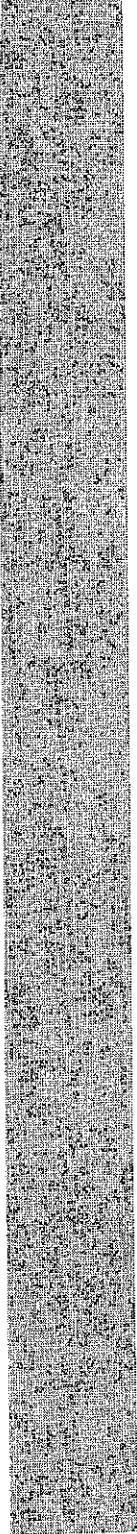




# Progress Report

## *Contents*

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| WasteWise Membership & Program Accomplishments ..... | 8  |
| 2000 WasteWise Award Winners .....                   | 12 |



# WATER REDUCTION RESULTS

8

From the operations of the Home (Chicago)

Water Reduction Results consistently report

that the Home Water Reduction Results

are the most consistent and accurate

of any other program in the industry

## Waste Reduction Reaches New Heights

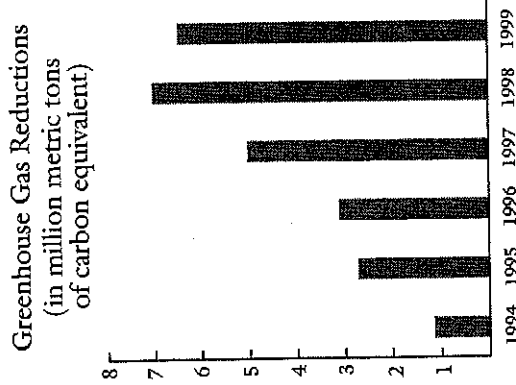
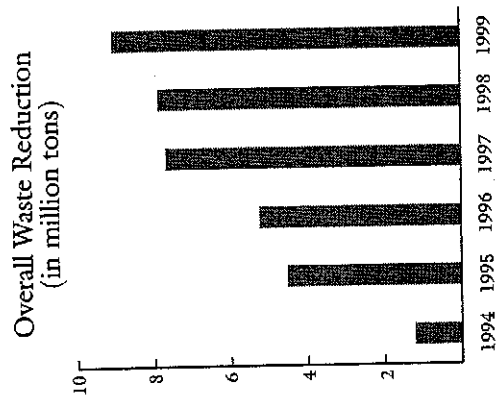
In the first six years of the WasteWise program, partners have removed more than 35 million tons of waste from the solid waste stream through waste prevention and recycling activities. In 1999, partners reduced 9 million tons of waste through these activities, surpassing 1998 waste reduction results by 15 percent.

These impressive numbers are based on the reports partners voluntarily provide each year. To some extent, these results understate partners' waste reduction activities. For example, some do not include results from ongoing waste reduction innovations that were implemented and reported in previous years.

## Waste Reduction Protects the Global Climate

Most people know that waste reduction conserves natural resources and has positive economic benefits. A lesser known impact is that reducing waste lowers atmospheric greenhouse gas emissions by decreasing fossil fuel consumption, minimizing methane emissions, and allowing vegetation to absorb carbon dioxide from the atmosphere. In 1999, partners' waste reduction activities were estimated to yield reductions of more than 6.5 million metric tons of carbon equivalent (MTCE), the standard unit of measure for greenhouse gas emissions.

Through practical and effective waste reduction activities, WasteWise partners have prevented the emission of 25 million MTCE since 1994—the equivalent of removing 19 million cars from the road for one year. **Anheuser-Busch Companies** made the



greatest contribution to the WasteWise greenhouse gas reduction total in 1999. **McDonald's** and **Louisiana-Pacific** also made outstanding contributions to reducing greenhouse gas emissions.

EPA developed the Waste Reduction Model (WARM), to help organizations estimate greenhouse gas reductions from their waste reduction activities. WasteWise provides WARM conversions for each reporting partner, enabling them to visualize the impact of their waste reduction activities. For more information about WARM, visit

[www.epa.gov/mswclimate](http://www.epa.gov/mswclimate)

### Preventing Waste Pays Off

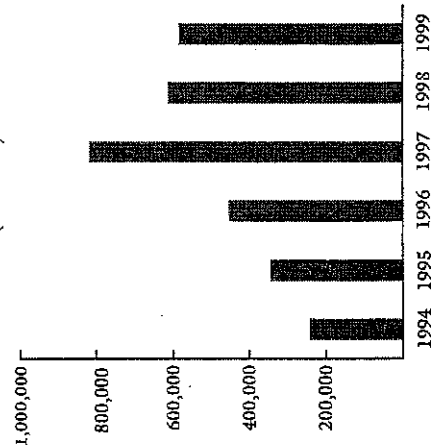
Through waste prevention activities, organizations are drastically reducing the amount of waste they annually produce, as well as saving money, time, and resources.

- **Allchem Services, Inc.**, repaired and reused 6.5 tons of pallets, skids, and totes, saving \$3,000. The company also reused 200 pounds of plastic packaging materials as filler for outgoing shipments.
- **Bell Atlantic** expanded the use of electronic purchasing orders and invoices, reducing nearly 29 tons of paper and saving more than \$60,000.
- **Guardian Industries Ligonier, Indiana Facility** laundered and reused gloves and wiping clothes, reducing waste by more than six tons and saving the company nearly \$30,000.
- **King County Department of Natural Resources**, located in Washington, recently moved into new offices furnished with 80 tons of refurbished carpet tiles. The agency also received more than \$9,000 in rebates for returning used shipping boxes to the moving company.

## WasteWise Partners Maximize Waste Prevention Programs

WasteWise stresses to partners the importance of waste prevention—activities that eliminate waste before recycling, such as refurbishing products for reuse or onsite composting. Since EPA launched the WasteWise program 6 years ago, partners have prevented the generation of more than 3 million tons of waste.

Waste Prevention (in tons)



## Top Waste Prevention Practices

WasteWise partners' most frequently targeted items for waste prevention activities in 1999 included:

### Office supplies

- Repairing, refurbishing, or reconditioning used supplies.
- Expanding electronic networks, including e-mail, Intranet, and electronic routing of documents.

### Manufactured products

- Improving manufacturing processes to reduce raw material waste.
- Displacing virgin materials.

### Manufacturing equipment or supplies

- Reducing material consumption during the manufacturing process.

### Transport packaging

- Switching from disposable to reusable products.
- Participating in packaging return programs.

### Construction and demolition materials

- Deconstructing buildings and salvaging materials for reuse.
- Establishing donation programs for reusable materials.



In 1999, WasteWise partners' waste prevention activities removed 583,000 tons of material from the solid waste stream. These results fall slightly below the waste prevention data for 1998, indicating that some reporting partners have at least temporarily reached the limits of their current waste prevention activities. As new partners begin to report and veteran partners update WasteWise goals to further enhance their waste reduction programs, we hope to see increases in waste prevention figures.

## Recycling Collection Soars

Recycling collection figures increased 1.2 million tons over 1998 results, bringing the total amount of materials collected by WasteWise partners to 8.4 million tons in 1999. This boost in recycling figures represents a 17 percent increase in 1999 compared with a 6 percent increase in 1998. Moreover, partners saved more than \$300 million in avoided disposal fees in 1999<sup>1</sup> by participating in recycling collection activities. Throughout the duration of the program, recycling collection has continuously risen, totaling more than 32 million tons since the program's inception.

### Top Materials Collected for Recycling

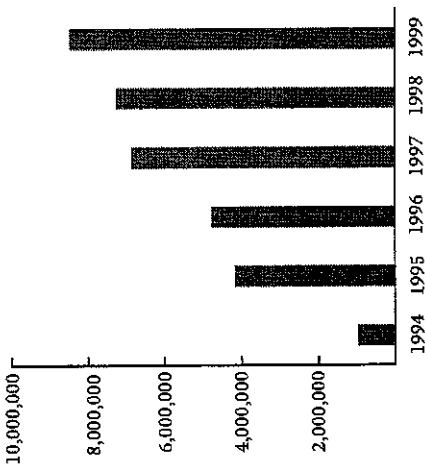
In 1999, the following materials constituted the bulk of partners' recycling activities:

- Wood
- Corrugated cardboard
- Aluminum
- Mixed paper
- Steel

<sup>1</sup>Disposal fees based on an average 1999 tipping fee of \$35.57. Source: Biocycle, April 2000.

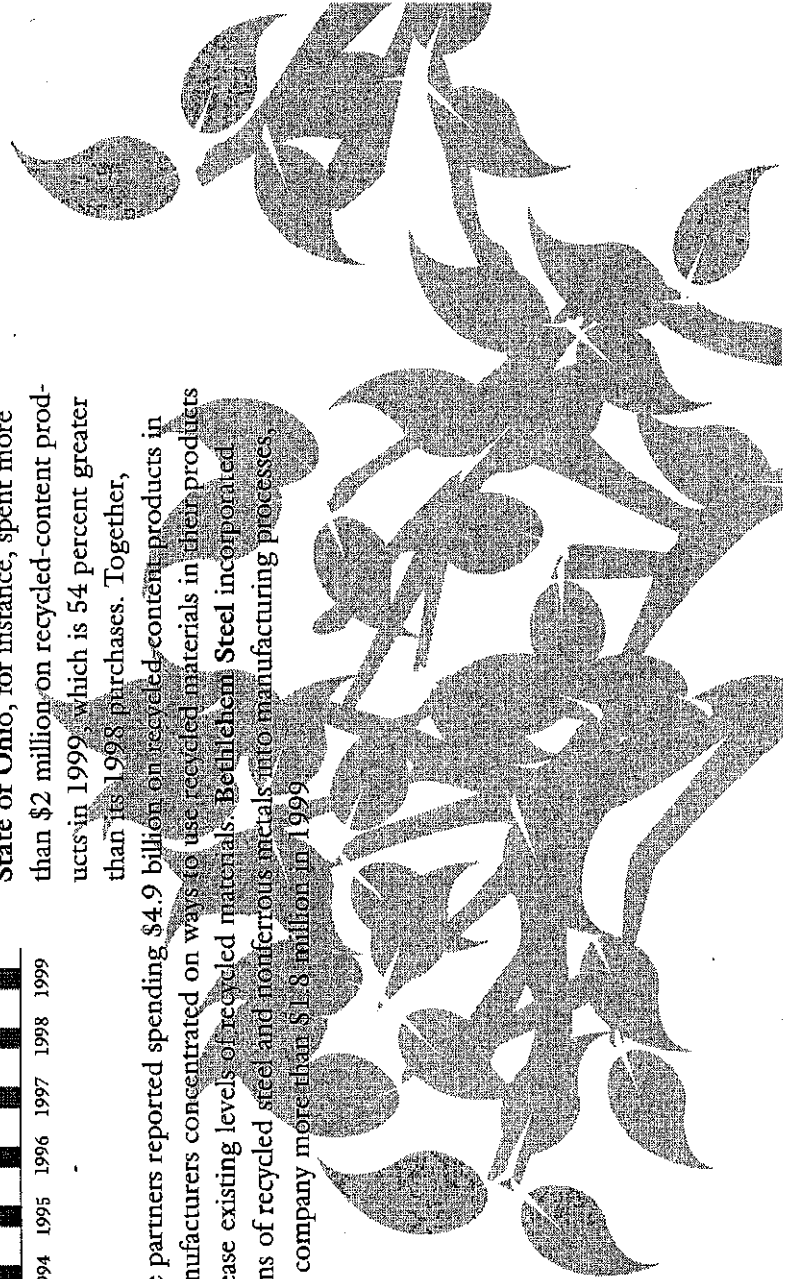
## Recycled-Content Purchases Double

Recycling Collection  
(in tons)



WasteWise partners reported purchases of 962,330 tons of recycled-content products in 1999, doubling the amount purchased in 1998. Many partners purchased products that contained a higher percentage of recycled materials than their previous purchases while others incorporated a greater number of recycled-content products into their purchasing programs. The **State of Ohio**, for instance, spent more than \$2 million on recycled-content products in 1999, which is 54 percent greater than its 1998 purchases. Together,

WasteWise partners reported spending \$4.9 billion on recycled-content products in 1999. Manufacturers concentrated on ways to use recycled materials in their products or to increase existing levels of recycled materials. **Bethlehem Steel** incorporated 36,500 tons of recycled steel and nonferrous metals into manufacturing processes, saving the company more than \$1.8 million in 1999.



WILLIAM W. WILSON  
MEMBER OF THE BOARD OF DIRECTORS

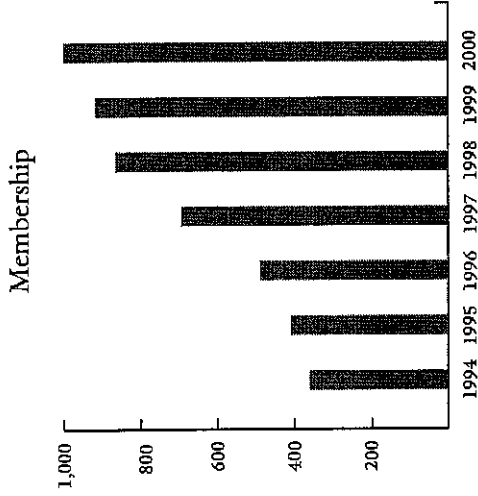
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WILLIAM W. WILSON  
MEMBER OF THE BOARD OF DIRECTORS

WILLIAM W. WILSON  
MEMBER OF THE BOARD OF DIRECTORS

## WasteWise Welcomes its 1,000th Program Partner—The United States Postal Service-Sacramento District

Over the past 6 years, membership has grown by leaps and bounds, encompassing more than 50 industry sectors across the country. In 1994, WasteWise inducted 281 charter members into the program. Today, these program pioneers are joined by organizations that have committed themselves to conserving our natural environment through waste reduction. To support program partners, the WasteWise team provides personalized technical assistance, innovative publications, networking opportunities, cutting-edge resources, and recognition for outstanding accomplishments.



**State Farm Mutual Automobile Insurance Company** converted to electronic cameras, decreasing the use of instant film by 12 percent and the use of 35mm film by 26 percent, and saving more than 50 tons of film.

## Partners Shape WasteWise Initiatives

1999 was a year of celebration for WasteWise—celebrations for past program successes as well as new program initiatives. Partners' favorable reactions to the Onsite Visit Program prompted WasteWise to continue conducting personalized waste reduction assessments for program partners. After successfully carrying out the Transport Packaging Challenge in 1999, WasteWise launched the second WasteWise Challenge, targeting electronics reuse and recycling in 2000. Enthusiastic response to a 1998 satellite forum on buying recycled-content products inspired WasteWise to plan a third satellite broadcast targeting colleges and universities.

**Russell Corp.** recycled more than 14,500 tons of textiles, 3,850 tons of corrugated cardboard, nearly 1,000 tons of paper, and more than 500 tons of additional materials, including wood, plastics, aluminum, and oil, in 1999.

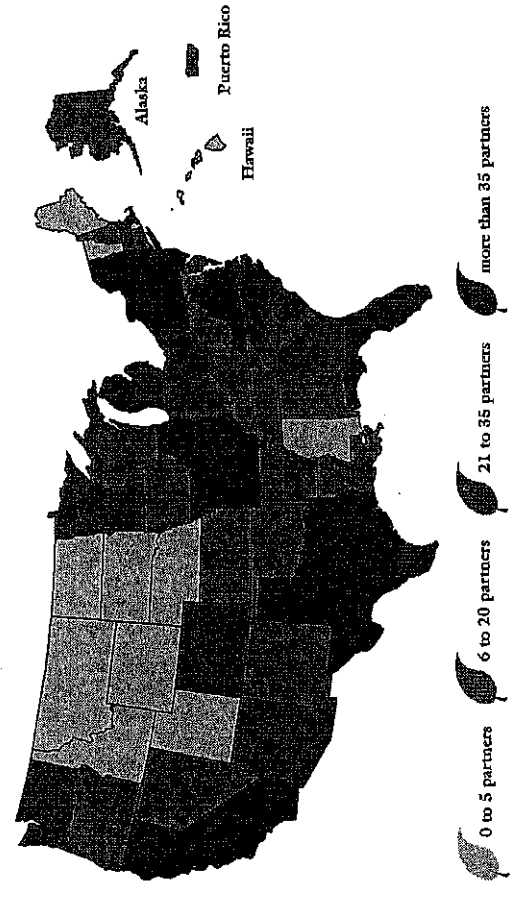
WasteWise also responded to partner comments provided through the 1999 Customer Satisfaction survey and the Partner Roundtable by creating the WasteWise E-Club, increasing the amount of personal interaction with partners, and updating the marketing strategic plan. The need to provide easy access to useful waste reduction information drove WasteWise to begin developing an online technical assistance database, which will allow users to locate answers to waste-related questions by searching an extensive list of organizations, publications, and Web sites.

Other 1999 WasteWise initiatives included:

- WasteWise introduced the E-Club, an initiative designed to prevent waste by notifying partners of the availability of recent publications on the WasteWise Web site via e-mail, rather than mailing hard copies.

*WasteWise Partners Located Across the Country*

Businesses, institutions, and governments from all states, the District of Columbia, and Puerto Rico participate in the WasteWise program.



- WasteWise provided practical waste reduction information to partners through our publications, including the bimonthly *WasteWise Bulletin*, semiannual *WasteWise Update*, *WasteWise Toolkit*, and other publications.
- WasteWise honored 13 Partners of the Year and 20 Program Champions for their outstanding waste reduction achievements at the 1999 Awards and Recognition Ceremony. WasteWise representatives and senior EPA officials presented recycled-content glass awards to the winners, formally welcomed new partners to the program, and recognized Transport Packaging Challenge participants.

- WasteWise continued to sponsor Regional Forums and Partner Network Meetings across the country. Meeting locations included Baltimore, New York, Washington D.C., Chicago, and Atlanta.

- WasteWise attended conferences and trade shows across the country in 1999 and 2000 promoting the WasteWise program to businesses, governments, and institutions.
- WasteWise welcomed the U.S. Postal Service-Sacramento District as the 1,000th program partner. To commemorate this achievement, WasteWise and the USPS issued a series of press releases, recognized the USPS-Sacramento District at the WasteWise 2000 Awards and Recognition Ceremony, and highlighted the milestone in WasteWise publications.

*Ford Motor Company* annually uses more than 60 million 2-liter plastic soda bottles in the manufacturing of grille reinforcements, window frames, engine covers, and trunk carpets. In 1999, this effort accounted for 3,750 tons of plastic.

*Walt Disney World Company* spent

\$600,000 on recycled-content products, including 3,000 pounds of low density polyethylene (LDPE) picnic tables with an average 30 percent postconsumer content.



# 2000 Partners of the Year

## VERY LARGE CORPORATION (20,000+ employees)

### *Eastman Kodak Company*

Eastman Kodak Company, headquartered in Rochester, New York, conserved 2,300 tons of cameras by increasing returns of its FUNSAVER cameras, allowing more parts to be reused for manufacturing of new cameras. Kodak also reused 31,500 tons of asphalt from construction and demolition projects as a conventional aggregate in road and building construction, saving \$2 million.

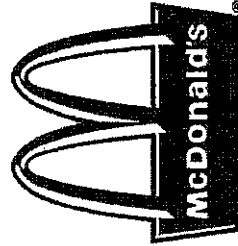


#### 1999 WasteWise Accomplishments

|                                |              |
|--------------------------------|--------------|
| Waste Prevented                | 39,835 tons  |
| Recycling Collection           | 67,500 tons  |
| Recycled-Content Purchases     | 24,000 tons  |
| Manufactured Recycled Products | 15,800 tons  |
| Total Cost Savings             | \$12,000,000 |

### *McDonald's Corporation*

McDonald's, headquartered in Oakbrook, Illinois, continually works to reduce the weight, volume, and environmental impact of its packaging materials and explores new packaging alternatives. Switching to lighter weight packaging for two of the company's sandwiches conserved 3,200 tons of cardboard containers and saved \$3.6 million. The company also led the way in promoting the "buy recycled" message by spending \$300 million on more than 300,000 tons of recycled-content materials in 1999.



#### 1999 WasteWise Accomplishments

|                            |                |
|----------------------------|----------------|
| Waste Prevented            | 6,850 tons     |
| Recycling Collection       | 1,684,850 tons |
| Recycled-Content Purchases | 300,000 tons   |
| Total Cost Savings         | \$3,600,000    |



**VERY LARGE CORPORATION (CONT.)**

*Motorola, Inc.*



**MOTOROLA**

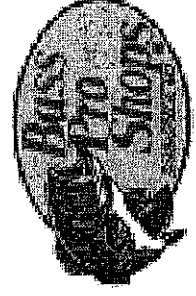
Motorola, a major electronics equipment manufacturer with facilities located in Illinois, Texas, Georgia, New York, Iowa, Florida, and Arizona, conserved more than 500 tons of waste through activities such as: switching to reusable plastic packaging, working with suppliers to take back plastic packaging materials for reuse, and reducing the disposable corrugated packaging used to ship products to customers. The company also conserved 72 tons of mixed plastics by collecting clean room booties, gloves, product packaging, and wafer boxes for reprocessing and reuse.

**1999 WasteWise Accomplishments**

|                            |             |
|----------------------------|-------------|
| Waste Prevented            | 1,637 tons  |
| Recycling Collection       | 16,529 tons |
| Recycled-Content Purchases | 899 tons    |
| Total Cost Savings         | \$521,438   |

**LARGE CORPORATION  
(1,000 to 19,999 employees)**

*Bass Pro Shops*



Bass Pro Shops, headquartered in Springfield, Missouri, implemented numerous innovative waste prevention activities at all its retail facilities. The company uses architectural salvage from building demolition products and trees reclaimed after forest fires in store offices and fixture construction. It also salvaged nearly 170 tons of transport packaging materials through a shipping and receiving waste prevention program, saving more than \$28,000 in 1999. This program involved the reuse and sale of used wooden pallets. Its cardboard recycling program saves Bass Pro more than \$94,000 and generates more than \$14,000 in donations for a local nonprofit.

**1999 WasteWise Accomplishments**

|                            |            |
|----------------------------|------------|
| Waste Prevented            | 182 tons   |
| Recycling Collection       | 1,370 tons |
| Recycled-Content Purchases | 1,140 tons |
| Total Cost Savings         | \$117,051  |

## Virco Mfg. Corporation

Virco Mfg. Corporation located in Conway, Arkansas, implemented forward-looking and innovative waste prevention, recycling, and buying-recycle efforts. In 1999, the company initiated a program to eventually eliminate the use of wooden pallets as part of the Transport Packaging Challenge. The company repaired more than 9.5 tons of pallets for reuse and mulched discarded boards. Virco also conserved 1,250 tons of plastic pellets and saved \$300,000 by selling scrap hard plastic for use as sandblasting material. The company reused 9,000 tons of wood dust as a soil amendment on its new building site, saving \$120,000.



### 1999 WasteWise Accomplishments

Waste Prevented  
 Recycling Collection  
 Recycled-Content Purchases  
 Total Cost Savings

10,760 tons  
 15,947 tons  
 1,025 tons  
 \$430,800

## MIDSIZE CORPORATION (500 to 999 employees)

### Bert Fish Medical Center

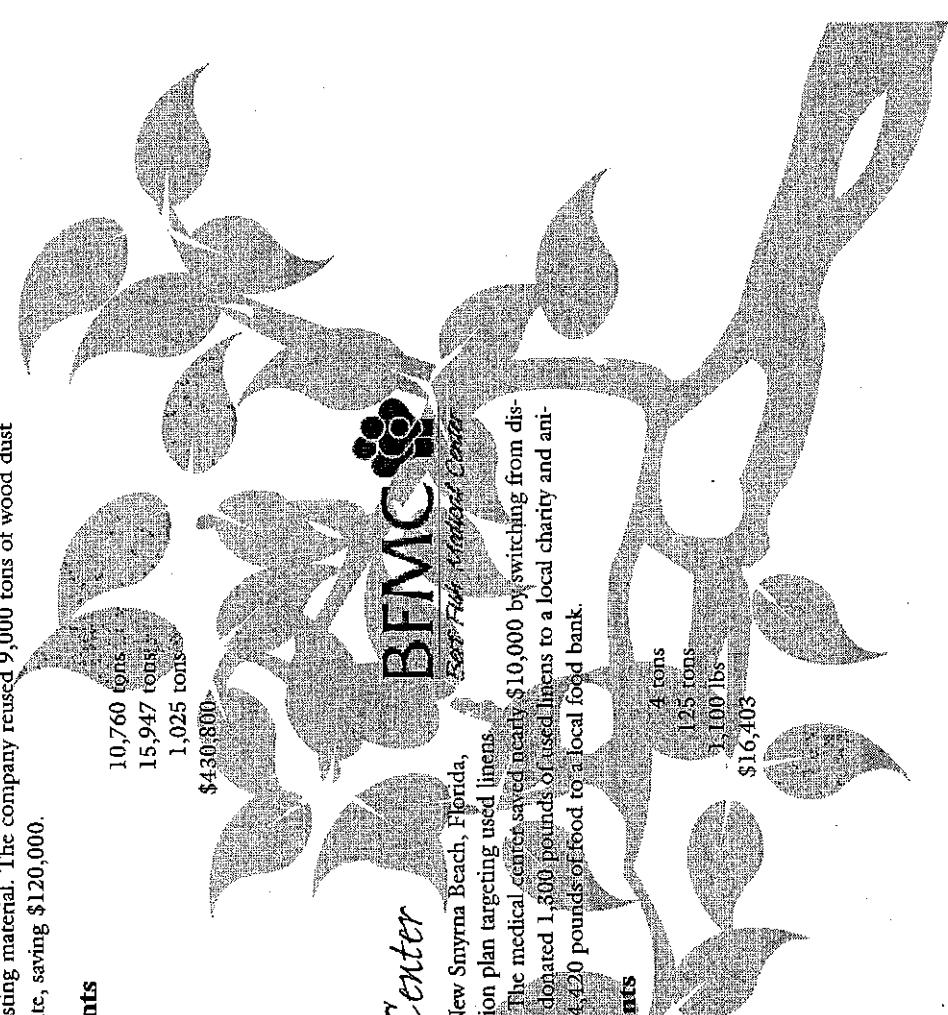
In 1999, Bert Fish Medical Center in New Smyrna Beach, Florida, established a comprehensive waste prevention plan targeting used linens and gowns no longer suitable for patients. The medical center saved nearly \$10,000 by switching from disposable to reusable hospital gowns. It also donated 1,300 pounds of used linens to a local charity and animal shelter for use as animal bedding and 4,420 pounds of food to a local food bank.



### 1999 WasteWise Accomplishments

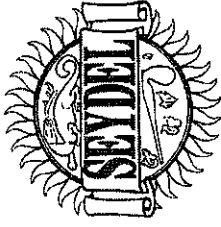
Waste Prevented  
 Recycling Collection  
 Recycled-Content Purchases  
 Total Cost Savings

4 tons  
 125 tons  
 3,100 lbs  
 \$16,403



**SMALL BUSINESS  
(1 to 499 employees)**

*The Seydel Companies*



The Seydel Companies in Pendergrass, Georgia, manufacture chemicals used in textile processing, including fabric preparation, dyeing, printing, and finishing, and garment laundering and finishing. The organization and its 109 employees conserved 500 pounds of paper by taking its business name off bulk mailings lists to reduce the amount of unwanted mail, donated 1,400 pounds of computer equipment to local schools, and cleaned and reused more than 3 tons of glass sample jars, saving more than \$5,000. The Seydel Companies also returned more than 85 tons of plastic drums and totes to vendors in 1999, saving nearly \$70,000.

**1999 WasteWise Accomplishments**

|                                |           |
|--------------------------------|-----------|
| Waste Prevented                | 396 tons  |
| Recycling Collection           | 316 tons  |
| Recycled-Content Purchases     | 646 lbs   |
| Manufactured Recycled Products | 125 tons  |
| Total Cost Savings             | \$435,287 |

**FEDERAL GOVERNMENT**

*U.S. Postal Service—  
Northeast Area*



The U.S. Postal Service Northeast Area's 76,854 employees and 3,200 post offices throughout New England and upstate New York continued to demonstrate their strong commitment to waste reduction in 1999. They reduced solid waste generation at 25 vehicle maintenance and 29 processing and distribution facilities by 50 percent compared with fiscal year 1992 generation rates. The Postal Service established a "Country Store" that reused 120 tons of various equipment and supplies from the 382 post offices in the Springfield District. It also repaired and refurbished 21 tons of steel mailboxes, saving \$85,000.

**1999 WasteWise Accomplishments**

|                            |             |
|----------------------------|-------------|
| Waste Prevented            | 2,972 tons  |
| Recycling Collection       | 54,534 tons |
| Recycled-Content Purchases | 4,847 tons  |
| Total Cost Savings         | \$266,500   |

**STATE GOVERNMENT**

*Tennessee Department of Correction*



The Tennessee Department of Correction, located in Nashville, Tennessee, employs 5,776 people and oversees thousands of inmates throughout 21 centers, prisons, and other buildings. Many of the inmates participated in the department's waste prevention activities and helped conserve 65 tons of computers by refurbishing and repairing 2,332 PC units from three computer repair and reuse centers across the correction system. The computers were placed into public schools. The department also conserved more than 13 tons of textiles by repairing inmate clothing—8,422 pairs of blue jeans, 7,882 shirts, 1,077 jackets, and 38 sweatshirts. This activity saved more than \$90,573 in new clothing purchases. Activities also included composting 1,600 tons of organic materials on site and using the compost on the department's building grounds, saving \$460,433.

**1999 WasteWise Accomplishments**

|                            |            |
|----------------------------|------------|
| Waste Prevented            | 1,691 tons |
| Recycling Collection       | 966 tons   |
| Recycled-Content Purchases | 208 tons   |
| Total Cost Savings         | \$551,000  |

**TRIBAL GOVERNMENT**

*Blue Lake Rancheria*



The Blue Lake Rancheria located in Blue Lake, California, made impressive inroads to developing a solid waste reduction program in its first year of WasteWise program participation. The tribal office, which had no solid waste reduction program before joining WasteWise, conserved 33 pounds of copier paper by double-sided all documents, and 49 pounds of printer paper by reusing single-sided copies for draft printouts and in the fax machine. The tribal office also implemented a new voice mail system that decreased handwritten phone messages, and an intraoffice mail network that allows employees to send memos and other documents to coworkers without printing them. These activities conserved 7 pounds of memo pads and internal memos.

**1999 WasteWise Accomplishments**

|                            |           |
|----------------------------|-----------|
| Waste Prevented            | 89 lbs    |
| Recycling Collection       | 2,638 lbs |
| Recycled-Content Purchases | 314 lbs   |

## LOCAL GOVERNMENT

### Washoe County Government

The Washoe County Government in Reno, Nevada, believes that government must lead by example and its doing just that by making itself an environmental role model for the community. The county implemented a carpet squares program that eliminates the use of broadloom carpeting throughout Washoe County facilities and in all new construction. Only worn and damaged carpet squares are replaced, and they are refurbished up to three times. This activity diverted 12 tons of carpeting and saved \$128,000 in 1999. The county also returned nearly 12 tons of worn tires to be retread for nonsteering wheels of trucks, saving approximately \$200,000.



#### 1999 WasteWise Accomplishments

|                            |           |
|----------------------------|-----------|
| Waste Prevented            | 30 tons   |
| Recycling Collection       | 81 tons   |
| Recycled-Content Purchases | 112 tons  |
| Total Cost Savings         | \$361,236 |

## UNIVERSITY/COLLEGE

### Seattle University

Seattle University has made a firm commitment to waste reduction. Through its innovative surplus store, for example, the university sold 71 tons of surplus furniture such as tables, blackboards, computer equipment, and desks to community members, saving nearly \$24,000 in 1999 disposal costs alone. All sales revenue supports the university's recycling program. The university also collected more than 1 ton of clothes from students in a campus clothing drive to benefit a local charity for homeless youth.



#### 1999 WasteWise Accomplishments

|                            |          |
|----------------------------|----------|
| Waste Prevented            | 72 tons  |
| Recycling Collection       | 552 tons |
| Recycled-Content Purchases | 150 lbs  |
| Total Cost Savings         | \$31,503 |

SCHOOL/SCHOOL DISTRICT

*Alden Central School*



Alden Central School, which educates children from kindergarten through 12th grade, implemented a comprehensive waste reduction program at all campus buildings: high school, middle school, intermediate school, and primary education buildings, and the grounds department. The Alden, New York, school and its 250 staff members eliminated 450 pounds of polystyrene cafeteria trays and dishes by switching to reusable products. It also composted 900 pounds of cafeteria waste and 150 pounds of yard trimmings for use as mulch on building grounds.

**1999 WasteWise Accomplishments**

|                            |           |
|----------------------------|-----------|
| Waste Prevented            | 2,650 lbs |
| Recycling Collection       | 3,400 lbs |
| Recycled-Content Purchases | 2,500 lbs |

TRANSPORT PACKAGING CHALLENGE

*SST Trucking, LLC*



SST Trucking, LLC, located in Garland, Texas, achieved substantial cost savings by utilizing reusable shipping racks, working with suppliers to reduce packaging, and establishing a transport packaging return program. The company saved more than \$55,000 and reduced packaging waste by nearly 180 tons through initiatives adopted as part of the Transport Packaging Challenge program.

**1999 WasteWise Accomplishments**

|                            |          |
|----------------------------|----------|
| Waste Prevented            | 180 tons |
| Recycling Collection       | 672 tons |
| Recycled-Content Purchases | 6 tons   |
| Total Cost Savings         | \$55,630 |

# Program Champions

## **Very Large Corporation**

Anheuser-Busch  
Companies, Inc.

Bell Atlantic

Lucent Technologies

Walt Disney World Company

## **Large Corporation**

Allergan, Inc.

Battelle Memorial Institute

Canon USA, Inc.

Constellation Energy Group

Herman Miller, Inc.

Millipore Corporation

Pitney Bowes, Inc.

## **Midsize Business**

Cytec Industries Inc.—  
Fortier Complex

## **Small Business**

Accent Construction, LLC  
Calgene, LLC

Allchem Services, Inc.

Guardian Industries,  
Ligonier Plant

## **University/College**

Eastern Illinois University

## **Federal Government**

Sandia National Laboratories

United States Postal Service—  
Alabama District

## **State Government**

The State of Ohio

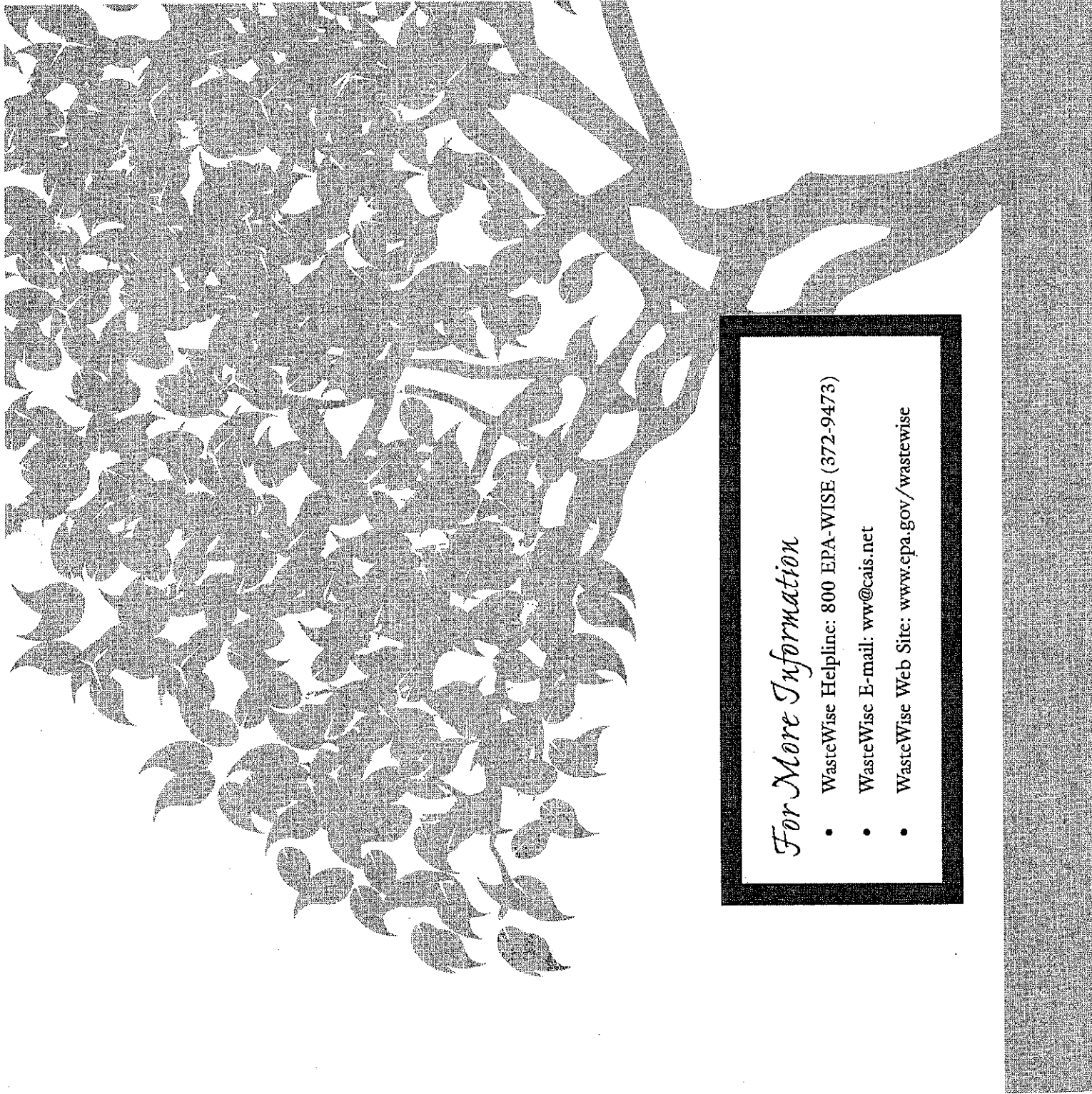
## **Local Government**

Polk County, Iowa

King County Department of  
Natural Resources,  
Washington

## **Tribal Government**

Grand Traverse Band  
of Ottawa and  
Chippewa Indians



*For More Information*

- WasteWise Helpline: 800 EPA-WISE (372-9473)
- WasteWise E-mail: [ww@cais.net](mailto:ww@cais.net)
- WasteWise Web Site: [www.epa.gov/wastewise](http://www.epa.gov/wastewise)





United States  
Environmental Protection Agency  
(5306W)  
Washington, DC 20460

Official Business  
Penalty for Private Use \$300



# WasteWise Update

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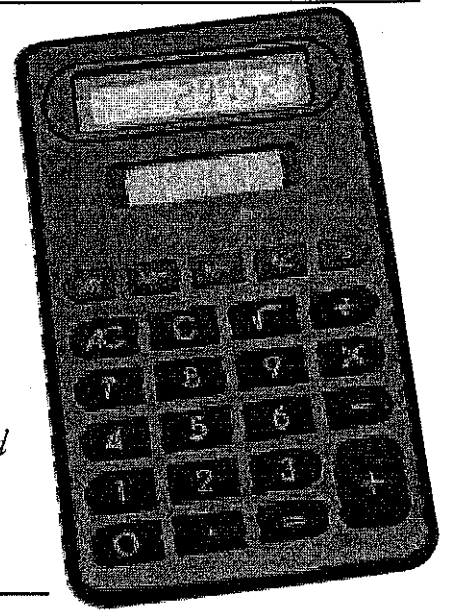
## THE MEASURE OF SUCCESS—CALCULATING WASTE REDUCTION



Preserving Resources.  
Preventing Waste.

# Calculating Waste Reduction

**Y**ou developed a waste reduction program for your organization—now can you prove, in tons and dollars, that those efforts are making a difference? Your waste reduction activities benefit the environment and your bottom line, but, until you measure them, their true impact will remain unknown.



## Why Measure?

Measurement is critical to every component of a waste reduction program—including waste prevention (preventing waste before it is generated, also known as source reduction), recycling collection, and buying or manufacturing products with recycled content. WasteWise partners report the following six main benefits of measurement:

- **Justifies waste reduction programs to management.** Measurement is an essential factor in perpetuating most partners' waste reduction programs. "By tracking the results of our waste reduction efforts, we are able to justify the continuation of our program and maintain upper management's support," explains Maureen Burke of Bell Atlantic, a 1998 WasteWise Partner of the Year.
- **Provides positive publicity opportunities.** Public recognition of an organization's environmental stewardship is a considerable marketing asset. Just ask the eight organizations recognized as WasteWise Partners of the Year in 1998 (see page 3). But this type of positive publicity from WasteWise or other programs is only possible when partners take the time to monitor and report their waste reduction successes.
- **Reveals the economic value of waste reduction.** By demonstrating economic benefits, measurement helps justify your organization's continued involvement in environmental activities. Effective measurement reveals, for example, which waste reduction activities are most efficient and which save the most money—vital information for your organization's future allocation of resources. George Thomas of Eastman Kodak Company, a 1998 WasteWise Program Champion, agrees, "Waste reduction measurement, including cost savings results, is critical for obtaining top management support for our efforts." Management often finds clear, indisputable cost savings data to be the most persuasive.

- **Uncovers opportunities for process efficiency.** Measurement can bolster the overall productivity of your organization. Careful measurement, for example, can reveal that your organization is wasting money on materials that simply get thrown away, such as unnecessary forms and paperwork.
- **Motivates employees.** Measurement also can be a valuable tool in motivating employees to participate in waste reduction programs. Evidence that individual workers' waste reduction efforts have made a real difference can be the key to maintaining the energy and dedication to sustain successful environmental programs.
- **Fulfills a WasteWise partner responsibility.** Yes, WasteWise is a voluntary program, but it also carries with it a few important responsibilities—in particular, the responsibility to measure waste reduction results. Measuring results allows you to compare your organization's efforts to others and contribute to the aggregate waste reduction results published annually by WasteWise.

## It Doesn't Have to Be Hard

To some companies, measurement might seem like a complex, labor-intensive task. But, as WasteWise partners across the nation have repeatedly shown, the most effective measurement systems often are simple and user-friendly. This *Update* provides step-by-step instructions on how to establish or improve your measurement system and explains a variety of options requiring different levels of effort and expense. The key steps are:

- Selecting a measurement approach that's right for your organization.
- Maintaining a dynamic data collection system.
- Determining what your "ounce of prevention" is worth.

To help you along the way, this *Update* also includes a list of measurement publications, tools, and Web sites.

# Selecting the Right Approach

What data will drive your waste reduction program? How do you begin? Discover the key questions that will help you select a measurement plan that works for your organization.

## What Is the Scope of the Waste Reduction Program?

The first step is to determine what data collection approach to measure. Some data collection restrictions work best as a guide to select for certain waste reduction approaches. Depending on the materials, activities, or locations involved, it may be important to focus on certain data types. Experiment with different approaches. For instance, it will be easier to obtain data for measuring volume or weight of materials reduced by separating bottles from the Waste Wise pallets and products already set aside in the area of waste prevention, recycling and reuse, and having an environmental condition with recycled content. To start by measuring your Waste Wise goals, as determined by the following:

- **Range of materials covered.** The types of materials you measure will directly impact your data collection process. To identify material-specific programs or goals, you need to collect data on a material-specific level. To measure office paper reduction, the materials records of those who paper their agendas and manuals will show paper use throughout the day.
- **Types of activities captured.** To identify waste reduction in general, an activity-specific based on leader activity might be sufficient. To identify discrete waste reduction activities such as getting suppliers to return in reusable containers, you need to measure results on an activity-specific level. A survey of employee responses for coordinating reuse of containers with the supplier, for example, might help to estimate the number of reusable containers used in a given

time period. These activities would help demonstrate the impact of material gathering, processing and could be measured further activities as well.

- **Operational areas included.** Consider the type and size of your organization's operations and whether you include areas or units that focus on waste reduction activities. Are your manufacturing and purchasing operations centralized in all facilities, for example, or would you need to coordinate with several facility managers to obtain the data you need?

The larger the facility and the more complex the waste stream, the more data you might need to collect and the more coordinated the program design might be. If your organization has several facilities, you might designate a team of employees to coordinate data collection, collect the data and periodically combine data across sites.

## What Data Sources Are Available?

After determining the data and possible sources available for your measurement efforts, you can now evaluate the available sources to find the data you need. Options include:

- Establishing a paper, purchasing, or sales records.
- Coordinating a facility-wide survey.
- Surveying your employees to find out how much waste is being produced and reduced.
- Establishing a waste log.

Take a range of possible approaches of the various sources for collecting waste generation data and compare the strengths and limitations of each. Waste generation data collected from departments or waste management employees may be accurate if you have reliable data and if the data consistently covers beginning, middle and end of shift operations. Other sources could be the waste reduction program and the a combination of approaches as needed.

For more detailed information, see the following column: Measuring a Chronic Paper Collection System.

### 1998 Partners of the Year:

BankAmerica Corporation  
 Dell America  
 Target Stores  
 Public Service Electric & Gas Company  
 Schlegel Systems  
 Southern Mills, Inc.  
 Applied Specialties  
 Signs-A-ventures

**TABLE 1: Where Can I Find the Data?**

Resource Intensity

Low

High

| Data Source  | Strengths   | Limitations  |
|--|---|--|
| <p><b>Hauler Records</b></p> <p>Waste and recycling haulers can provide your organization with regular (e.g., biweekly or monthly) records of the tonnage of waste recyclables generated and collected.</p>  | <ul style="list-style-type: none"> <li>Information can be required as part of a hauler's contract if you request it.</li> <li>Can provide recyclables tonnage on a commodity-specific basis if you request it in your contract.</li> <li>Might provide total weight or volume of waste generated at a facility.</li> </ul>  | <ul style="list-style-type: none"> <li>Detailed records might not exist if you don't ask for them in your contract.</li> <li>Might not provide component-specific information if materials are combined before being discarded or collected for recycling.</li> <li>Can be difficult to use if you share dumpsters with others or if hauler picks up from multiple sites.</li> </ul>   |
| <p><b>Purchasing Records</b></p> <p>An internal examination of your purchasing records can reveal how much money was spent on different products from one year to the next, as well as quantities purchased. Organizations also can ask their suppliers for invoices, which contain the same kind of information.</p>    | <ul style="list-style-type: none"> <li>Can provide data for estimates of waste generation of specific materials.</li> <li>Tracks potential wastes from the point of origin.</li> <li>Can track low-volume or seasonal waste materials.</li> <li>Helps identify the most expensive components of an organization's waste.</li> <li>Can identify and track recycled-content or source-reduced purchases.</li> </ul> | <ul style="list-style-type: none"> <li>Might provide incomplete picture of waste generation if all materials are not tracked from the point of purchase.</li> <li>Can be difficult to track if you have decentralized purchasing.</li> <li>Tracks quantity purchased, not volume or weight.</li> <li>Might be difficult to correlate purchase date with use or discard date if materials are stored for long periods of time.</li> </ul> |
| <p><b>Sales Records</b></p> <p>Sales records can provide information on revenue from resale of surplus equipment or materials.</p>   | <ul style="list-style-type: none"> <li>Documents the financial benefits of reuse including total revenues and (potentially) avoided disposal costs.</li> </ul>  | <ul style="list-style-type: none"> <li>Only valid for those items that are reusable.</li> <li>Typically does not provide data on weight or volume of items resold.</li> </ul>  |
| <p><b>Employee Surveys</b></p> <p>Periodic surveys of employees that deal directly with waste generation, disposal, and recycling of a particular product can yield specific data on waste generation and reduction.</p>   | <ul style="list-style-type: none"> <li>Can monitor the effectiveness of employee education programs and indicate behavior changes.</li> <li>Can provide information about specific waste components.</li> </ul>   | <ul style="list-style-type: none"> <li>Can be a burden depending on scope and frequency of survey.</li> <li>Most likely relies on estimates rather than exact measurements.</li> </ul>   |
| <p><b>Facility Walk-Through</b></p> <p>A facility walk-through involves touring an entire facility or a portion thereof (e.g., the administrative office but not the manufacturing plant) to observe the activities of different departments and talk with employees about waste-producing activities and equipment.</p> | <ul style="list-style-type: none"> <li>Allows first-hand examination of facility operations and raises awareness of all involved.</li> <li>Can provide qualitative information about major waste components and waste-generating processes.</li> <li>Allows interviews with personnel, which can reveal waste prevention, recycling, and purchasing opportunities.</li> </ul>                                     | <ul style="list-style-type: none"> <li>Might not identify all wastes generated.</li> <li>Might not be representative if only conducted once.</li> <li>Relies on estimates of waste generation.</li> </ul>  |
| <p><b>Waste Sort</b></p> <p>A waste sort involves the physical collection, sorting, and weighing of an organization's waste. The goal of the sort is to identify each waste component and calculate its percentage of the overall waste stream.</p>  | <ul style="list-style-type: none"> <li>Provides the most accurate waste generation data for an entire facility or functional area, depending on scope.</li> </ul>   | <ul style="list-style-type: none"> <li>Might require multiple staff and significant workspace.</li> <li>Might not be representative or statistically valid if only conducted once or on a small sample.</li> <li>Does not provide qualitative information on how or why wastes are generated.</li> </ul>   |

See Table 2 on page 8 for information on how to collect data for specific activities and materials.

## How Can You Maximize Your Measurement Investment?

Keep in mind that not every waste reporting purpose or material receipt software-based or best professional judgment is all you need. But for the many reasons discussed in the beginning of this Update, you might want to install a more detailed measurement system which nearly always begins with instruments. Considering a waste audit for example, which instruments are used and resources that enhance waste transfer or purchasing records. Obtaining the data is discussed in the previous section. Your one-year expenditure will use the waste reduction methods and other approaches and articles in this Update help you reflect your measurement resources.

A good way to maximize time and resources is to conduct a waste reduction audit to coordinate measurement efforts among appropriate departments. A network can generate current data and relationships throughout an organization. An employee purchasing or facility will be more familiar with how much of a given item the organization purchases, when it is purchased, in what quantities, from whom they were purchased and so on. Another way to maximize your measurement responsibilities is to identify the process or tracking, training, reporting, reviewing or auditing activities.

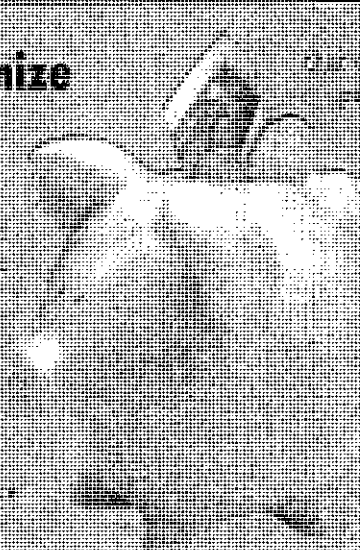
Also consider the following ways to help you maximize available resources and begin to collect data:

### Conduct a Pilot Test

Initially, your measurement might use an untested or unproven instrument or device. A pilot test will provide results to reveal how effective these activities are. If you require the instrument or method of waste reduction, you can evaluate the results of your measurement approach. Test with a specific facility, material, resource or to determine the feasibility of each approach.

### Use Established Estimates

This approach helps to use data or estimates when a tracking method of yours is proven. In estimating the amount of waste generated through an office paper recycling program, for example, you might only know the total number of paper purchased in a month and the amount



of waste from this amount of paper. Estimates can be used to estimate the amount of waste generated. Refer to page 10 for information on waste audit techniques and estimated amount of waste generated. Also, in general, business operations can be used to estimate waste generated. WasteWise.com provides information on waste reduction activities. In addition, the WasteWise.com website provides information on waste reduction activities developed by WasteWise.com. California Integrated Waste Management Board is also providing practical waste audits and information for different industries. The database is available through WASTEWISE.com at [www.waste-wise.com](http://www.waste-wise.com).

### Enlist Support

WasteWise.com provides information on waste reduction activities. The WasteWise.com website provides information on waste reduction activities. The WasteWise.com website provides information on waste reduction activities. The WasteWise.com website provides information on waste reduction activities.

## Bell Atlantic Makes the Waste Reduction Connection

Bell Atlantic, a leading provider of telecommunications services, has made a significant commitment to waste reduction. The company has implemented a comprehensive waste reduction program that includes recycling, energy conservation, and other sustainable practices. This program has resulted in significant waste reduction and cost savings for the company. Bell Atlantic's commitment to waste reduction is a testament to the company's dedication to environmental stewardship and sustainable business practices. The company's waste reduction program is a model for other businesses to follow, demonstrating that waste reduction can be both profitable and environmentally responsible.



# Maintaining a Dynamic Data Collection System

**O**nce you determine the scope of your waste reduction measurement effort and consider the merits of various measurement approaches, it's time to collect your data. While the details of measurement processes will vary from program to program, the basic steps are the same.

## Step One: Establish the Baseline

A baseline, or set of data representing the conditions from which you start, serves a number of purposes. First, it provides a frame of reference for your waste reduction program. To measure waste prevention progress, for example, you need to know how much waste your organization was generating before you implemented your prevention program. Establishing this baseline and periodically collecting waste generation data are the core activities of waste prevention measurement.

Developing a baseline also helps your organization establish a consistent data collection procedure. Before starting a waste reduction program, take the time to answer the planning questions described on pages 3 through 5 and make the key measurement decisions discussed there. You don't have to get it absolutely right the first time. The trial and error of setting a baseline is an opportunity to explore which data collection approach works best. Once you decide on a measurement approach, however, you should stick with it. Make sure you're satisfied with the data collection method and be certain your data sources are likely to remain available. An organization that establishes a waste generation baseline using purchasing records, but later switches to hauler records, for example, probably would find the data from the two sources difficult to compare.

Finally, baseline setting provides an opportunity to inventory current waste prevention activities. Your baseline should take these activities into account so your previous accomplishments are recorded when you measure your progress. This inventory of current prevention practices can help define the scope of the waste prevention program. You might realize, for example, that the prevention practices occurring in one area might work in others—a shipping

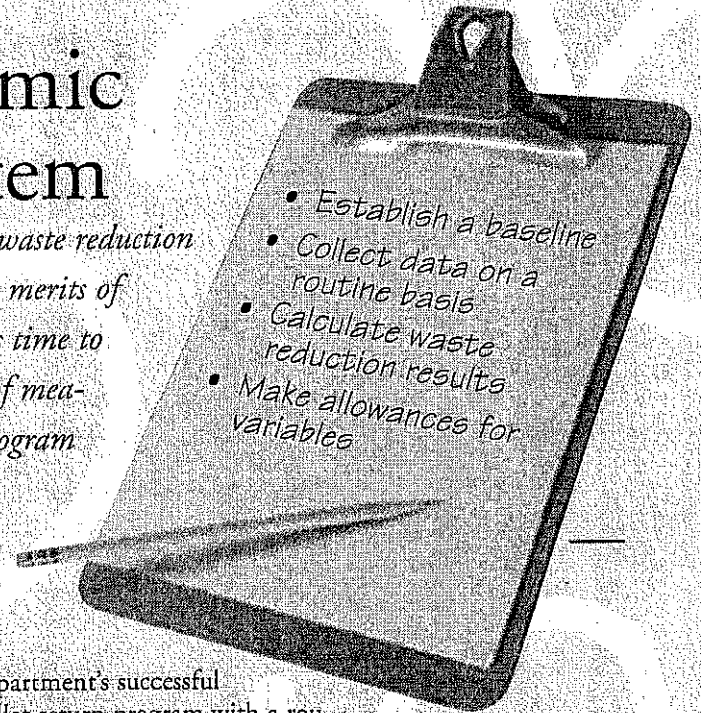
department's successful pallet return program with a routine customer might inspire the purchasing department to include a pallet return provision into other supplier contracts.

## Step Two: Continue Data Collection

Waste reduction is a dynamic process. Once your waste prevention program is underway, you'll need to continue collecting data to evaluate the program's effectiveness. Evaluate the program periodically to accomplish the following:

- Track program successes and build upon them.
- Identify areas needing improvement.
- Determine the effect of any changes to the program, such as new waste prevention activities.
- Develop new ideas for waste reduction.
- Keep employees informed and motivated.
- Document compliance with state and local regulations.

Collect a second set of data after the program has been in place long enough to affect your organization's waste generation rate, usually 6 months to 1 year. Since you have already developed a data collection process to determine your baseline, subsequent data collection should be much easier. It also might be worthwhile to conduct additional waste assessments periodically to determine further changes in the composition of your organization's waste. Trends in waste generation



might indicate changes should be made to your waste prevention program. If they interesting supplies are creating large amounts of excess materials, for example, a company might consider working with one supplier to develop alternative or reusable packaging options. As you add new materials to your waste prevention program, make sure to develop and document appropriate baseline waste generation rates for those materials as well.

**Data Collection for Specific Materials and Activities**

Certain data collection methods, such as examining reader records, can be a good indicator of overall waste reduction. But what if your organization wants waste prevention or recycling data for specific materials or activities? Or what if you need data on the quantity or types of products purchased with recycled content or information on the percentage of post-consumer recycled content in those products? Some data collection techniques are better than others for certain goals, materials, and activities. Table 2 (page 6) provides a few examples.

**Step Three: Calculate Results**

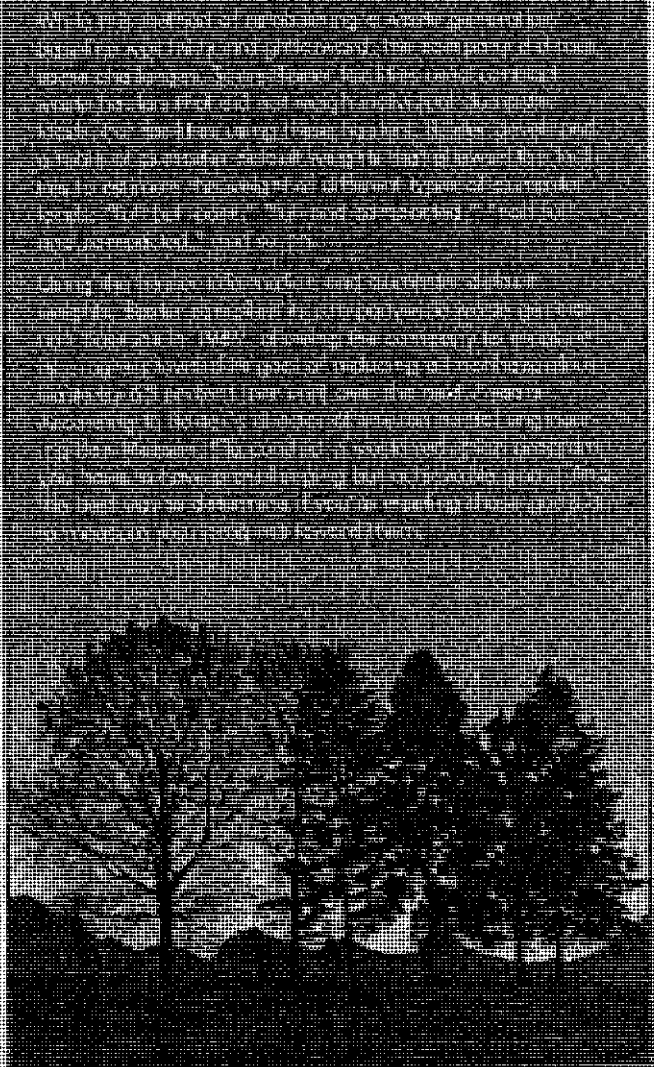
Before preparing your waste prevention results, consider the level of detail your organization needs to evaluate the effectiveness of its waste prevention program. Some organizations might not need extremely detailed results. Depending on the level of accuracy you require, you may collect data, and then simply take the waste to ground or waste prevention calculations, calculating only simple straight estimates or more complex equations.

Once you determine the level of detail required, your organization is ready to calculate its waste prevention results by comparing the baseline to subsequent waste generation data. When measuring the amount of waste prevented, select the time period (e.g., weeks or months) closest for post-to-recycling. Multiply waste figures by the appropriate annual multiplier to correlate with an estimate of the amount of waste reduced per year. Annual waste prevented should also be converted to cubic yards or volume figures. If you are charged for waste removal based on weight, you will convert the amount of waste reduced to a standard volume (e.g., tons). If you are charged for waste removal by volume, you will, even that, convert the amount to cubic yards.

The sample calculations on pages 8 and 9 will help you determine results for two common waste prevention activities: multi-use packaging and paper reduction.

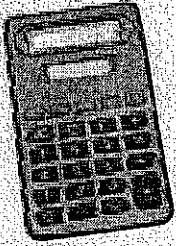
**Baseline Setting at Baxter International**

When Baxter International, a major medical product manufacturer, decided to evaluate its environmental waste reduction program in 1990, it was faced with a complex task. The company had a large, multi-faceted waste generation program. The waste was generated from a wide range of activities, including the production of pharmaceuticals, the manufacturing of medical devices, and the production of medical supplies. Baxter had a long history of environmental responsibility, and it was committed to reducing its waste generation. The company had a waste management program in place, but it was not clear how to measure the effectiveness of that program. Baxter needed a way to set a baseline for its waste generation, and it needed a way to track its progress. The company had a large amount of waste, and it was difficult to track. Baxter had a large amount of waste, and it was difficult to track. Baxter had a large amount of waste, and it was difficult to track.









## Calculation 1: Single-Use Versus Multiple-Use Containers

This method calculates the amount of packaging materials conserved resulting from a switch from disposable (single-use) to reusable (multiple-use) containers. Reusing containers can lead to significant cost savings and waste reduction. Corrugated containers generally can be used up to 12 times, while plastic containers might be reusable 250 times. To estimate the weight of the single- and multiple-use containers, you can weigh them, obtain a figure from the manufacturer, or use the values presented in the table of default weights on page 11.

To calculate the packaging reduced, obtain the following information:

### INPUTS:

- Weight<sub>single</sub>** = Weight of the disposable container previously used.
- Number<sub>multi</sub>** = The number of reusable containers purchased by your company. This information should be available from your purchasing department.
- Weight<sub>multi</sub>** = Weight of the multiple-use container.
- Trips<sub>annual</sub>** = The number of trips expected to be made annually. If your business needs have not changed, this should equal the number of single-use containers previously purchased per year.
- Discarded<sub>multi</sub>** = The number of multiple-use containers discarded each year, because reusable containers will eventually need to be recycled or, if not recyclable, thrown away. To estimate this figure, divide the number of trips made per year (**Trips<sub>annual</sub>**) by the estimated number of trips each multiple-use container can make in its lifetime (**Reuses<sub>multi</sub>**). (This information should be available from the manufacturer or you can use estimates in the table of default weights on page 11.)

$$\text{Discarded}_{\text{multi}} = (\text{Trips}_{\text{annual}}) / (\text{Reuses}_{\text{multi}})$$

### OUTPUTS:

#### Annual reduction in packaging:

$$\text{Reduction} = (\text{Trips}_{\text{annual}} \times \text{Weight}_{\text{single}}) - (\text{Discarded}_{\text{multi}} \times \text{Weight}_{\text{multi}})$$

By focusing on annual figures, this equation assumes you will dispose of an equal number of reusable containers each year. In reality, your organization might not dispose of any of the reusable containers in the early years of implementation. Instead, you might need to throw away or recycle all containers in the final years of their estimated lives. If you prefer, you can calculate the total waste reduction benefit over the entire lifespan of the product rather than annually. This calculation also assumes that the manufacturer's estimated life projection is correct. If the container's lifespan is shorter or longer than expected, the waste reduction benefits will be decreased or increased, respectively.

### Example

A business purchases 200 reusable plastic containers weighing 5.5 pounds each. It plans to use these containers to transport calculators an average of 1,000 times per month, for a total of 12,000 trips annually. The estimated life of each container is 250 trips. The new containers replace corrugated containers, weighing 1.5 pounds each, which were used one time and discarded.

$$\text{Number}_{\text{multi}} = 200 \text{ containers}$$

$$\text{Reuses}_{\text{multi}} = 250 \text{ trips/container}$$

$$\text{Weight}_{\text{single}} = 1.5 \text{ lb}$$

$$\text{Weight}_{\text{multi}} = 5.5 \text{ lb}$$

$$\text{Trips}_{\text{annual}} = 12,000 \text{ trips}$$

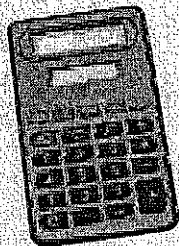
$$\text{Discarded}_{\text{multi}} = 48 \text{ multiple-use containers per year}$$

To calculate the waste reduced annually, the business first estimated the number of reusable containers that it would have to throw away each year:

$$(12,000 \text{ trips}) / (250 \text{ trips/container}) = 48 \text{ containers discarded or recycled per year}$$

The firm used this information to calculate the annual reduction in packaging:

$$(12,000 \text{ trips} \times 1.5 \text{ lb}) - (48 \text{ containers} \times 5.5 \text{ lb}) = 18,000 \text{ lb} - 264 \text{ lb} = 17,736 \text{ lb}$$



## Calculation 2: Reducing the Number of Pages Used

To measure a specific paper reduction activity where document length is known or can be easily estimated, you will need to obtain or estimate the following information:

### INPUTS:

- Sheets<sub>before</sub>** = Sheets of paper that would have been used before implementing the office paper reduction activity.
- Sheets<sub>after</sub>** = Sheets of paper used after implementing the activity.
- Frequency** = Number of times per time period (e.g., week or month) the document is distributed.
- Distribution** = Number of people to whom the document is distributed.
- Weight** = Weight of the paper. If you are unable to actually weigh the paper, you should be able to estimate the weight using the table of default weights on page 11.
- Reduction Factor** = Percentage of reduction from the activity:  
(Sheets<sub>before</sub> - Sheets<sub>after</sub>) / Sheets<sub>before</sub>

### OUTPUTS:

$$\text{Reduction} = \text{Sheets}_{\text{before}} \times \text{Frequency} \times \text{Distribution} \times \text{Weight} \times \text{Reduction Factor}$$

### Example

A government (still in the process of updating its electronic network to allow e-mail) encouraged its departments to begin double-sided printing for its 25-page interdepartmental project updates. Each of the 10 departments distribute approximately one update per week to 200 people. By duplexing, they were able to reduce the amount of paper used.

- Sheets<sub>before</sub> = 25 sheets
- Sheets<sub>after</sub> = 13 sheets
- Distribution = 200 people
- Frequency = 10 times per week
- Weight = 1 sheet × (5 lb/500sheets) = 0.01 lb
- Reduction Factor = (25 sheets - 13 sheets) / 25 sheets = .48
- Weekly paper reduction = (25 sheets) × (10/wk) × (200 people) × (0.01 lb/sheet) × (0.48) = 240 lb
- Annual paper reduction = (240 lb/yr) × (52 wk/yr) = 12,480 lb/yr

Table 3 (on the right) provides default weights for a range of packaging materials and office products.

## Keeping Tabs on Paper Reduction at Janus Funds

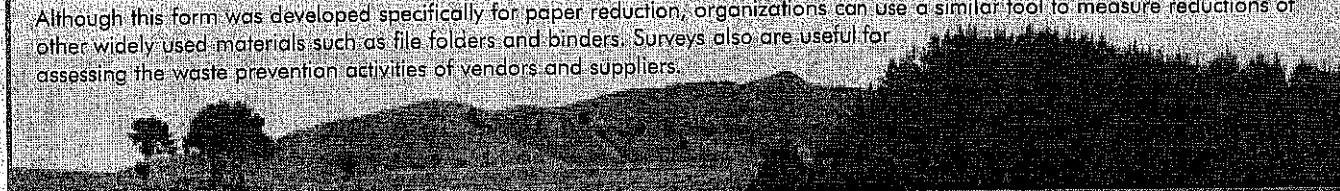
Surveys can be very effective measurement tools for widely used materials like office paper. **Janus Funds**, a financial services company with approximately 1,000 employees, used an electronic survey to gauge the number and performance of paper reduction activities companywide. A waste reduction team met with each department and asked for a commitment to three paper reduction goals. After the departments began implementing some of their paper reduction ideas, the team circulated the following form via e-mail asking the departments to indicate the different ways they had reduced paper usage, noting that estimates were acceptable.

### Sample Janus Capital Paper Reduction E-mail Survey Form

| Item                 | # of Pages | Frequency | Distribution                   | New Method              | Started This Before the Team Meeting? | Result of the Team Meeting? | Estimated Savings |
|----------------------|------------|-----------|--------------------------------|-------------------------|---------------------------------------|-----------------------------|-------------------|
| Weekly status report | 2          | 1/wk      | Goes to 1 person from 8 people | Now we use e-mail       | YES                                   |                             | 16 pgs./wk        |
| Inter-dept memos     | 2 on avg.  | 3.5/wk    | Goes to 200 people             | Now we use double-sided |                                       | YES                         | 700 pgs./wk       |

The questions about whether the department implemented the activity before or after the meeting helped the team determine which activities were a result of their efforts. The form also included a space to suggest ideas that other departments might find helpful. The form allowed the waste reduction team to measure paper reduction companywide without a substantial amount of effort.

Although this form was developed specifically for paper reduction, organizations can use a similar tool to measure reductions of other widely used materials such as file folders and binders. Surveys also are useful for assessing the waste prevention activities of vendors and suppliers.



**TABLE 3: Default Weights for Selected Materials and Products**

| <b>CONTAINER</b>  |                   |                           |                       |                 |
|-------------------|-------------------|---------------------------|-----------------------|-----------------|
| Type of Container | Dimension (in)    | Volume (ft <sup>3</sup> ) | Container Weight (lb) | Number of Boxes |
| Standard          | 14.35 x 12 x 9.25 | 1.58                      | 0.5                   | 1,920           |
| Standard          | N/A               | N/A                       | 1.5                   | 1,280           |
| Standard          | N/A               | N/A                       | 3.2                   | 640             |
| Standard          | 16 x 16 x 16      | 2.15                      | 2.0                   | 960             |
| Standard          | N/A               | N/A                       | 5.5                   | 384             |

Source: EPA, Estimating the Costs of Waste Management, 2nd Edition, 1994; Container Weight: Container Weight Association, 1994.

| <b>PAPER</b>  |                |                      |                        |  |
|---------------|----------------|----------------------|------------------------|--|
| Type of Paper | Dimension (in) | Sheets Per Ton       | Sheets Per Ton         |  |
| Standard      | 8.5 x 11       | 2,700 sheets per ton | 200,000 sheets per ton |  |
| Standard      | 9.5 x 11       | 2,700 sheets per ton | 270,000 sheets per ton |  |

| <b>OFFICE FURNITURE</b> |                     |          |             |                  |
|-------------------------|---------------------|----------|-------------|------------------|
| Item                    | Type                | Material | Size (in)   | Avg. Weight (lb) |
| Chair                   | Double Pedestal     | Steel    | 72 x 36     | 27.5             |
| Chair                   | Double Pedestal     | Aluminum | 72 x 36     | 24.0             |
| Chair                   | 3 Shelves           | Steel    | 36 wide     | 5.0              |
| Chair                   | 3 Shelves           | Aluminum | 36 wide     | 4.0              |
| Chair                   | 4 Drawers, Vertical | Steel    | Letter Size | 1.0              |
| Chair                   | Swivel Arm          | Steel    | N/A         | 1.0              |
| Chair                   | CFU                 | Steel    | N/A         | 1.0              |
| Chair                   | N/A                 | Aluminum | N/A         | 1.0              |

Source: Pennyc's, Office Depot, Sears

## Step Four: Make Allowances for Variables

Once you prepare your final results, you need to adjust that information, where possible, to develop an accurate picture of waste generation in your organization. After all, waste generation estimates often require more than just adding the facilities waste generation from the original measurements with production. There are numerous variables that might affect the waste generation figures. These variables include:

- Variations in the price of supplies
- Changes in the size of the workforce
- Seasonal variations in production
- Changes in the type of material used

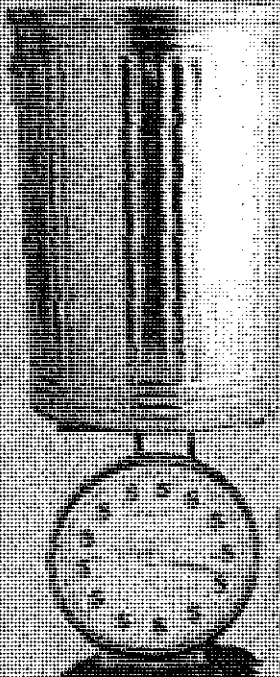
These variables can have significant impacts on waste generation and, depending on how waste generation is measured, might cause an inordinate amount of the

amounts of waste generated. One organization that was faced with generation for estimating purchasing records, for example, discovered that its purchasing agent bought paper based on paper prices rather than actual price consumption. Having waste generation data only on the amount purchased would have yielded a false picture, because much of the paper bought was not being used.

Another business noticed that its overall paper recycling rate actually increased during its waste reduction program and in a significant manner. This occurrence led the firm to investigate why the recycling rate had increased. The firm discovered that its waste reduction program had affected how the paper was purchased. In an earlier document as a result of the waste prevention activities, the firm had determined that the amount of paper that would have been generated by the paper manufacturing plant before paper reduction activities were initiated with the amount of paper generated after the activities were implemented. The difference between these figures provided an estimate of the paper waste prevented.

# Determining What an Ounce of Prevention Is Worth

**A**n ounce of prevention might be worth hundreds of dollars, or more if you're a victim fan of environmental risk. Or consider waste of landfill space, depending on how you calculate it. Before you share the results of your waste reduction activities, consider how many pounds of waste reduced translate into cost savings, environmental benefits, and additional bottom profits.



## For WasteWise Partners, Being Green Means Saving Green

Management reports what you can achieve under a contract with WasteWise that Exceeds The Green Company's 1998 WasteWise Program Guarantees. Examining the financial impacts of your waste reduction cost savings, you can understand management's input for your organization's waste reduction program. The financial benefits of waste reduction include the following areas:

### Operational Efficiencies

As you understand the benefits of current waste reduction activities, you can save through more streamlined work practices. A division of WasteWise partner State of Ohio's Department of Administrative Services, for example, replaced a time-consuming manual paper routing system with an online system, representing more than 475 hours of man-hours previously spent making copies and administrative work hours previously spent filing, mailing, and locating records in the routing process. Similarly, by cutting down on the use of cartons and stretchers for packaging materials, Target Stores saved WasteWise hundreds of dollars per month by eliminating the need for these items. If you're currently using stretchers, you can save by switching to a more efficient system. To determine if waste reduction will increase your productivity, you can use the WasteWise survey on productivity and time. The survey is available at [www.wastewise.com](http://www.wastewise.com). For more information, see Target Stores' success story in the WasteWise Partner Success Stories section of this January/February report. Following Green Source's commitment to the Green Source Award for the Environment, the company has reduced its waste by 100,000 pounds and saved \$100,000 in waste disposal costs.

### Avoided Waste Removal Costs

WasteWise partners also have saved millions of dollars by reducing the amount of solid waste that goes to landfills. Waste removal costs are dependent on the regional market and change often. Some states charge weight or volume-based rates, while others charge a fee or charge per unit. The Oak Hill Environmental Center, Green Facility of WasteWise partner Mitsubishi, Inc., reduced the number of pallets and film drums used by 100,000 units, \$200,000 worth, the equivalent of saving 100,000 units of waste. In addition, the company's waste reduction activities have resulted in a 10% increase in State Farm Mutual Automobile Insurance Company's personal line rate and reduction of annual costs by almost 10 percent by negotiating the alternative disposal arrangement. The fact that all avoided costs are with local facilities means more business revenue for the waste management care and terms. For more information on reducing disposal costs, see EPA's publication *How to Save Money Using Green Waste Reducing WasteWise* (EPA-600/R-01-010), which also is available on the WasteWise Web site [www.wastewise.com](http://www.wastewise.com).

### Avoided Purchasing Costs

Many services, such as recycling paper, construction or energy efficient lighting and equipment, show the most in avoided purchasing costs. First, if you've already been awarded a contract, you can consider applying for a contract awarding policy for recycling materials and equipment to purchase items in terms of cost and green time period.

### Profits From Reselling

Used materials might still have value, but you can sell them to a buyer. Just keep in mind that revenues will vary considerably depending on factors such as geographic location and market price fluctuations. You also might consider repairing and refurbishing certain products for resale, if applicable.

See page 14 for illustrations of several waste reduction services and how to calculate the associated cost savings.

## Calculating Environmental Savings

Waste reduction measurements also can tell you how much your organization has saved or avoided from air and the environment. Among the obvious environmental benefits of waste reduction are reductions in greenhouse gas emissions and in the consumption of natural resources and energy. Environmental impacts occur throughout stages of a product's life cycle, from the initial extraction of raw materials to the product's disposal. Waste prevention and recycling can minimize these impacts, and your measurements can help you quantify the environmental savings.

### Use EPA's Waste Reduction Model

To calculate how well your waste reduction measurements benefit climate change, EPA has developed the Waste Reduction Model (WARM). WARM calculates greenhouse gas (GHG) emissions reductions from various waste reduction activities. Greenhouse gases, which contribute to global climate change, are emitted in nearly every stage of a product's life cycle, even when the product is used. GHG emissions amount of GHG emitted depends on the waste management technology and the material type. Waste prevention, or reducing waste at the source, is the best option for reducing GHG emissions. Recycling is the next best choice for reducing emissions, generating credits and saving to reuse raw materials from recycled rather than virgin materials.

To calculate the GHG emissions reduction of waste reduction activities, WARM uses emissions factors, which are the GHG emissions calculated from the full life cycle of a material, not including a credit for virgin material that's produced from waste management activities. Waste prevention provides the highest savings. The emissions factors are in terms of metric tons of carbon equivalent (MTCe), an internationally recognized unit of measurement, and account for different warming potentials among various GHGs such as methane and carbon dioxide. To put MTCe in perspective, one metric ton is equal to 1 million MTCe. One equivalent metric ton of MTCe is off the road for 1 year.

WARM is a useful tool for calculating emissions reductions and provides an important way to compare the benefits of waste reduction activities on a common basis. EPA's information from a WasteWise survey in 1997. The Director and Council Company government waste that 23 million pounds of unrecycled waste by law with the secretary and assistant managing. According to WARM, the credits for each GHG emission by more than 90% MTCe. Calculated GHG emissions reflect emissions from virgin materials waste reduction efforts, and EPA's website, WasteWise Web site at [www.epa.gov/wastewise](http://www.epa.gov/wastewise), where WARM is available for downloading as Microsoft Excel format.

Yet, there are many other organizations and projects that measure and report emissions of other greenhouse gases in such as natural gas and energy conservation. The WasteWise program, for example, saves 7% percent of the energy required to make aluminum cans from virgin materials. To put these numbers into perspective, recycling for cans saves about the same amount of energy consumed by the average household in 1 day. WasteWise partner, American Paper Company, a beverage manufacturer and distributor, recently avoided 20 billion cans in 1997, saving enough energy to power approximately 100 million homes for 1 day, or nearly 100,000 households for an entire year.

## Accounting for the "Hidden" Benefits

A national waste reduction program can yield additional benefits for your department. The following benefits are hard to calculate, more difficult to measure, and hard to link and operational benefits. However, they can impact your bottom line by increasing productivity and reducing product rejection.

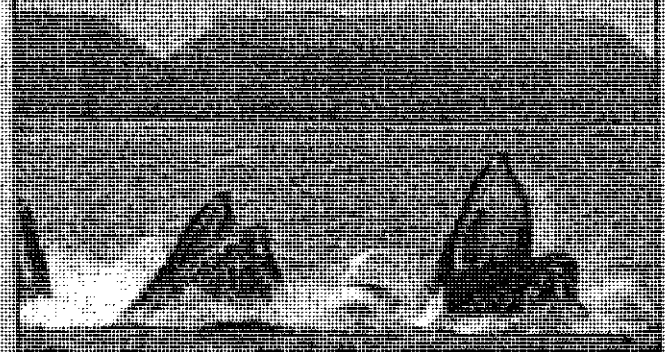
### Employee Morale

Many employees support their own waste reduction program for 2000 dollars worth. They employees structure in the best production system have resources could be used.

## Investing in Waste Reduction

Waste reduction programs can be a significant investment for your organization. While the initial costs of a waste reduction program can be high, the long-term benefits can be substantial. Investing in waste reduction can lead to significant cost savings and increased productivity. The benefits of a waste reduction program include:

- **Cost Savings:** Reducing waste disposal costs and the cost of raw materials.
- **Increased Productivity:** Streamlining processes and reducing downtime.
- **Improved Quality:** Reducing defects and rework.
- **Enhanced Safety:** Reducing the risk of accidents and injuries.
- **Increased Compliance:** Meeting regulatory requirements and avoiding fines.
- **Improved Reputation:** Demonstrating a commitment to environmental stewardship.



## How to Calculate Cost Savings

### AVOIDED WASTE REMOVAL COSTS

#### By weight or volume:

To calculate avoided waste removal costs for waste removed by weight or volume, multiply avoided disposal costs (per unit of material) by the weight or volume of the material removed by the recovered component weight or volume.

**Example:** Your organization reduced the amount of hazardous waste by diverting 540 tons to reusable plastic chairs. The avoided waste removal cost is \$1,200.

$$\begin{array}{r}
 540 \text{ tons} \\
 \text{Weight or volume} \\
 \text{of material}
 \end{array}
 \times
 \begin{array}{r}
 \$2.22 \\
 \text{Avoided disposal cost per unit} \\
 \text{weight or volume}
 \end{array}
 =
 \begin{array}{r}
 \$1,200 \\
 \text{Avoided waste} \\
 \text{removal costs}
 \end{array}$$

#### By pull:

To calculate avoided waste removal costs for waste removed by pull, divide the volume of the material generated by the volume of the container used. Then multiply the result by the cost per pull.

**Example:** Your organization reduced the amount of waste pulled by using a 10 yd<sup>3</sup> dumpster. The avoided waste removal cost is \$1,200.

$$\begin{array}{r}
 400 \text{ yd}^3 \\
 \text{Volume of} \\
 \text{material removed}
 \end{array}
 \div
 \begin{array}{r}
 10 \text{ yd}^3 \\
 \text{Volume of dumpster}
 \end{array}
 \times
 \begin{array}{r}
 \$30 \\
 \text{Avoided disposal cost} \\
 \text{per dumpster}
 \end{array}
 =
 \begin{array}{r}
 \$1,200 \\
 \text{Avoided waste} \\
 \text{removal costs}
 \end{array}$$

### AVOIDED PURCHASING COSTS

To calculate avoided purchasing costs for office paper, multiply the number of reams not purchased (per unit of time) by the price of each ream (there are 500 sheets in a ream).

**Example:** Your organization extracted the need to purchase 40 reams of paper each month by implementing a default double-sided copying policy. Each ream of paper costs \$35.

$$\begin{array}{r}
 40 \text{ reams} \\
 \# \text{ of reams not} \\
 \text{purchased per} \\
 \text{unit of time}
 \end{array}
 \times
 \begin{array}{r}
 \$35 \\
 \text{Cost per ream}
 \end{array}
 =
 \begin{array}{r}
 \$1,400 \\
 \text{Avoided costs} \\
 \text{per month}
 \end{array}
 \times
 \begin{array}{r}
 12 \text{ months} \\
 \text{year}
 \end{array}
 =
 \begin{array}{r}
 \$1,440 \\
 \text{Avoided waste} \\
 \text{removal costs}
 \end{array}$$

### PROFITS FROM SELLING RECYCLABLES

To calculate the revenue from sales of recycled materials, multiply the price of the product (per unit) by the number of units sold.

**Example:** Your organization sold 300 tons of glass for \$30 per ton. The revenue from the sale was \$9,000.

$$\begin{array}{r}
 300 \text{ tons of glass} \\
 \text{Number of} \\
 \text{units sold}
 \end{array}
 \times
 \begin{array}{r}
 \$30 \\
 \text{Selling price} \\
 \text{of product}
 \end{array}
 =
 \begin{array}{r}
 \$9,000 \\
 \text{Revenue}
 \end{array}$$

more efficiently. Because they are the most knowledgeable about their operating problems, owners, including those for their associates, are starting the recycling cost savings and environmental benefits that there can be no responsibility for waste and investment. Recycled materials, in fact, are the new commodity.

**Public Image**

Waste reduction programs and initiatives of and public opinion have become the most important organizational public relations. The public program can show the public that your organization has moved beyond an environmentalism which is a based product of a market. For governments, such programs can demonstrate that they are the "right" direction. Meanwhile, corporate environmentalism and environmentalism becoming a vital part of a company's identity. New World Communications and its founders are increasingly involved in the environmental arena and positions of the companies with which they work. In fact, a survey by Walter Korsch, a marketing analyst company, found that 78 percent of the environmentalists who had business that had an impact on their companies had environmental activities. An article at the University of Maryland, the management consulting firm McKinsey and Company also suggests that the public image management is essential to the success of products and services. Such activities are essential if customers are provided with the benefits of the products almost immediately after production.

Environmental development commitments to the public, and which increasingly involve objective, verifiable data, are the challenge of environmental activities in the market. With the public as the target and political and social pressure, the focus is on Target Group 1994. Waste management is the focus of the 1994 period. As an example, I have worked up with a lot of environmentalists in waste prevention and waste reduction. Managing objectives as critical components, which in turn, include in present and future activities with shareholders. Waste reduction studies that are heavily underway by employees and vendors are a major display of an environmental program to the public.

Waste Management, Inc., Waste Management, Inc., Ashland, Ohio, 1994.

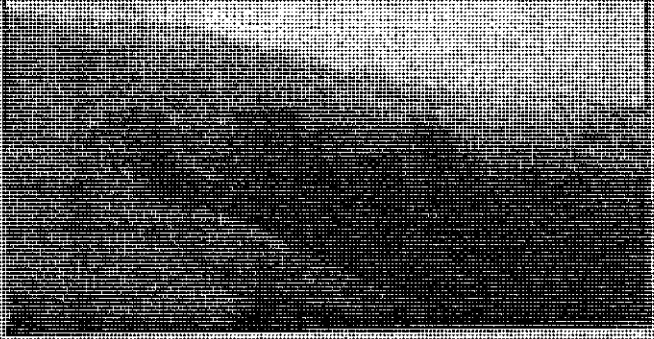
Waste Management, Inc., Waste Management, Inc., Ashland, Ohio, 1994.

Waste Management, Inc., Waste Management, Inc., Ashland, Ohio, 1994.

# Sample Environmental Conversions<sup>1</sup>

Here are some examples of conversions that can be made to conserve energy and resources:

- Replacing 120 watt incandescent bulbs with energy saving compact fluorescent bulbs.
- Replacing one gallon of oil with energy saving compact fluorescent bulbs.
- More than 5,000 BTU's of energy are conserved for every pound of food required.
- One ton of incandescent bulbs saves 17 tons of carbon dioxide emissions.
- One ton of CO<sub>2</sub> emissions of the road for 1 year.
- The amount of energy saved through these means can be used to:
- The amount of energy saved through these means can be used to:



1. Robert E. P. Williams, E. J. Williams, and J. P. Williams, "Energy Conservation in the Home," Energy Conservation Program and Energy Performance Measurement System, National Environmental Council, 1994.

2. Christopher Paul D. 1993, "Energy Conservation in the Home," Energy Conservation Program and Energy Performance Measurement System, National Environmental Council, 1994.

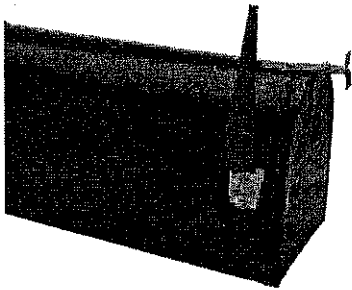
3. Energy Conservation Program and Energy Performance Measurement System, National Environmental Council, 1994. U.S. Department of Energy, 1994. Energy Conservation Program and Energy Performance Measurement System, National Environmental Council, 1994. U.S. Department of Energy, 1994.

4. Energy Conservation Program and Energy Performance Measurement System, National Environmental Council, 1994.



## Measurement Made Easy at Texas Instruments

The Texas Instrument of Measurement makes Texas Instruments' (TI) easy to use. TI believes that easy to use measurement tools are essential for the success of any measurement program. TI's easy to use measurement tools are designed to be used by anyone, anywhere, at any time. TI's easy to use measurement tools are designed to be used by anyone, anywhere, at any time. TI's easy to use measurement tools are designed to be used by anyone, anywhere, at any time.



If you have received this publication in error, or want to be removed from the *WasteWise Update* mailing list, please call the WasteWise Helpline at 800 EPA-WISE (372-9473) or send a copy of this page, with the mailing label, back to WasteWise at the address below. Many WasteWise publications, including the *WasteWise Update*, are available electronically on the WasteWise Web site at <[www.epa.gov/wastewise](http://www.epa.gov/wastewise)>.



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Environmental Protection Agency  
(5306W)  
Washington, DC 20460

Official Business  
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# R e s o u r c e s



## ▼ **Business Guide to Reducing Solid Waste (EPA530-K-92-004)**

The U.S. Environmental Protection Agency (EPA) developed this guide to assist businesses, governments, and other organizations in establishing waste reduction programs. This guide not only discusses the development and implementation of waste reduction programs but also explains waste assessments and how to monitor and measure waste reduction techniques. To order, contact EPA's RCRA Hotline at 800 424-9346.

## ▼ **Buy-Recycled Training Manual**

The Northeast Maryland Waste Disposal Authority (NMWDA) prepared this manual to help public and private agencies develop buy-recycled programs and monitor the progress of those programs. For more information, contact Richard Keller at Maryland Environmental Service at 410 974-7254 or e-mail <rkell@menv.com>.

## ▼ **Profiting From Source Reduction: Measuring the Hidden Benefits**

Alameda County, California, produced this report to demonstrate source reduction measurement

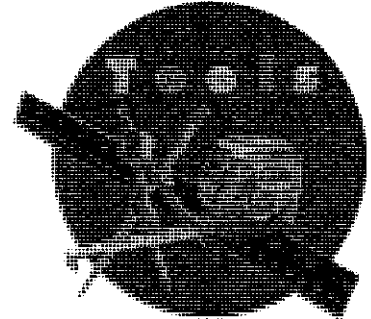
tools and benefits for businesses and governments, including basic source reduction cost analysis and productivity modeling. The report can be downloaded from Alameda County's Web site <[www.stopwaste.org/srcred](http://www.stopwaste.org/srcred)> or ordered in hard copy from Tom Padia at 510 614-1699. The cost of reproduction is \$20.

## ▼ **Source Reduction Now!**

This manual, by the Minnesota Office of Waste Management, provides information on how to measure product and behavior changes that prevent waste, along with other information on how to implement successful source reduction programs. The manual describes problems and suggests well-tested solutions. For more information, visit Minnesota's Office of Waste Management Web site at <[www.moea.state.mn.us/berc/srndl.cfm](http://www.moea.state.mn.us/berc/srndl.cfm)> or call 800 877-6300.

## ▼ **Uncovering Value: Integrating Environmental and Financial Performance**

This 1998 Aspen Institute report recommends that companies find effective ways to measure internal environmental activities. The report's findings indicate that companies experience a competitive advantage when they integrate environmental considerations into core business strategies. In fact, the report specifically finds that financial institutions place a higher value on organizations with this type of integrated environmental planning. To download a copy of the report, go to <[www.aspeninst.org/dir/polpro/eee/ny/eeenyrep.pdf](http://www.aspeninst.org/dir/polpro/eee/ny/eeenyrep.pdf)>.



## ▼ **Accounting Software Application for Pollution Prevention (ASAPP)**

The Electric Power Research Institute (EPRI) developed waste accounting software for use by any industry that generates byproducts or wastes. The software allows companies to track both hazardous and nonhazardous waste generation, management, reduction activities, and costs. It provides a means to gather data from multiple facilities and operations and to analyze, graph, compile, and report a variety of waste management information. Users can analyze waste generation data and waste management costs for an entire company or facility or for a specific activity. To obtain the ASAPP software, contact EPRI at 415 855-2487.

## ▼ **Business Recycling Cost Model**

Green Solutions created this flexible model to help organizations evaluate solid waste management options by projecting costs and results for recycling and waste reduction. To order, call Green Solutions at 360 897-9533 for more information.

▼  
**CIWMB Waste Characterization Database and Buy-Recycled Database**

California Integrated Waste Management Board (CIWMB) designed this database to provide local governments with a tool to determine what's being disposed of in their waste streams, how to divert materials from disposal, and how to conserve resources. See CIWMB's Web site at <[www.ciwmb.ca.gov/wastechar/](http://www.ciwmb.ca.gov/wastechar/)> for the waste characterization database and <[www.ciwmb.ca.gov/rcp/](http://www.ciwmb.ca.gov/rcp/)> for the buy recycled database.

▼  
**Source Reduction Program Potential Manual and Reducelt Software (EPA530-E97-001)**

EPA developed this manual to evaluate the potential impact of various source reduction options for local governments' residential programs. An organization can calculate the potential for a particular source reduction program to reduce waste using example scenarios and worksheets. In addition to the manual, the Reducelt software, an electronic version of the program potential worksheets, helps calculate waste generation data, program potential factors, and savings estimates. The manual and software can be obtained through the RCRA Hotline at 800 424-9346 or downloaded from EPA's Web site at <[www.epa.gov/epaoswer/non-hw/reduce/reduceit/index.htm](http://www.epa.gov/epaoswer/non-hw/reduce/reduceit/index.htm)>.

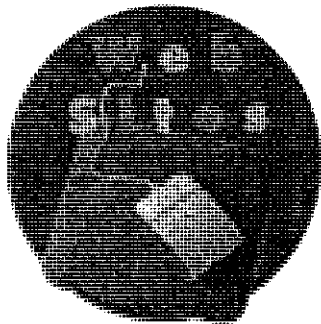
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**WasteNot System**

This tracking software, created by Ecology Action, helps organizations conduct waste assessments and measurements. It serves as a guide for collecting relevant information and creates detailed reports showing successful waste reduction efforts. For more information, contact Ecology Action at

<[wastenot@ecoact.org](mailto:wastenot@ecoact.org)> or <[www.ecoact.org](http://www.ecoact.org)>.

▼  
**Waste Reduction Model (WARM)**

WARM is a Microsoft Excel spreadsheet application created by EPA to help solid waste planners and organizations track and voluntarily report greenhouse gas (GHG) emission reductions. The model calculates and totals GHG emissions of baseline and alternative waste management practices including source reduction, recycling, combustion, composting, and landfilling. WARM can be downloaded from EPA's Web site at <[www.epa.gov/mswclimate](http://www.epa.gov/mswclimate)>.



▼  
**California Integrated Waste Management Board Web Site**  
[www.ciwmb.ca.gov/](http://www.ciwmb.ca.gov/)

The CIWMB Web site contains a wealth of waste reduction information, including two pages focused on measurement. For information on measuring waste streams and determining base-year waste generation and adjustment methods, go to <[www.ciwmb.ca.gov/lgtools/measure/](http://www.ciwmb.ca.gov/lgtools/measure/)>. For the fact sheet, Measuring the Success of Office Paper Reduction Efforts, which helps organizations measure the impact of office paper reduction activities and determine cost savings, go to <[www.ciwmb.ca.gov/bizwaste/officepaper/measure.htm](http://www.ciwmb.ca.gov/bizwaste/officepaper/measure.htm)>.

▼  
**Cutting Paper Web Site**  
[eetd.LBL.gov/paper](http://eetd.LBL.gov/paper)

The Cutting Paper Web site investigates how paper is used in offices and provides strategies for reducing its cost and quantity. Topics include ideas for saving paper, actions to cut down paper use, tips on how to measure and count savings, and miscellaneous information about reducing paper use and related topics.

▼  
**Environmental Accounting Project Web Site**  
[www.epa.gov/opptintr/acctg](http://www.epa.gov/opptintr/acctg)

Developed by EPA, this Web site is intended to encourage and motivate businesses to understand the full spectrum of their environmental costs and integrate these costs into their decision-making. A list of helpful resources is available, including both EPA and non-EPA publications, and information sources on environmental accounting.

▼  
**Recycling Measurement Web Site**

[www.epa.gov/epaoswer/non-hw/recycle/recmeas](http://www.epa.gov/epaoswer/non-hw/recycle/recmeas)

This EPA Web site provides a standard methodology for state and local governments to use when measuring recycling rates. The site includes several recycling measurement documents, detailed instructions, worksheets, sample survey forms, planning checklists, helpful tips, a recommended timeline for developing a measurement program, and standard volume-to-weight conversion factors.

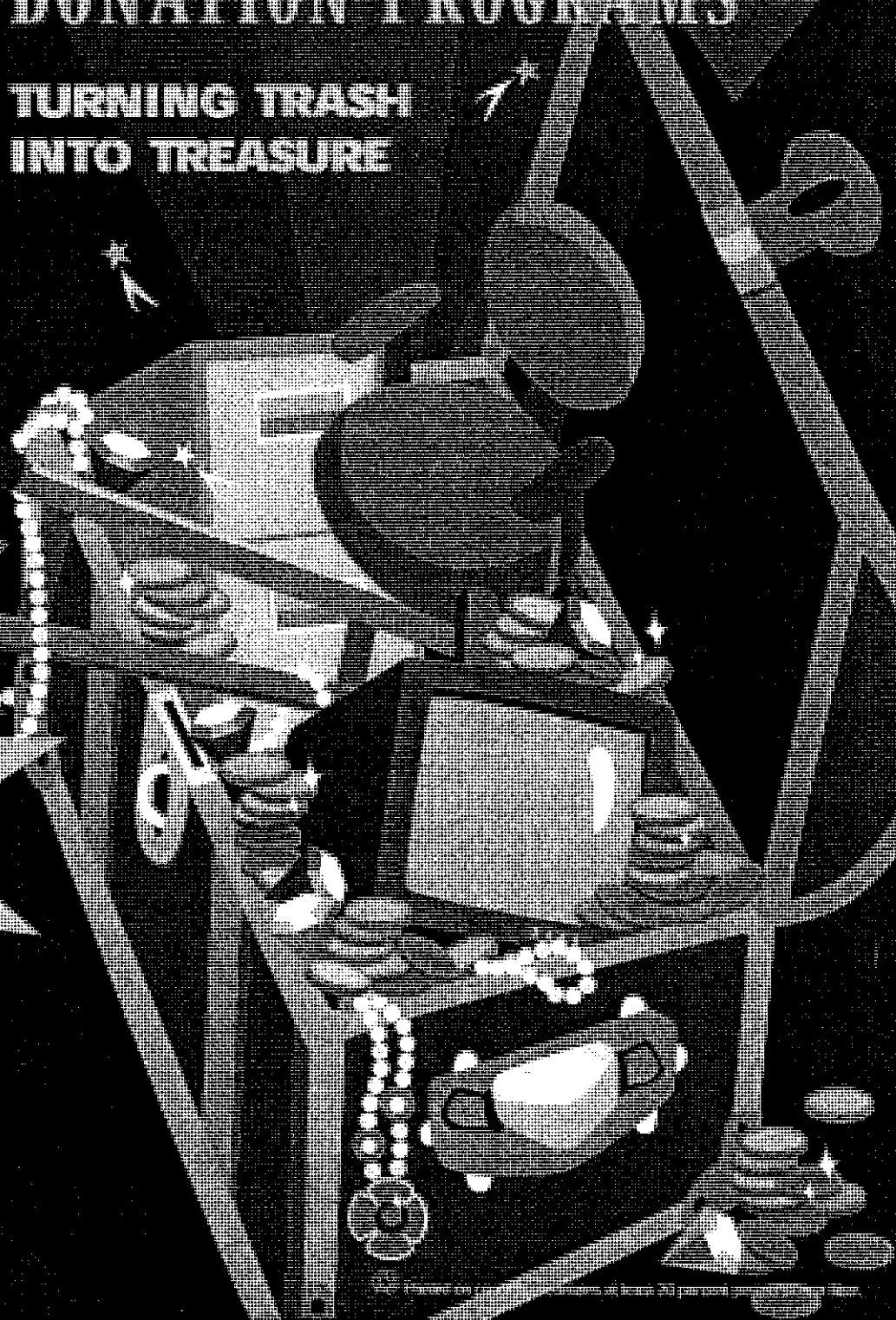
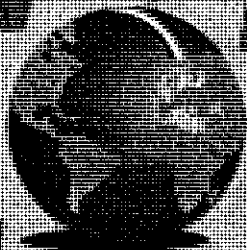


# WasteWi\$e Update

## DONATION PROGRAMS

TURNING TRASH  
INTO TREASURE

WASTE  
WISE



# DONATION PROGRAMS

## Turning Trash Into Treasure

**O**ne man's trash is another man's treasure. Just ask the WasteWi\$e partners and the donation recipients featured in this issue of WasteWi\$e Update.

Everyone wins when corporations donate surplus equipment, supplies, and materials to nonprofit organizations in need. These donations fill a massive void in the nonprofit community and can make the difference between the survival and elimination of services desperately needed by communities across the country. The donating companies benefit by knowing they are "doing the right thing." In addition, they may reap rewards through tax breaks, avoided storage and disposal costs, and improved community relations. Moreover, the environment also wins. Donation is an important waste prevention strategy, since it reduces the need for the purchase and manufacture of new products and helps keep materials out of landfills.

Corporations have donated several billion dollars in equipment and supplies over the past 2 decades. The National Association for the Exchange of Industrial Resources (NAEIR) has provided over \$950 million worth of corporate inventory to America's schools and nonprofit organizations since 1977. Similarly, in the past decade, nearly \$1 billion in newly manufactured products have been donated through Gifts In Kind International, Education Assistance Ltd. (EAL), which has been donating materials to universities in coordination with tuition scholarships since 1982, awarded more than \$3 million in tuition scholarships. These results are just a sampling of what American companies can achieve when donation becomes part of their corporate culture.

This issue of WasteWi\$e Update highlights several donation strategies implemented by WasteWi\$e partners. Many partners keep donations in the community by using local organizations. For example, the University of South Florida gives excess prepared food to a local chapter of the Salvation Army, a national nonprofit organization. Abbott Laboratories, Millipore Corporation, and Raytheon E-Systems donate materials to local charities and schools. Other partners, such as Baxter International and Thomas Jefferson University Hospital, take a more global outlook and donate materials to national nonprofits that redistribute the materials to those in need around the world.

Other donation strategies include developing a relationship with local handicapped organizations to process items for reuse and recycling, contacting a materials exchange to identify prospective recipients, and contributing materials to state or local government agencies for special projects. Florida Power Corporation, for example, donates used concrete utility poles to an artificial barrier reef project sponsored by a local government agency. Apart from donation, companies might also consider employee give-aways, sale of surplus materials, and internal materials exchanges. These actions reduce waste, help your company's bottom line, and boost employee morale.

Donation is an important waste prevention strategy, since it eliminates the need for the purchase and manufacture of new products and helps keep materials out of landfills.

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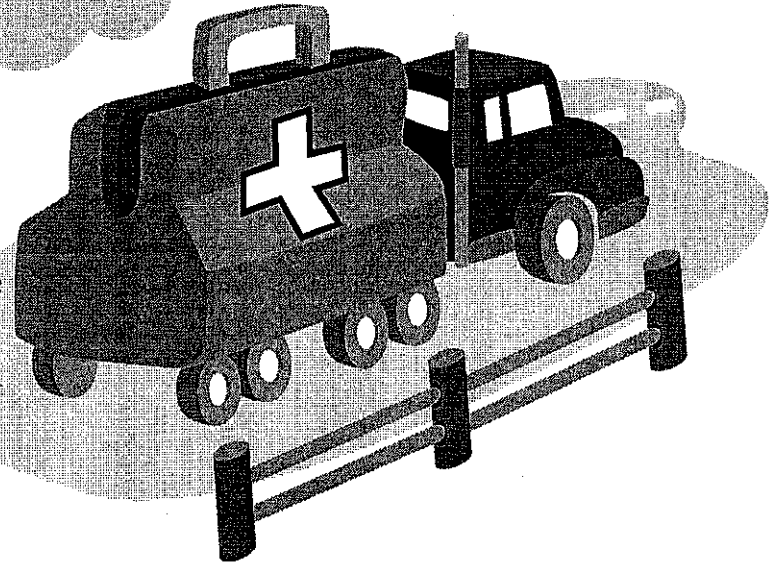


# Medical Supplies Saving Money and Lives

In the summer of 1994, a shipment of intravenous (IV) needles, gloves, surgical masks, and nutritional supplements arrived at a Rwandan refugee camp in Zaire. Doctors there used these donated medical supplies to treat refugees suffering from dehydration and gastrointestinal disorders, as well as to deliver babies. Imagine if those supplies had ended up in the bottom of a landfill, instead of being used to save refugees' lives.

Each year, millions of dollars worth of medical supplies go unused by the U.S. hospitals that purchase them. The reason: U.S. law prohibits hospitals from using supplies once their packaging has been opened, even if the supplies themselves have not been touched. Rather than wasting these valuable supplies, many hospitals, including several WasteWi\$e partners, donate them to relief organizations. These organizations then distribute the supplies to developing nations around the world. Donating medical supplies enables hospitals to reduce their solid waste, avoid disposal costs, and help people in the far reaches of the world who are in dire need of medical relief.

Medical supply donation programs are relatively easy to set up and inexpensive to implement. These programs usually entail working closely with a national or local relief organization that accepts the supplies and sends them to places where they are needed. Donated supplies include everything from gloves, sponges, gowns, and sterile gauze, to sutures, syringes, catheters, and IV tubing. In addition, many relief organizations accept medical equipment, such as operating room tables, X-ray units, kidney dialysis machines, and wheelchairs. Hospitals store the supplies in properly labeled boxes or containers until the relief organization collects them. Depending on the relief organization, hospitals may be asked to sterilize the items before storing them. Other relief organizations, however, sterilize the products after receiving them. Most relief organizations



pay for the costs of transporting the supplies from the donating hospital to the warehouse where they are stored prior to shipment abroad.

A hospital's liability for donated medical supplies ends at the point of donation, if proper steps are taken. When relief organizations pick up the donated items, legal paperwork can be signed indicating the items the hospital has donated and that the relief organization is now liable for any malfunction of the supplies when they reach their final destination.

As the following WasteWi\$e partners' experiences show, one of the greatest benefits of donating medical supplies is that donation doesn't just save money, it can make the difference between life and death.

## RESOURCES

The following organizations are sources of information on medical supplies:

- American Red Cross
- CARE (Catholic Relief Effort)
- Department of Health and Human Services
- International Medical Supplies
- International Medical Supplies

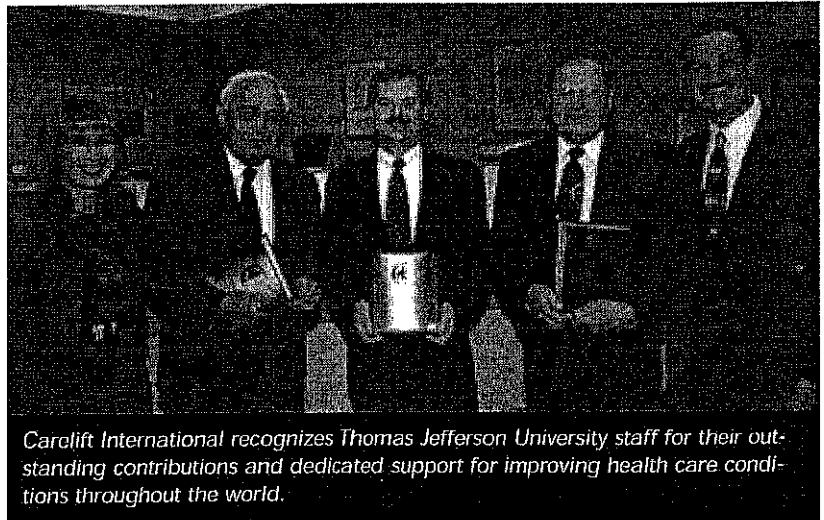
## Thomas Jefferson University and Hospital Donate Supplies and Equipment

**E**mloyees at Thomas Jefferson University and Hospital in Philadelphia, Pennsylvania, were concerned when they saw the quantities of medical supplies the hospital discarded. They knew the unused supplies cost the hospital money to dispose of—and would be priceless in regions of the world where medical products are in high demand.

In 1994, the hospital (a WasteWi\$e partner) identified a local organization, Carelift International, that accepts donations of unused surgical supplies and medical equipment, such as X-ray machines and operating room tables. Carelift distributes the supplies and equipment to hospitals in the former Soviet Union, Africa, and the Far East. Carelift is notified when supplies are ready to be collected, then Carelift pays to transport the supplies to its distribution center. When a full X-ray room and dental clinic were no longer needed at the university and hospital, due to downsizing, this equipment was donated to Carelift as well. The total donations in the past 3 years have been worth more than half a million dollars and have saved the costs of storing or disposing of the products.

According to Bill Wardle, assistant vice president for materials management, the greatest benefit of the program has been giving new life to supplies that would otherwise be unusable. "By donating these supplies, we make them usable again, and someone benefits from our donation."

For more information about Thomas Jefferson University and Hospital's program, contact Bill Wardle at 215 503-6244.



*Carelift International recognizes Thomas Jefferson University staff for their outstanding contributions and dedicated support for improving health care conditions throughout the world.*

## Baxter International Partners With AmeriCares

**I**n 1987, WasteWi\$e partner Baxter International began working with AmeriCares, an international relief organization that distributes medical supplies worldwide. Baxter, a global medical products and services company, had been looking for cost-effective ways to manage its excess inventory, including IV, renal, and biotechnology products. Excessive inventory is expensive for Baxter to dispose of and represents a lost investment for the company. In addition, Baxter knew that its excess inventory could be a life saver in regions of the world where few medical supplies are available.

After researching several relief organizations that accept donated medical supplies, Baxter selected AmeriCares. "AmeriCares was the best fit for us," says Patricia Morgan, coordinator of the company's product donation efforts. "AmeriCares is a very large organization with warehouses all over the United States. As a result, they're able to

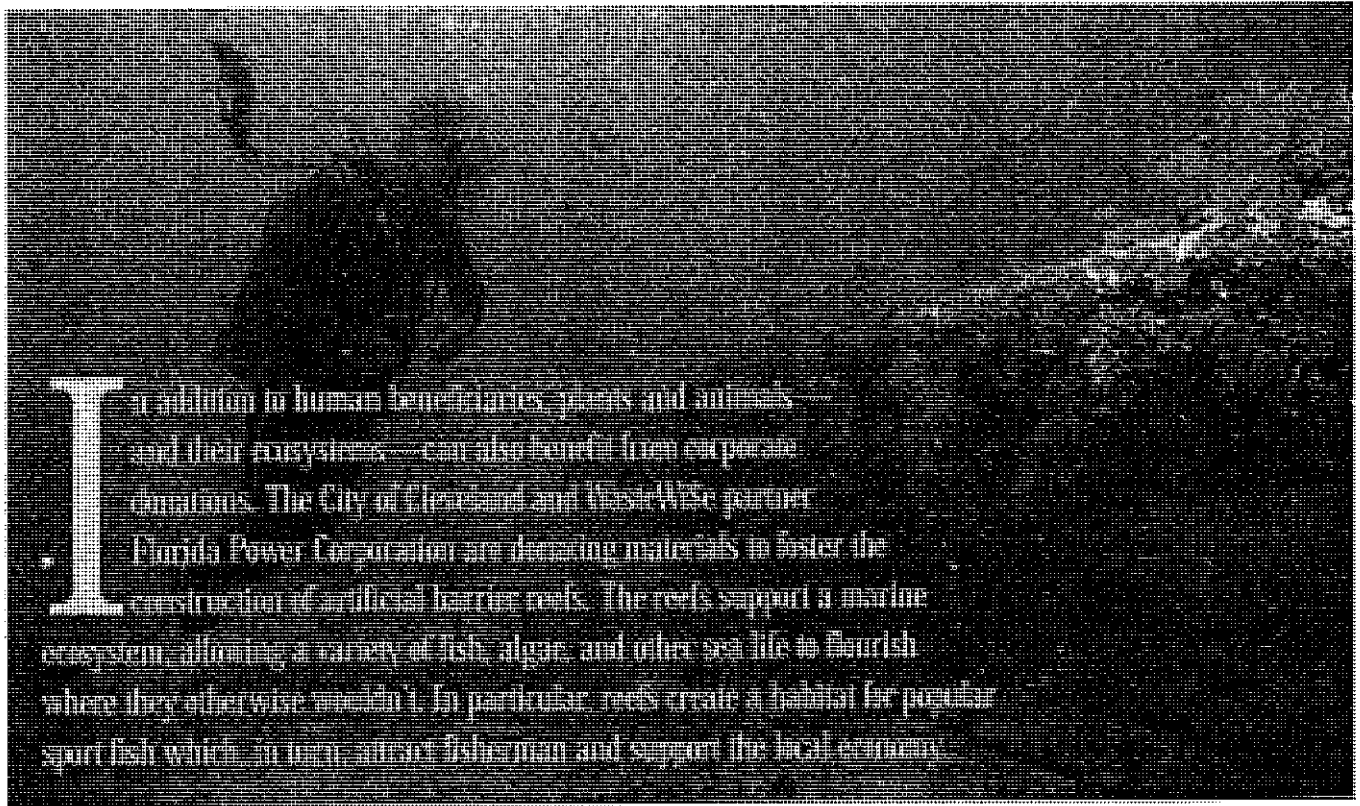
ensure an easy movement of product from our warehouses to theirs." In addition, AmeriCares ensures that recipients of the donated supplies use them properly and before their expiration dates. Through AmeriCares, Baxter's donated products have been distributed to four continents and countries such as Rwanda, Croatia, Russia, and India. In 1994 and 1995, Baxter donated a total of 1,740,000 pounds of materials worth more than \$21 million.

Baxter has received numerous letters from small hospitals and clinics around the world acknowledging the supplies they received from Baxter and thanking them for the donation. The rewards of the program for Baxter stem from the satisfaction of helping others in need. "We know that hospitals that literally had nothing, now have a clean, workable product," says Morgan.

For more information about Baxter's program, contact Patricia Morgan at 847 948-4604.



# Artificial Reefs Are "Growing"



In addition to human beneficiaries, plants and animals and their ecosystems can also benefit from corporate donations. The City of Cleveland and WasteWise partner Florida Power Corporation are donating materials in foster the construction of artificial barrier reefs. The reefs support a marine ecosystem, allowing a variety of fish, algae, and other sea life to flourish where they otherwise wouldn't. In particular, reefs create a habitat for popular sport fish which, in turn, attract fishermen and support the local economy.

## Sinking Costs for Florida Power Corporation

While utility poles can remain in use for approximately 25 to 30 years, utility companies are still faced with the disposal of a tremendous volume of old poles each year. Given the high costs of hauling and landfill disposal, utility companies have a clear incentive to search for alternative methods for managing their waste poles. **Florida Power Corporation** is breaking new ground with a creative approach to prevent its poles from entering the waste stream.

Over the years, Florida Power has found it quite costly and inefficient to dispose of its old concrete utility poles via landfilling. Today, Florida Power takes advantage of a unique local reuse opportunity for its used poles. The utility donates the poles and other concrete debris to the Pinellas County, Florida, artificial reef program, one of the largest in the country. Pinellas County accepts concrete, and other forms of clean rubble, that has been diverted from the landfill to use in the construction of artificial barrier reefs off the coast of Florida. The artificial reefs provide new habitats for marine life, attracting schools of tropical fish.

Jennifer Waggoner, Florida Power's corporate recycling program manager, first learned about artificial reef programs in 1996 through an article in a nature magazine. Waggoner quickly recognized how well such a project would fit with Florida Power's needs and began to contact the coastal counties in which the company has electric plants. She soon discovered that the staging area for Pinellas County's Clearwater Reef Program was located close to one of the company's utility pole take-down sites. Proximity would prove to be a key factor in determining the economic feasibility of the project.

Having found the project to be economically sound, Florida Power initiated its donation program with Pinellas County in July 1996. Florida Power removes the utility poles from the take-down site, loads them directly onto its own trucks, and transports the concrete straight to the reef staging area. From there, Pinellas County ships the poles on barges out to the reef sites. Through this unique, mutually-beneficial program, Florida Power has successfully avoided the costs of transporting and landfilling truckloads of poles, while also eliminating the additional labor required by the previous system. The reduction

# 'J' in U.S. Lakes and Oceans

in hauling and landfilling fees, combined with the increase in efficiency, has amounted to a total savings of \$9,000 in just the first 7 months of operation. More significant, however, is the impressive 900,000 pounds of retired poles that have already been diverted from landfills to find new life in the Gulf of Mexico as a result of this program. As Florida Power's efforts continue in 1997, these numbers are steadily rising.

Due to pole-size constraints, the Pinellas Clearwater Reef Program can not accept all of the used poles Florida Power takes down. Nonetheless, Waggoner has not given up so easily on finding a way to avoid landfilling the unsuitable poles. In pursuit of a home for the "unreefable" material, Waggoner raised the issue at a Pinellas County Business Recycling Network meeting. The network members referred her to a company that accepts concrete debris for conversion into roads and pavement, the site to which Florida Power now brings all remaining poles and debris.

Similar programs exist along coastal zones all over the country. If concrete, brick, limestone, or another type of clean rubble makes up a significant part of your waste stream, you may want to contact city or county officials to inquire whether such a program exists in your region. For further information on getting a concrete donation program started, contact Jennifer Waggoner of Florida Power at 813 866-5395. To find out more about Pinellas County's artificial reef program, contact Ocean Operations Supervisor Bob Gatland at 813 596-7302.

## Cleveland Stadium Makes Waves

**F**ish will soon swim through Cleveland's old football stadium. The city of Cleveland, Ohio, with the guidance of Ohio State University's Sea Grant Extension Program, is converting its old football stadium into an artificial barrier reef.

Along with the plans for construction of Cleveland's new football stadium inevitably comes the need to demolish the old stadium. With the stadium's demolition, hundreds of thousands of tons of concrete rubble will require disposal. David Kelch, district specialist for Ohio State University's Ohio Sea Grant Program, envisioned the lakefront demolition site not as a pile of rubble, but rather as "a perfect opportunity to utilize a tremendous amount of material." The environmental benefits and economic incentives for

adding the stadium rubble to the reef project include:

- Reducing the need to purchase or manufacture materials for a new reef.
- Greatly relieving hauling costs due to the stadium's lake-side location, conveniently adjacent to the reef staging site, and eliminating landfill disposal costs for the city.
- Creating a habitat for the lake's most popular sport fish: yellow perch, walleye, and smallmouth bass.
- Attracting anglers from outside the area, indirectly boosting profits in the reef communities.
- Creating safe, accessible recreational areas for fishing and SCUBA diving.

When plans for the new stadium were made public in February 1996, Kelch immediately approached the city of Cleveland with a proposal that they donate all usable concrete for the construction of an artificial reef in Lake Erie. When completed, the site will be the largest freshwater, underwater artificial reef in the world!

According to Kelch, the North Central Ohio Sea Grant Committee has been constructing artificial reefs in Lake Erie since the early 1980s. Two demonstration projects, located off the shores of the cities of Lorain and Cleveland, have shown that properly planned and constructed reefs can be highly successful. Biological research conducted on the reef sites during the early to mid-1990s indicated those reefs fostered a concentration of fish 25 times greater than found in nonreef areas. Further, the economic value of the Lorain reef was estimated to be \$275,000 annually, more than twice the construction costs. The stadium reef project is slated to be much larger than the existing reefs, ensuring even greater benefits to the community.

To find out more about artificial reef projects, contact David Kelch of the Ohio Sea Grant College Extension Program at 216 322-0127.

### Animals Rest Easy with Florida Power Donations

Florida Power donations support over 100 artificial reefs in the state's fish ponds. For example, in the Wichita Region, Pennsylvania, Cedar Rapids, Iowa, and other artificial reefs created by Florida Power. The artificial reefs benefit about 100,000 people in the state and provide a habitat for many species of fish and other animals. Contact the Florida Department of Natural Resources, Bureau of Marine Resources, for more information on Florida Power's artificial reef program.

# Fighting Hunger Through Food Donations

**U**p to 20 percent of the food produced in this country goes to waste. The annual value of this wasted food is estimated at \$31 billion—enough to feed roughly 49 million people.

Where does all of this wasted food end up? In the dumpster. The uneaten food from your company's cafeteria can, however, go toward feeding a hungry child or senior with the Meal-on-Wheels program. More and more companies are partnering with food programs, shelters, and human service agencies to put this wholesome food where it belongs — in the mouths of needy people. Two WasteWi\$e partners, **Boeing North American, Inc.** and the **New College/University of South Florida at Sarasota**, are donating the leftover food from their cafeterias to feed needy people in their communities.

Both partners started donating their food through very different means. Ken Jones, lead engineer with Boeing, said that about 10 years ago, staff at the facility decided that donating food was a socially conscious way of getting rid of the excess food. To locate an organization that would accept leftover food, Boeing first contacted a local food bank—LA Shares. The food bank then put Boeing in touch with a local shelter who could use the food. Alternately, Anne Tazewell, resource conservation coordinator with New College, explains that in November 1996, the university was trying to implement a food scraps composting program. For several days, Tazewell monitored the cafeteria to research what was being thrown away. "I was amazed to see how much perfectly good food we threw away each day. In addition to establishing a composting program, I contacted the Salvation Army about donating the food to them."

And the rest is history. Now, the Salvation Army food service director comes to the college cafeteria every afternoon and picks up about 10 gallons of prepared food, which will feed approximately 100 people. The cafeteria staff also have noticed a small reduction in their workload. Tazewell explained, "Each day, the Salvation Army brings our contain-

ers back washed and ready for staff to use again." For the past 4 years, Boeing has donated \$20 to \$100 worth of less perishable foods, such as bakery goods, milk, fruit, and mistaken deliveries, each week to the Affirmative Action shelter in Long Beach, California. Sam Vance, food manager with Aramark, a food service contractor and also a WasteWi\$e partner, has been overseeing the program for Boeing for the last 3 years. "The program is part of our daily routine. We have a certain place we put the food during the week, and, on Friday afternoons, shelter staff come by and pick up the food."

This type of program often can be established just by talking with food service management. "Food service people see the waste everyday, and, as long as the program is easy to follow, most employees have been more than eager to help," Tazewell explained.

Both partners would like to expand their program. Tazewell would like to see the entire University of South Florida system donate their leftover food. Vance is also interested in expanding his program and is currently looking into donating their prepared food as well.

"Overall, this program gives us the feeling that we are doing the right thing," Tazewell states. "Feeding people instead of throwing away perfectly good food is personally satisfying."

Every state has a food donation or "Good Samaritan Law." In October 1996, President Clinton signed The Bill Emerson Good Samaritan Food Donation Act, a federal law that promotes food recovery. This legislation limits the liability of donors to instances of gross negligence and intentional misconduct, and establishes nationwide uniform definitions pertaining to donation and distribution of nutritious foods.

For more information on New College's food donation program contact Anne Tazewell, resource conservation coordinator, at 941 359-5753. Sam Vance, food manager with Aramark, can be reached at 310 797-2530. To obtain a WasteWi\$e tipsheet, *Donating Leftover Food to the Needy*, please call the Helpline at 800 EPA-WISE.

## Food Donation Resources

### Foodchain—

A network of prepared and perishable food rescue programs. Provides listings of local organizations that accept donations and distributes them to those in need. 800.846.3008.

### Second Harvest—

Operates a national network of local food banks that distribute nonperishable foods. 800.532.FOOD.



## Educating Others Through Corporate Donations

**D**onating discards not only reduces waste and cuts costs, it also provides valuable education tools to students of all ages. The donations of WasteWiSe partners **Millipore Corporation** and **Raytheon E-Systems** have helped children looking for project materials and adults looking to learn a new vocation. Millipore's donations of scrap materials and discarded plastic moldings encourage both imagination and creativity in the students who make arts and science projects from them. Meanwhile, Raytheon E-Systems' donation of scrap aluminum provides a much needed medium for students to practice their technical welding skills. Both companies agree that, while donation has significant environmental benefits and saves them money, they do it to promote strong corporate citizenship and good will.

### Scraps From Raytheon E-Systems Help Keep a Local Vocational School in Business

**O**bservant and active employees are often the key to finding new homes for unwanted materials. Paul Boucher, an employee with WasteWiSe partner Raytheon E-Systems in Saint Petersburg, Florida, helped the company establish a unique scrap donation program. Raytheon's Saint Petersburg facility manufactures electronic equipment. Boucher, an employee in the company's machine shop, also teaches welding at the Pinellas Technical Education Center (PTEC), a local vocational school. PTEC's

welding program has a limited budget and, therefore, is unable to purchase many needed welding materials, such as aluminum. Recognizing the school's need and observing the aluminum scraps produced at Raytheon, Boucher initiated the company's donation program with PTEC.

Rather than going to a recycler, 1,600 pounds of the company's sheet and block aluminum scraps (approximately 10 percent of the total aluminum scrap generated), valued at \$650, now go to PTEC each year. Every piece of the donated aluminum is used in the classroom—nothing goes to waste. Since Raytheon is PTEC's only aluminum donor, this material is essential to the success of the welding program. As described by Craig Pethe, a Raytheon environmental engineer, "From the company's perspective, our donation program helps create an outstanding welding program, which produces well-trained graduates who could someday be Raytheon employees."

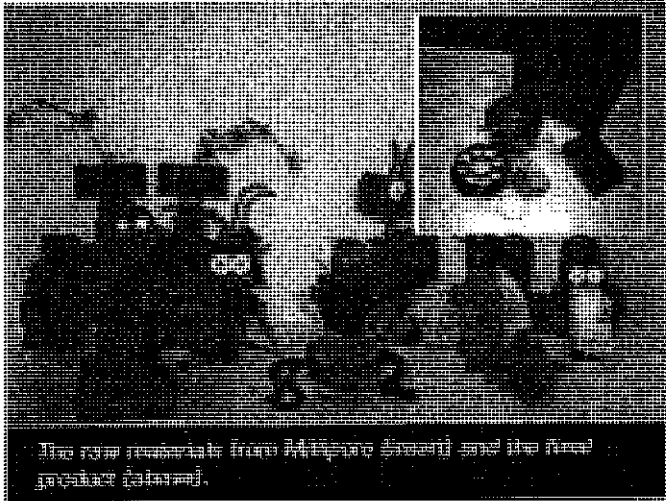
In 1996, Raytheon received the 1995 Pinellas County Recycling Award, in the large business category. This award recognized the company's efforts in donating and recycling numerous materials, including aluminum scrap. For more information on Raytheon's Saint Petersburg donation program, contact Craig Pethe at 813 381-2000.

## RESOURCES

Local school districts are an excellent place to start when looking for a donation recipient. In addition, the following organizations accept donations for art, cultural, and educational programs:

**Educational Assistance Ltd.** makes grants to the commercial, industrial, and retail sectors for up to more than 200 nonprofit and educational centers. Contact: Claude Marini  
Phone: 630 600-5010

**Material for the Arts** is a program of the City of New York Department of Cultural Affairs, in partnership with the Department of Sanitation. This nonprofit operated donation program distributes items to nonprofit arts and cultural organizations and programs in New York City.  
Contact: Susan Glass  
Phone: 212 230-5924



The new materials from Millipore (above) and the time spent (below).

## Millipore Supplies Young Artists

**T**oy eyeglasses, floating gardens, and a 'Millipore Chia Pet' — these are just a few of the projects created by students using materials donated to the Children's Resource Center by WasteWi\$e partner Millipore Corporation, which manufactures filters for the high technology industry. The Children's Resource Center, located in Belmont, Massachusetts, accepts a variety of materials from Millipore for use in children's art and science projects, including rejected plastic moldings, netting, and almost anything conceivable that is clean and safe for children's use. The center then sells the materials at a minimal cost (usually items go for just pennies!) to local teachers and parents, so the kids can have creative materials to make science, art, and other educational projects. Last year, Millipore donated approximately 15 cubic yards (a full truckload!) of plastics and other miscellaneous materials to the center. Beverly Wilkins, an environmental technician for Millipore, notes, however, "We usually send samples of materials before sending a whole truckload, just to make sure the material is acceptable and useful."

Students occasionally send samples of their finished products back to the company, in thanks. Millipore has created a display of these items for all employees to enjoy. Not only do the kids have a fun time making the toys, but Millipore employees get a kick out of seeing creative uses for their scientific parts. "It's important to remain open-minded about materials—something that looks like junk, or is useless to the company, may be very useful in encouraging creativity and imagination in children," says Steve Dark, an environmental engineer at Millipore.

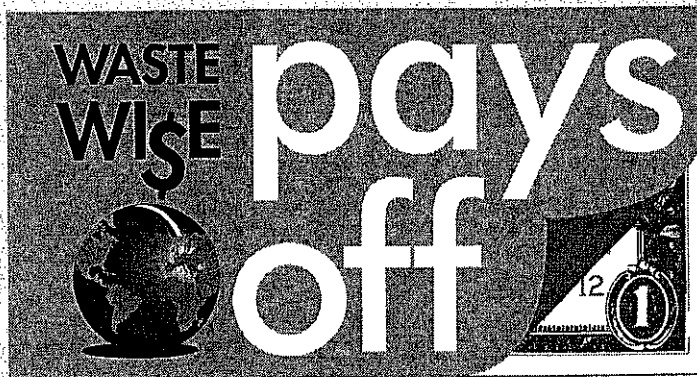
For more information on Millipore's donation program, contact Steve Dark or Beverly Wilkins at 603 532-8711.

## Steps for setting up a donation program might include:

- **Assess materials available for donation.** Companies can begin by reviewing the contents of their storage areas and examining materials routinely thrown away. These materials might include overstocked items; surplus finished products, such as promotional items; or items whose packaging has changed.
- **Review liability issues.** To guard against future lawsuits, companies should review potential liabilities prior to donation.
- **Locate and contact a user or distributor for the donated materials.** Options include local chapters of national nonprofit organizations (Salvation Army and Goodwill), national nonprofit organizations that match materials available to materials needed (Gifts In-Kind, The Trade Bank, and NAEIR), materials exchanges, and local nonprofit organizations or educational institutions.
- **Confirm with the user or distributor that materials are acceptable and needed.** Often nonprofit organizations are seen as the dumping ground for unusable or obsolete items. While companies are doing the right thing by trying to find a reuse avenue for the materials, providing a nonprofit organization with materials they can not use actually increases their burden. The distributor or user must then locate someone who can reuse the materials or pay for their disposal. Companies are encouraged to call ahead and check before sending any materials. Also, you may want to confirm how transportation charges are distributed.
- **Track materials donated.** Tracking the weight, volume, and value of materials generated will help you calculate potential tax deductions, cost savings through avoided disposal costs, and total amount of materials diverted from landfills. Many nonprofit organizations will provide such measurements for tax purposes. Companies are encouraged to ask about any paperwork involved beforehand to avoid any unnecessary hassles.
- **Publicize results.** Companies can use tracking information to report waste reduction and cost savings to WasteWi\$e, as well as employees, customers, and shareholders. Companies often benefit from improved community relations as a result of donation programs.

## Abbott Labs Say YES to the Local Community

As a technology driven company, WasteWi\$e partner **Abbott Laboratories** needs to stay on the cutting edge. As a result, Abbott continually upgrades equipment to improve productivity. While some of this equipment no longer has value to Abbott, it is often very useful for schools and charitable organizations in the Chicago and southeastern Wisconsin areas. The company maintains a waiting list of requests for its old equipment, such as computers, office furniture, lab equipment, and vehicles. When equipment becomes available, Abbott donates it to an organization that can use it. The company donates approximately \$250,000 worth of equipment each year to several nonprofit organizations.



Jim Greiner, manager of recycling says Abbott likes to donate to local organizations. "Donating to local organizations allows the company to reinvest in the communities in which our employees live and enhance the corporation's public image."

For more information, contact Jim Greiner, manager of recycling at Abbott Laboratories, at 847-937-8090.

**We'd Like to  
Hear  
from  
You!**

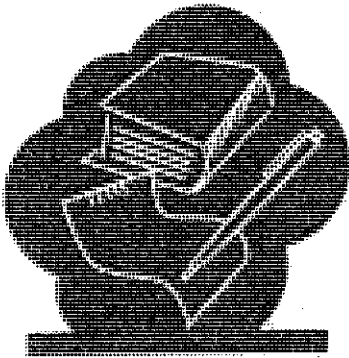


*If you are not yet a WasteWi\$e partner and would like to join, please let us know. State and local government agencies are now welcome to join the WasteWi\$e program. Contact us at 800 EPA-WISE for more information.*



United States  
Environmental Protection Agency  
(5306W)  
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### Publications on Donation and Reuse

**M**any partners have worked successfully with local reuse organizations to donate surplus supplies and equipment for reuse. Local organizations are often easily accessible, which can simplify the logistics associated with donating items. Further, contributing locally can boost employee morale and provide a positive source of recognition in the community. Check your yellow pages or the publications listed below to identify local reuse organizations and donation opportunities.

#### General

▼ ***Electronics Reuse and Recycling Directory.*** U.S. EPA. This directory provides numerous practical options for reusing and recycling consumer electronics including computers, televisions, video cameras, and more. The listing, organized by state, details manufacturers with take-back programs, scrap dealers, electronics refurbishers, charitable organizations, and materials exchanges for electronic products. This document is available on the Internet via EPA's Public Access Server at (<http://www.epa.gov/epaoswer/non-hw/index.htm#reduce>). To order an original copy, call the WasteWi\$e Helpline at 800 EPA-WISE (372-9473).

▼ ***WasteWi\$e Materials Exchanges.*** EPA WasteWi\$e Program. This listing presents materials exchanges organized by EPA Region and includes contact information, services provided, and materials available for exchange. To obtain a copy, call the WasteWi\$e Helpline at 800 EPA-WISE (372-9473).

▼ ***Choose to Reuse.*** Nikki and David Goldbeck. This book provides an alphabetical directory containing more than 2,000 products, services, and organizations that facilitate the reuse of goods or offer durable alternatives to disposables. Organized by product type, subheadings classify opportunities for maintenance, repair, rental, remanufacture, purchase or sale of used products, secondary reuse, and donation. Case studies throughout the directory highlight organizations that have successfully implemented reuse initiatives. To order, contact Ceres Press at P.O. Box 87, Dept. CTRB, Woodstock, NY 12498. Phone/Fax: 914 679-5573.

#### Institute for Local Self Reliance

▼ The following four publications can be ordered from the Institute for Local Self-Reliance, 2425 18th Street

NW., Washington, DC 20009-2096.  
Phone: 202 232-4108.  
Fax: 202 332-0463.  
([ilsr@igc.apc.org](mailto:ilsr@igc.apc.org)).  
(<http://www.ilsr.org>).

▼ ***Creating Wealth from Everyday Items.*** Institute for Local Self-Reliance. This report profiles seven household collection programs and six model reuse operations that handle reusable goods. By providing data on working models and tips for replication, this report will help recycling professionals, economic development planners, and community-based organizations to contain waste handling costs, meet waste reduction goals, and link recycling with local economic development. Contact information is provided for the 13 featured programs.

▼ ***Plug into Electronics Reuse.*** Institute for Local Self-Reliance. This report provides contact information for more than 150 operations that repair or recycle computers. Thirteen facilities that focus on computer reuse are profiled in depth.

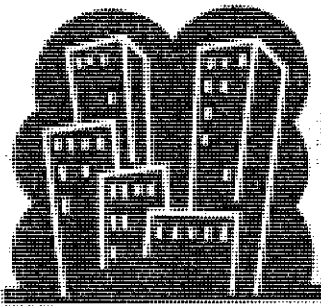
▼ ***Sustaining Businesses & Jobs through Pallet Reuse and Repair.*** Institute for Local Self-Reliance. This report documents job opportunities in the pallet repair and reuse industry and provides data on 31 pallet reuse businesses interested in expanding. Profiles of five enterprises detail the logistical specifics of the pallet repair industry. Appendix lists 193 pallet repair and recycling facilities.

▼ ***Weaving Textile Reuse into Waste Reduction.*** Institute for Local Self-



**Reliance.** By documenting 10 programs that collect discarded textiles, this report lays out how communities can integrate textile recycling into their existing textile infrastructure. Tips for setting up similar textile recycling programs, such as keeping textiles dry and partnering with local charities and nonprofit organizations, are highlighted. An appendix lists companies around the country that accept nonindustrial textiles locally.

*WasteWi\$e maintains a listing of additional reuse organizations, organized by EPA Region. For more information on local reuse organizations, or to let us know about a reuse organization your company has been involved with, please call the WasteWi\$e Helpline at 800 372-9473.*



### National Donation and Reuse Organizations

Some businesses and institutions prefer to work with national donation and reuse organizations. National organizations may be more appropriate and effective for situations in which the donor company has large quantities of an overstocked item or excess finished products. The list below is a sampling of national donation and reuse organizations.

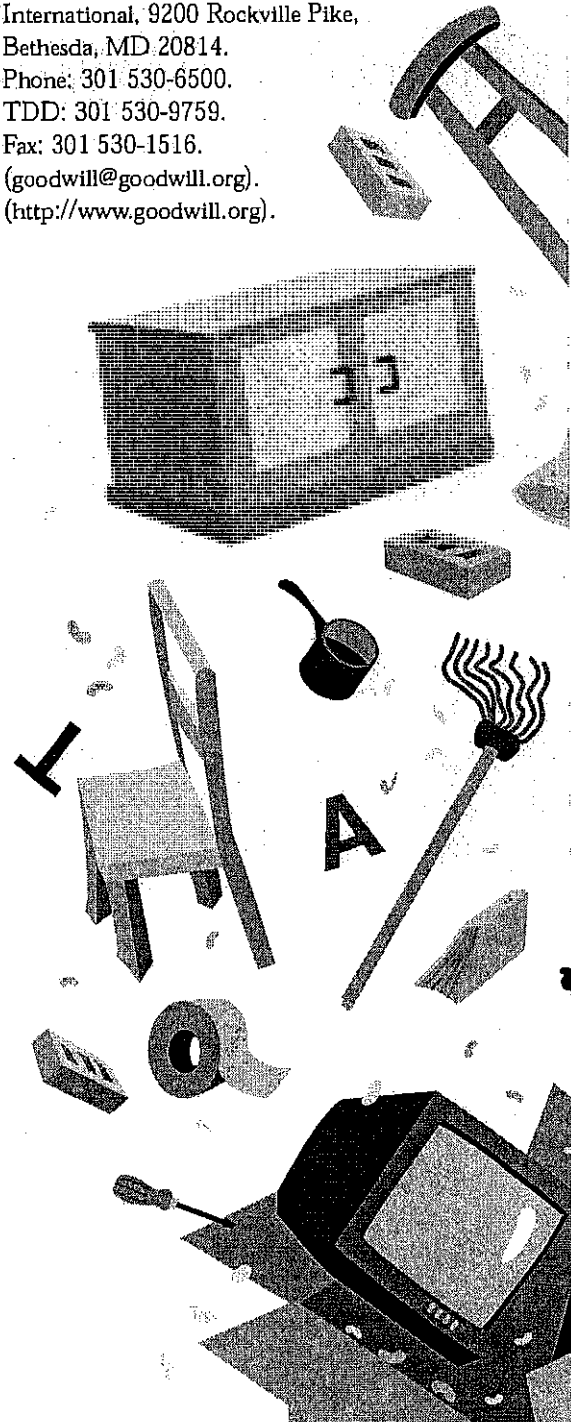
#### General

▼ **Educational Assistance, Ltd. (EAL):** EAL provides donated commercial, industrial, and retail inventory to over 130 colleges and universities. These institutions establish scholarships equal to 90 percent of the inventory's value to help their neediest students. EAL charges no membership fees. Call for EAL's free guide explaining how companies earn tax writeoffs while helping disadvantaged students go to college. Contact: Claudia Mancini, P.O. Box 3021, Glen Ellyn, IL 60138. Phone: 630 690-0010; Fax: 630 690-0565. (scholar@eduassist.org).

▼ **Gifts In Kind International:** Gifts In Kind International operates a program that matches donations from nearly 1,000 donor companies with a network of 50,000 nonprofit organizations. The organization accepts newly-manufactured products as well as used products meeting its used equipment giving guidelines. Materials handled include office equipment and supplies, furniture, personal-care products, clothing, bedding and all kinds of building supplies (no food or chemicals are accepted). Contact: Veronica Connelly, 700 North Fairfax Street, Alexandria, VA 22314. Phone: 703 836-2121 Ext. 41. Fax: 703 549-1481. (<http://www.giftsinkind.org>).

▼ **Goodwill Industries International:** Operates more than 1,200 autonomous dropoff sites and thrift stores where donated goods are sold to finance Goodwill's job and rehabilitation programs for the disabled and socially disadvantaged. In addition to typical thrift-shop merchandise such as household goods and clothing, Goodwill accepts working vehicles of all kinds, and many branches accept

items in need of repair, for which they employ handicapped individuals to do the work. For partners located in the District of Columbia area, please note that EPA awarded a grant in May 1997 to the Davis Memorial Goodwill Institute local office to help establish a computer collection program servicing DC, Maryland, and Virginia. Computers will be either upgraded or repaired for sale or donation, or dismantled for recycling. Contact: Goodwill Industries International, 9200 Rockville Pike, Bethesda, MD 20814. Phone: 301 530-6500. TDD: 301 530-9759. Fax: 301 530-1516. (goodwill@goodwill.org). (<http://www.goodwill.org>).



▼ **National Association for the Exchange of Industrial Resources (NAEIR):** NAEIR accepts excess inventory (new, finished merchandise) at its 450,000 square foot warehouse, where it is distributed to more than 6,000 nonprofit member organizations across the country. A free tax reduction toolkit that explains the donation process and includes a formula for calculating potential tax savings is available by calling NAEIR. Contact: Corporate Relations, 560 McClure Street, Galesburg, IL 61401. Phone: 800 562-0955. Fax: 309 343-0862.

(donor.naeir@misslink.net).  
(<http://www.misslink.net/naeir/naeir.htm>).

▼ **Salvation Army:** The Salvation Army accepts most donated items of any size, including broken items if needed repairs are minor. Donations are sold in the Salvation Army's 1,300-plus thrift shops, and proceeds are used to fund their drug and alcohol rehabilitation programs. Contact: James Bradley, P.O. Box 269, Alexandria, VA 22313. Phone: 703 684-5522. Fax: 703 684-5538. (<http://www.salvationarmyusa.org>).

▼ **The Surplus Exchange:** The Surplus Exchange provides refurbished computers and other business equipment to nonprofit organizations. Surplus serves nonprofits both locally and nationally. The organization solicits equipment donations from companies across the nation. Contact: Rick Caplan, 1107 Hickory, Kansas City, MO 64101. Phone: 816 472-0444. Fax: 816 472-8105.

▼ **Trade Bank International (TBI):** TBI is a nonprofit organization with more than 250 international nonprofit members. Through their In-Kind Donation Management Program®, TBI works with asset recovery firms to manage the sale of donated items according to guidelines specified by the donating corporation. The nonprofit member (which has taken the title to the materials) receives 100 percent of the donations net value in cash and trade credits (usable with vendors in a vast buying compendium). Contact: Elke Lewis, 2022 Storm Drive, Falls Church, VA 22043. Phone: 703 556-0699. Fax: 703 556-9336.

### Construction And Demolition

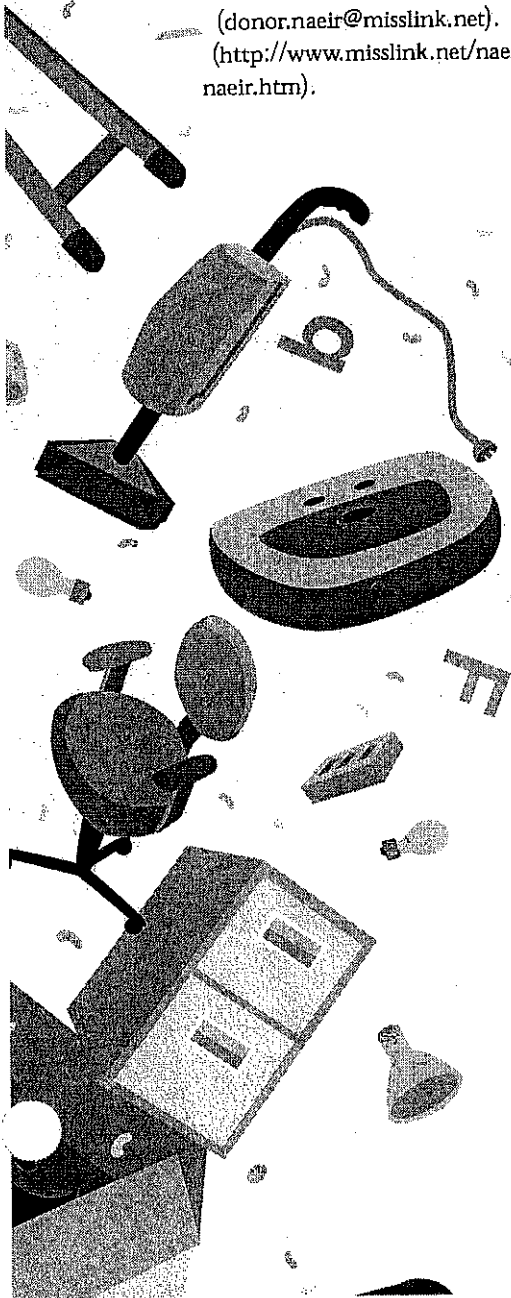
▼ **American Salvage.** American Salvage buys and sells new and used liquida-

tion items, including building materials, office furniture and supplies, restaurant furniture, household goods, and warehouse supplies. (No food or clothing is accepted.) American Salvage is a for-profit company (although it does donate some goods to charity) that works primarily east of the Mississippi; however, the company does some work on the west coast and is happy to provide referrals to other salvage companies if American Salvage cannot meet callers' needs. Contact: Terry Waldron, 9200 NW 27th Avenue, Miami, FL 33147. Phone: 305 691-2455.

▼ **The Loading Dock (TLD):** The Loading Dock is a self-sufficient nonprofit organization for the reuse of building materials. Through the partnerships The Loading Dock has established with nonprofit housing groups, environmental organizations, local governments, building contractors, manufacturers, and distributors, TLD facilitates and coordinates the reuse of building materials for low-income housing production in the Mid-Atlantic region and across the country. Materials handled include lumber, toilets, nails, paints, carpeting, and more. Contact: John Lambertson, 2523 Gwynns Falls Parkway, Baltimore, MD 21216. Phone: 410 728-3625. Fax: 410 728-3633.

### Education And Cultural Arts

▼ **Children's Re-Source Center:** The Children's Re-Source Center is a local nonprofit organization that accepts foam, fabric, cardboard, and other materials from companies that have overruns, endpieces, scraps, or other rejects that are no longer usable for the manufacturer but which may be useful for children's arts and crafts projects. Materials are individually priced and very cheap, and are especially suitable



for use by teachers and camps. Contact: Sylvia Murphy or Dottie Keosaiian, 42 Trapelo Road, Belmont, MA 02178. Phone: 617 484-9290.

▼  
**Material For the Arts (MFA):** MFA is a local program of the City of New York, Department of Cultural Affairs in partnership with the Department of Sanitation. This municipally-operated donation program distributes furniture, computers and other office hardware, construction materials, paint, paper products, and other media to over 1,300 nonprofit cultural organizations and social service agencies with arts programs in New York City. MFA has also prepared a guidance document entitled "Starting a Materials Donation Program" for groups interested in developing their own donations programs. Contact: Susan Glass, 410 West 16th Street, New York, NY 10011. Phone: 212 255-5924. Fax: 212 924-1925. (materialsforthearts@Juno.com).

### Food Donation Resources

▼  
**Foodchain:** Foodchain is a network of prepared and perishable food rescue programs. It also provides listings of local organizations that accept donations and distributes them to those in need. Contact: Jeff Whited, 912 Baltimore Street, Suite 300, Kansas City, MO 64105. Phone: 800 845-3008. Fax: 816 842-5145. (rescuefood@aol.com).

▼  
**Second Harvest:** Second Harvest distributes perishable and nonperishable food and grocery products to the needy through a nationwide network of nearly 200 certified affiliate food banks. Nonfood items may fall under the categories of excess or test product inventory, discontinued items, or mislabeled or off-spec product, and may

include such products as cleansing agents, insecticides, laundry products, and health and beauty aides. Second Harvest will pick up product from any location in the United States, and also provides a nationwide listing of food programs. Contact: Marketing Department, 116 South Michigan Ave - Suite 4, Chicago, IL 60603. Phone: 800 771-2303 Ext.122. Fax: 312 263-4357. (grocerydonations@secondharvest.org). (<http://www.secondharvest.org>).

▼  
**USDA National Hunger Clearinghouse's World Hunger Year (WHY):** WHY provides referrals to anti-hunger and -poverty organizations nationwide. In the interest of promoting self-reliance, food security, and economic justice, WHY partners with and supports grassroots organizations and conducts research and educational outreach for policy makers, the media, and the general public. Contact: Peggy Hupcey, 505 8th Avenue, 21st Floor, New York, NY 10025. Phone: 800 GLEAN-IT (453-2648). Fax: 212 465-9274. (NHCATWHY@aol.com). (<http://www.iglou.com/why/usda>).

### Medical Supplies

▼  
**AmeriCares:** AmeriCares is a private nonprofit disaster relief and humanitarian aid organization that provides immediate response to emergency medical needs and supports long-term health care programs for all people around the world. To do so, AmeriCares obtains donations of medicines, medical supplies, and other relief materials from American companies. AmeriCares then delivers these materials to indigenous health and welfare professionals in many countries. Contact: Steve Skakel, 161 Cherry Street, New Canaan, CT 06840. Phone: 800 486-HELP. Fax: 203 972-0116.

([info@americares.org](mailto:info@americares.org)). ([www.americares.org](http://www.americares.org)).

▼  
**Carelift International:** Carelift International solicits recyclable or reusable medical and dental equipment, supplies, and pharmaceuticals; collects and transports medical goods to Carelift's Service Center; and there inventories, values, and repairs equipment and readies medical goods for shipment. Carelift delivers and installs harvested medical and dental goods, based on needs assessments, to hospitals in developing countries that have requested aid. Contact: Lane Liebman, GSB Building, Suite 425, One Belmont Avenue, Bala Cynwyd, PA 19004. Phone: 610 617-0995. Fax: 610 668-0930. (carelift@netaxs.com).

### Other

▼  
**Carpel Video:** Carpel Video purchases used video tapes for reuse and video duplication from video production companies, television stations, libraries, universities, and individuals, and sells them to smaller organizations such as smaller television markets and advertising agencies. Transportation may be provided. Contact: Andy Carpel, 429 East Patrick Street, Frederick, MD 21701. Phone: 800 238-4300 or 301 694-8273. Fax: 301 694-9510.

▼  
**GreenDisk:** GreenDisk is a company that accepts out-dated, unused software packages, computer disks, and compact disks, from across the country. The company cleanses, tests, erases and reformats the disks for resale to consumers as blank, high quality disks. The disks come preformatted and prelabeled. Contact: Janna Peach, 8124 304th Avenue, SE., Preston, WA 98050. Phone: 800 305-DISK or 425 222-7734. Fax: 425 222-7736.

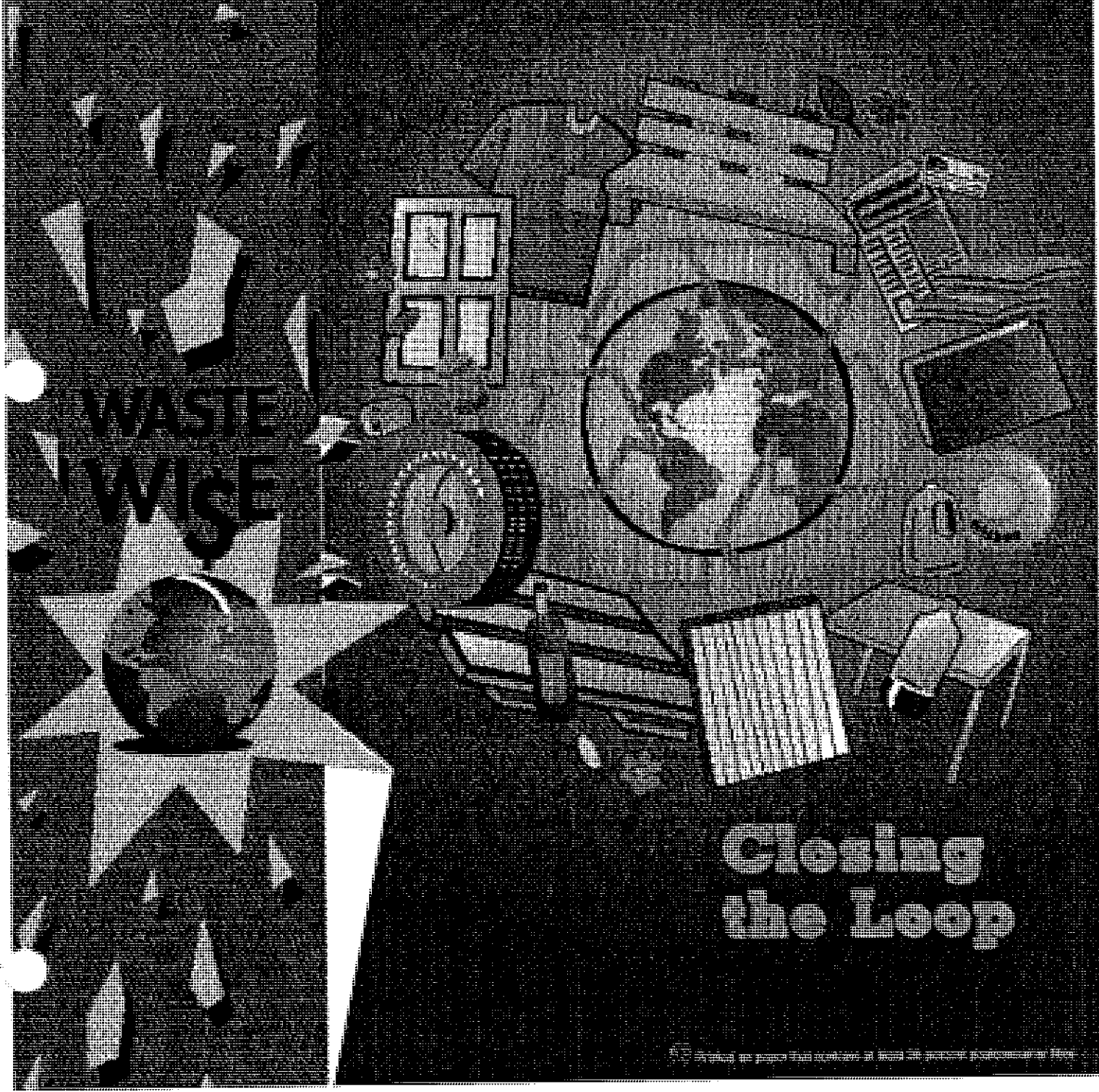
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EPA 333-N-97-005  
December 1997  
www.epa.gov/wasteupdate



# WasteWiSe Update



WASTE  
WISE

Closing  
the Loop

EPA 333-N-97-005

# CLOSING THE LOOP

**A**nyone involved with recycling programs, purchasing, or manufacturing these days has probably noticed an increase in attention paid to the issue of "Buying Recycled" as a companion activity to recycling collection. "Why is this important?" you ask. It's a simple lesson in economics: in order for the recovered material to have value and get used, there needs to be a demand. You create that demand by purchasing or manufacturing recycled-content products.

Beyond economics are the environmental benefits associated with buying recycled. Purchasing products made from or packaged in recycled materials saves resources for future generations. Manufacturers then have an incentive to use recycled feedstock, which keeps a large quantity of materials out of landfills. This benefit goes right to the heart of eco-efficiency—extracting the maximum productive goods from resources with minimal waste or pollution—and helps create a sustainable resource-use system that benefits everyone.

While WasteWi\$e still encourages partners to prevent waste before recycling, this issue of the *WasteWi\$e Update* examines the topic of "closing the recycling loop" by buying and manufacturing recycled products. This is a key component of the WasteWi\$e program.

After dispelling some common myths about buying recycled, this *Update* provides tips on getting started, from one of our leading partners, the **Dow Corning Corporation**.

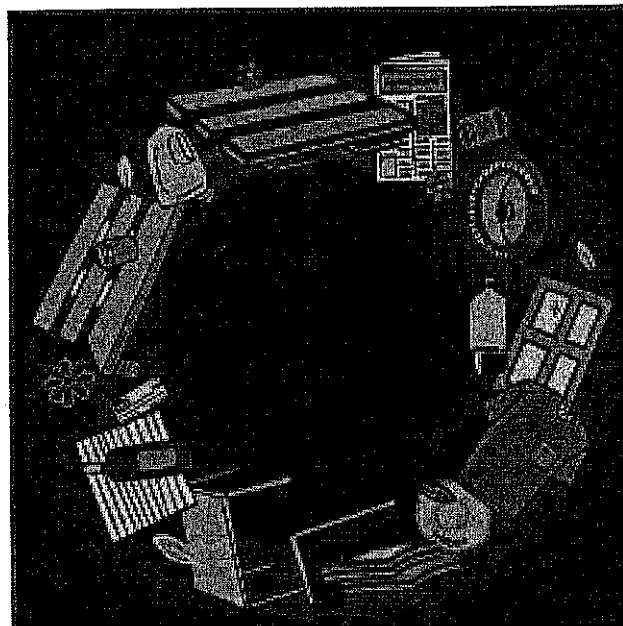
Some of our WasteWi\$e partners, such as **Aetna, Inc.**, go a step further by purchasing products made from their own collected recyclables.

In May 1997, WasteWi\$e welcomed government partners. A special feature in this *Update* covers government purchasing issues. We examine the Comprehensive Procurement Guidelines (CPG) used by federal and state governments in purchasing quality recycled-content products and why including recycled content in government specifications is important. **The Commonwealth of Massachusetts and King County, Washington**, charter WasteWi\$e government partners, have successfully developed recycled-content purchasing programs with assistance from the CPG.

Once your organization decides to purchase recycled-content products, many WasteWi\$e partners recommend tracking and monitoring the purchases. **Northeast Utilities**, who tracks recycled-content office supply purchases through its vendor, provides tracking tips.

And finally, information needed to locate recycled products is included in the "Buy-Recycled Resources" insert. These resources are compiled for your reference and we recommend that you remove the section and keep it in a special binder. Buy-Recycled Resources is the second in a series of inserts that began arriving in the previous *Update* (Donation Programs: Turning Trash Into Treasure), and more are on the way.

We hope that the information provided in this issue helps your organization choose to buy-recycled and close that loop!



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The mention of any company, product, or process in this publication does not constitute or imply endorsement by the U.S. Environmental Protection Agency.

# GETTING STARTED

**H**ave you considered starting a buy-recycled program, but found the challenge a little overwhelming? Have you established your program, but wonder how to make it even more successful? Perhaps WasteWi\$e can help. We recently talked with Mr. Kim Hohisel, Senior Recycling Coordinator at Dow Corning Corporation in Midland, Michigan. Hohisel spearheads Dow Corning's successful Green Procurement Initiative.

Dow Corning, a chemical manufacturer and Charter WasteWi\$e Partner, launched its buy-recycled program in 1993 by becoming the first company in mid-Michigan to sign an agreement with the Michigan Recycling Coalition to voluntarily commit to purchasing recycled-content products. By employing some key development strategies, the company increased its recycled-content purchases \$7 million in 1995 and 1996.

Here are some valuable insights from Hohisel on planning and implementing a successful buy-recycled program.

**WasteWi\$e:** What motivated Dow Corning to start a buy-recycled program?

**Hohisel:** Buying recycled products is a natural extension of recycling collection. A truly successful recycling program involves three steps—separation, collection, or recovery; reprocessing; and purchasing. If you're not buying recycled, you're not really recycling.

**WasteWi\$e:** How did your organization initially find recycled-content products?

**Hohisel:** We looked at our purchasing records and found that we already purchased a number of recycled-content products. To increase purchases, we involved our suppliers.

**WasteWi\$e:** How did Dow Corning work with its suppliers in implementing its buy-recycled program?

**Hohisel:** First, we developed a supplier environmental policy. Our suppliers must meet certain environmental criteria, one of which includes providing recycled-content options for products. In September 1995, we conducted a buy-recycled training session for key employees such as our purchasing personnel, engineering team, space planners, custodial staff, and a core group of our suppliers. We then kicked off a pilot project and each supplier submitted a list of our products that they offer with recycled content. With our suppliers' help, we were able to identify and add more than 200 recycled-content products to our purchasing initiative. Some of these products include packaging materials, steel drums, shipping containers, janitorial supplies, and numerous paper products.

**"You must realize that this is not an overnight process—I learn something new every day."**

—Kim Hohisel, Senior Recycling Coordinator, Dow Corning Corporation

**WasteWi\$e:** How did your suppliers react to the new policy?

**Hohisel:** As a large customer, Dow Corning has a lot of leverage. Our suppliers share our belief in the value of buying recycled. They were very willing either to provide products already available or to research other alternatives. A buy-recycled program must be treated as a partnership between the customer and the supplier in order to be successful.



*Kim Hohisel, second from left, discusses buy-recycled options at a national WasteWi\$e forum.*

**WasteWi\$e:** How did you justify a buy-recycled program to upper management?

**Hohisel:** Obtaining upper management support was very easy for us. Our management firmly believes that buying recycled products is a key component in an overall waste reduction program.

**WasteWi\$e:** What about purchasers? How did you obtain their support?

**Hohisel:** We had a few difficulties in the beginning. To win their support, we explained the importance of buying recycled and demonstrated the performance of some recycled-content products. After they received this type of training at special seminars, the purchasers were quite enthusiastic.

**WasteWi\$e:** Have you found recycled-content products to be competitively priced with respect to virgin products?

**Hohisel:** Yes and no. The bottom line is this: if you are working with a supplier who cannot meet your pricing criteria, then you begin exploring other options. The price usually drops rather quickly.

**WasteWi\$e:** What employee education ideas work best for communicating the buy-recycled message?

**Hohisel:** Dow Corning has several communication vehicles that work well for us. We have:

- A quarterly employee newsletter, which discusses the recycled-content products purchased at Dow Corning, provides suggestions on how to find and purchase such products, and highlights recycling collections amounts, revenues, and expenditures.
- Awareness seminars for employees.
- Monthly communication meetings, where there are opportunities to present program information.
- Green Procurement Guidelines, which provide a series of questions to consider when evaluating products to purchase. Guidelines are an essential tool to provide to employees.

If you would like more information on Dow Corning's Green Procurement Initiative, please contact Kim Hohisel via phone at 517 496-5008 or fax at 517 496-5457.

### Advice from Dow Corning: Keys to Starting Your Own Buy-Recycled Program

**Find Your Champion.** You need someone in your organization who will be enthusiastic and push your objectives through. This is true for any type of waste reduction program.

**Obtain Support.** You must obtain support from and involve management, employees, and purchasers.

**Establish Guidelines and Policies.** It also is important to establish internal procurement guidelines and a supplier environmental policy.

**Set up a Green Procurement Team.** Gather team members from your purchasing department, and possibly other areas, to generate ideas as well as develop and implement your game plan.

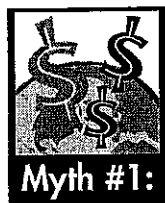
**Network and Educate Yourself.** Hohisel and a purchaser participated in buy-recycled seminars sponsored by the National Recycling Coalition (NRC) and the U.S. Conference of Mayors when they first began developing Dow Corning's buy-recycled program. Opportunities to learn about other programs and network are invaluable.

**Offer Internal Training.** Take what you've learned from outside sources and offer internal training seminars for key personnel such as engineers, space planners, custodial staff, purchasers, and safety staff.

**Work With Your Suppliers.** Buying recycled is a partnership between you and your supplier. They should be able to support your efforts in locating high quality products at competitive prices.

## JUST THE FACTS

**H**ave you heard that recycled products are difficult to find, inferior in quality, or too high in cost? These myths are dispelled by the fact that during 1996, WasteWi\$e partners purchased more than \$3 billion dollars worth of products with recycled content. Don't let misconceptions about recycled-content products prevent your organization from investigating new opportunities—learn the facts that counter these myths.



**Myth #1:**

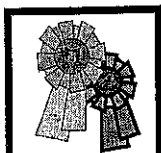
### Buying recycled-content products will cost me too much.

The truth is that many products with and without recovered feedstock will often have competitive prices; many variables—including feedstock availability, quantity produced, energy costs, distributor mark-up, transportation charges, quantity ordered, and geographic location—ulti-

mately influence the price of both virgin and recycled-content products. In some cases, the recycled-content products will cost more; however, recycled-content products are not inherently more expensive. Take time to investigate prices and make a decision based on facts, not perceptions. NRC's Buy Recycled Business Alliance (BRBA), compared prices between recycled-content general use copier paper and virgin paper of the same grade.<sup>1</sup> BRBA asked several mills and retailers nationwide about the perception that recycled-content paper costs more—as much as 20 percent

<sup>1</sup>National Recycling Coalition's Buy Recycled Business Alliance. Spring 1996. *Are You Paying Too Much for Recycled Copier Paper?* Buy Recycled Newsline.

more—than virgin paper. Of the eight people interviewed, only one agreed that recycled-content paper can cost up to 20 percent more. Other respondents offered estimates closer to 5 percent. In fact, some of the retail representatives noted that recycled paper often costs the same or less than virgin paper. Furthermore, BRBA expects price differential to be less of a factor as manufacturers continue adding to their infrastructure and as paper recycling continues to grow throughout the country.

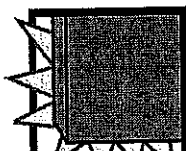


### Myth #2:

#### To purchase recycled-content products, I will need to sacrifice quality.

Again, recycled content is not the only factor in product quality. Often the engineering of the product and quality control are the crucial factors. In many cases, people have been using recycled products for years, even before recycling became popular, without any stigma. Most cereal boxes, for example, are manufactured from paper scraps. Current users of recycled-content products express satisfaction with product performance as well. In the BRBA 1996 Annual Buy Recycled Survey, nearly 97 percent of respondents reported being pleased with the overall performance of recycled products. According to William Meng of **The Southern Company**, a WasteWi\$e charter partner, the company "purchases products on a competitive basis and still finds some recycled-content products of equal or better quality at equal or better prices."

To help move beyond the misconception that recycled-content products offer inferior quality, investigate the results for yourself. Obtain samples of a desired product with recycled content and conduct a pilot test to see how the product meets your needs. Author of the *Buy-Recycled Training Manual* Richard Keller of the Maryland Environmental Services suggests, "Use blind tests for recycled products. Some users, jaded by a poor experience with recycled products in the past, may automatically think that recycled products are inferior. Give the products a fair test." Moreover, he continues, "Don't expect superior performance; only require that the products perform as well as nonrecycled products."



### Myth #3:

#### My organization would never specify recycled-content products.

It is a fact that some current procurement specifications preclude recycled-content products or supplies. Now may be the perfect time to review the product specifications, however, to find out why and how they can be modified to foster recycled-content products. Unless your process requires virgin materials, keep specifications language neutral. Be on the lookout for wording in your specifications that unintentionally precludes buying recycled products. Do your purchasing specifications require "virgin only" material or do they specifically prevent the use of recycled products? Do you allow substitutions that meet your needs without specifying the type of mate-

rials used? If you prefer to explicitly require recycled-content products, consider using contract language that "encourages the use of recycled or environmentally sound materials wherever practical" or "includes consideration of the use of recovered materials as a practical alternative to virgin materials." As alternative sample language, create a policy that any reason for not procuring recycled products be submitted in writing to the purchasing manager.

You also can help suppliers and purchasing agents if you define your terms (e.g., recovered material and postconsumer content) or offer minimum content standards whenever feasible. EPA's Recovered Materials Advisory Notice (RMAN) contains widely accepted definitions and recommends levels of recycled content. See the insert page for information on how to obtain it.



### Myth #4:

#### I will have difficulty locating recycled-content products.

It's time to start looking for the recycled-content products from your current suppliers. More recycled-content products enter the market every day, and a little encouragement to suppliers could help solve the problem of finding sources. Ask your suppliers to offer more recycled-content products or to clearly indicate in their catalogues which products contain recovered materials. Emphasize your commitment to purchasing recycled products, ask for their support, and explain your willingness to investigate other vendors if they are unable to cooperate. Then follow up with them to make sure you receive the most competitive price and the best quality product for your needs. Encourage service contractors, such as janitorial services, print shops, and maintenance contractors, to use recycled-content products as well.

Additionally, you will find a variety of recycled product directories available to help you locate specific recycled products. Consult the resources insert in this *Update* to learn more about opportunities for buying recycled, such as the *Official Recycled Products Guide*, which includes more than 4,500 recycled product listings for a wide range of products, and *The Harris Directory*, which includes more than 4,000 recycled products for construction, gardening, home furnishing, and decorating.

### Definitions

**Postconsumer material** refers to material that has been used by the consumer and is discarded as waste. It is material that has been used by the consumer and is discarded as waste. It is material that has been used by the consumer and is discarded as waste.

**Preconsumer material** refers to material that has been used by the manufacturer and is discarded as waste. It is material that has been used by the manufacturer and is discarded as waste. It is material that has been used by the manufacturer and is discarded as waste.

**Recovered material** refers to material that has been used by the manufacturer and is discarded as waste. It is material that has been used by the manufacturer and is discarded as waste. It is material that has been used by the manufacturer and is discarded as waste.

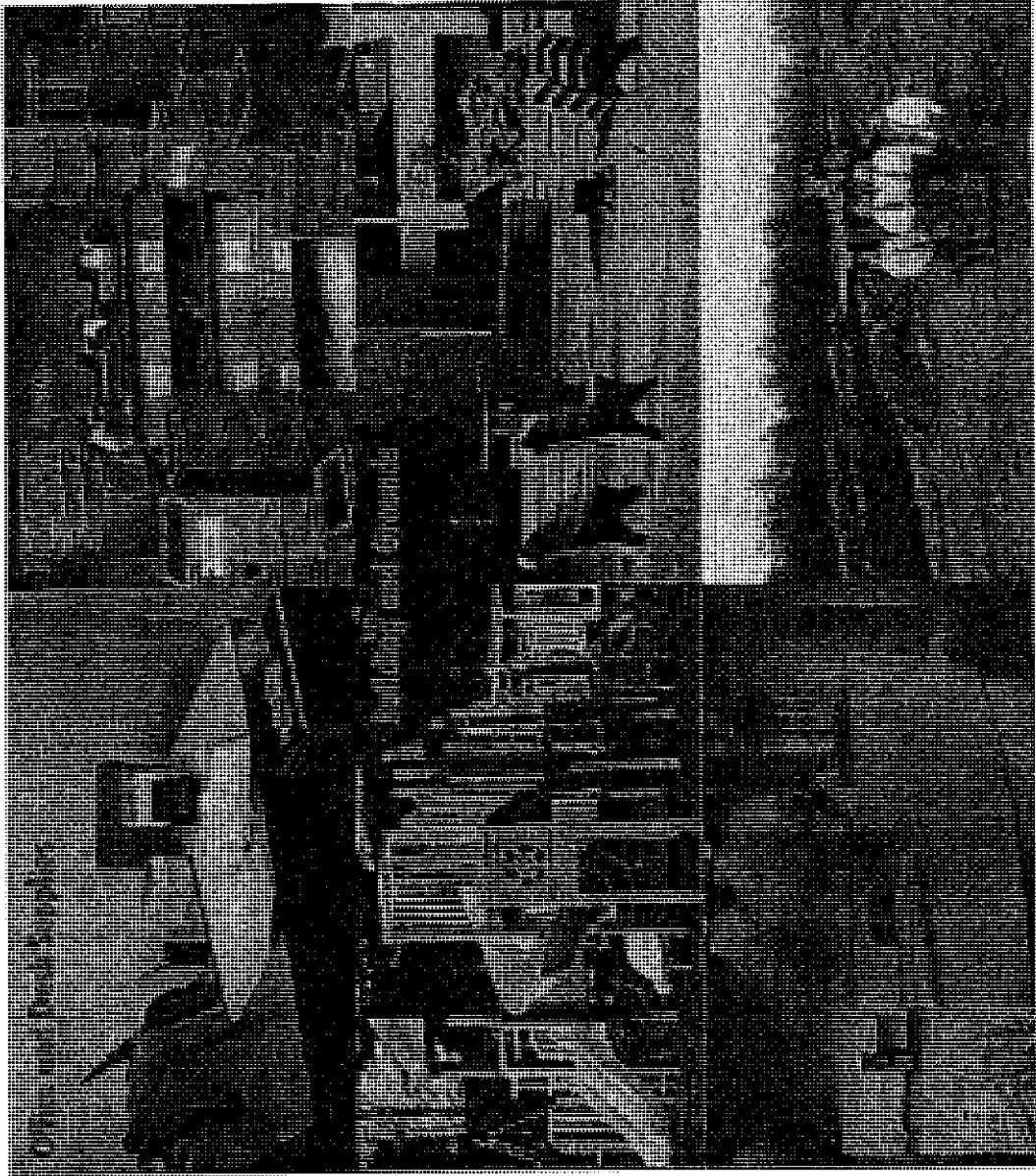
**Recycled material** refers to material that has been used by the manufacturer and is discarded as waste. It is material that has been used by the manufacturer and is discarded as waste. It is material that has been used by the manufacturer and is discarded as waste.



# MOVING BEYOND PAPER PRODUCTS—WASTEWISE PARTNERS BUY RECYCLED

More than 4,500 products are available with recycled content.

Here is a sampling of what some of our partners purchase.



In a typical office setting, people often think of and notice recycled content paper products, especially copier paper. What more offices are finding out every day is that there are many kinds of recycled-content products available. Some recycled-content items available include pencils, rulers, diskette molars, padded mailer bags, Post-it notes, Post-it note trays, note organizers, legal pads, folders, hanging folders, tape dispensers, binders, and message books. This desktop features a range of recycled-content office supplies purchased by WasteWise partners.

**Stigo Adventist School**, in Takoma Park, Maryland, constructed a new school playground using 100 percent recycled-content plastic playground equipment and rubber surfacing. The school uses recycled plastic lumber for structures as well as border materials. Recycled rubber mulch and particles, made from shredded automobile tires, are used to inhibit soil erosion and as protective surfacing in the "fall zone" beneath the equipment. This project shored approximately 86,000 gallon-size milk jugs and 4,250 automobile tires from the waste stream. The school has found the recycled playground equipment to be far superior to other products.\*

**WAX Technologies, Inc.**, a leading environmental services company, spent \$113,498,000 on recycled-content purchases for its corporate office and \$100,000 on recycled-content materials for its Washington, DC, office build-out. In the Los Angeles, California, and Washington, DC, locations, 85 percent of the materials used for construction and furnishings are made from recycled and reused goods including carpet, Snydercrete™ flooring, and table and counter tops.

The **Chrysler Corporation** purchases recycled plastic supply bins for use on their production floors. Additional information is forthcoming on the plastic bins and the savings found through reuse of these durable recycled-content containers.

**New York Life Insurance Company** purchased outdoor furniture made from 100 percent recycled-content PEI. The company purchased eight benches and three waste receptacles for use in three locations outside the company offices. Employees have commented favorably both on the quality of the furniture and on the company's commitment to buying recycled-content products.

**Johnston Industries**, a textile manufacturer, composts waste fiber generated at its utilization plant in Valley, Alabama. The utilization plant recycles and reclaims textile wastes and byproducts, saving the company several hundred thousand dollars in avoided hauling and tipping fees annually. Johnston's Fiber Products Division is marketing the composted material locally as a soil amendment and conducting tests for other uses.

# STATE AND LOCAL GOVERNMENT PARTNERS LEAD BY EXAMPLE



Waste management practices that are effective in reducing a product's life-cycle environmental impact? With a little help from the Resource Conservation and Recovery Act (RCRA), government agencies across the United States are realizing they need not wait. Almost 100 RCRA "Product Change Award Executive Orders" (PCAs) which call for increases in the federal government's use of recycled content products, are now in effect. And 10 state governments and other interested parties to the program have also adopted the Comprehensive Procurement Guidelines (CPG) and Revised Federal Acquisition Regulation (FAR) which require government agencies to purchase from products that contain recycled content. Through the use of CPG and FAR, state and federal government agencies expand their cooperation with manufacturers and in helping develop mar-

kets for the products in other sectors of the economy. For more information on CPGs and who developed or designed designated items, contact the RCRA Division at 401-474-7466 or TDD 401-474-7672.

As a result of the CPG, state and local governments began to realize their own long practices. King County, Washington, and the Commonwealth of Massachusetts, have taken the lead in government purchases. As part of the award, a number of governments have set on the example of having recycled their purchases in structure programs. As a result of the experience, a number of the products are now in the market.

## CPG Designated Products

The CPG has designated some 24 products in 7 product categories:

**Construction products:** structural fiberboard, laminated paperboard, carpet, floor tiles, patio blocks, building insulation products, cement and concrete containing coal fly ash or granulated blast furnace slag, latex paint, and shower and restroom dividers.

**Landscaping products:** hydraulic mulch, yard trimmings compost, garden and soaker hoses, and lawn and garden edging.

**Miscellaneous products:** pallets.

**Nonpaper office products:** office recycling containers, office waste receptacles, plastic desktop accessories, toner cartridges, binders, plastic trash bags, printer ribbons, and plastic envelopes.

**Park and recreation products:** playground surfaces, running tracks, and plastic fencing.

**Transportation products:** traffic control cones, traffic barricades, parking stops, and traffic control devices.

**Vehicular products:** re-refined motor oil, retread tires, and engine coolants.

## King County

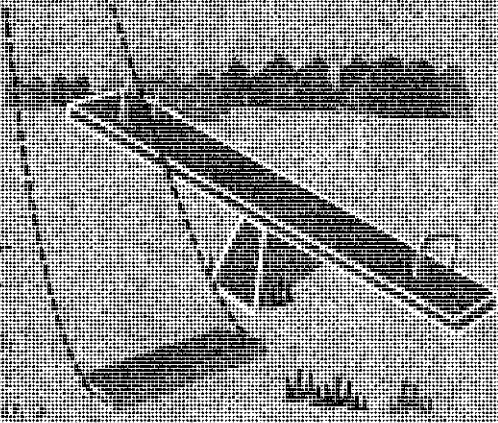


In 1987, King County's local government adopted its own CPG and was the first to have a policy requiring all agencies to purchase recycled content products. The county's CPG was the first to include a list of products and materials that are recycled. The county's CPG was the first to include a list of products and materials that are recycled. The county's CPG was the first to include a list of products and materials that are recycled.

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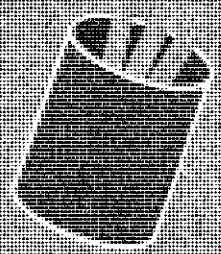


## Commonwealth of Massachusetts

Since the inception of the buy-recycled program in 1974, the Commonwealth of Massachusetts has boosted its purchase of recycled products from \$8.2 million to \$34 million in fiscal year 1997. In addition, Massachusetts estimates that secondary materials manufacturers directly employ nearly 12,000 people, ranging from small companies to large-scale manufacturers, which use at least 20 different recycled feedstocks to create a multitude of products. These manufacturers create an additional 50,000 associated jobs and contribute \$400 million to the Massachusetts economy.

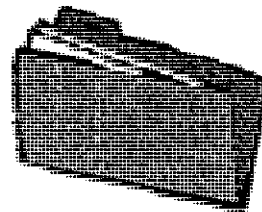
## Buying Recycled Pays Off!

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## BRINGING WASTE FULL CIRCLE

**A**ll WasteWi\$e partners commit to "closing the loop" by purchasing or manufacturing products with recycled content. Some partners, however, go the extra mile by initiating programs that make them directly accountable for the waste they generate—the company agrees to purchase products manufactured with the company's own materials collected for recycling. Through these cooperative agreements, partners guarantee the creation of end markets for the recyclables they generate.



### Déjà Vu at Aetna

Employees at WasteWi\$e charter partner Aetna, Inc., who thought they had washed their hands of scrapped documents months ago, are getting a sense of déjà vu as they dry their hands now. They may indeed be holding the remnants of old briefs and memos in the paper towels they are using. In late 1996, the company demonstrated its support for the wise use of resources when it entered into an agreement initiating closed-loop paper product purchases. Ever since, recyclable mixed paper generated at Aetna's offices has found a second life at the company in the form of bathroom paper products.

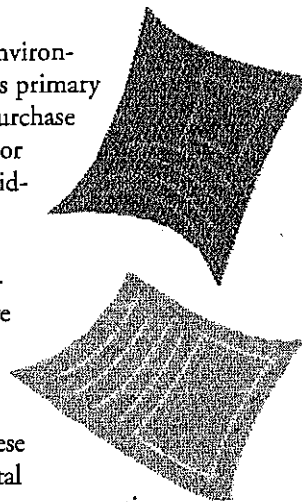


The establishment of Aetna's closed-loop purchasing program involved multiple steps and required coordination with many vendors. The company began with the collection of office paper for recycling. According to Aetna's Contract Manager Fran Hubeney, the key was to successfully track the paper's trail from the collection point all the way to its final destination. This entailed pick-up and transport by a waste hauler via a paper broker to a paper mill, which treated and reprocessed the paper scraps into hygienic paper products. Ultimately, a distributor sold the bathroom products containing the postconsumer recycled content back to companies like Aetna. Having ensured the availability of a recycled-paper end product, Hubeney worked with Aetna's purchasing department to arrange for the procurement of these products made from its own recycled materials.

Because 1997 will be Aetna's first full year of implementation of this closed-loop program, the company does not yet have any figures for the annual amount of closed-loop recycled-content product pur-

chases. The company estimates, however, that it supplied approximately 7 million pounds of mixed office paper for recycling in 1996 and expects a similar contribution this year. Taking environmental responsibility for the high rate of paper generation inherent to the insurance industry, Aetna is doing its part to ensure that there is a market for its office paper waste.

While certainly prompted by the environmental benefits of its actions, Aetna's primary motive for initiating a closed-loop purchase program was financially based. Vendor discussions conducted as Aetna considered implementing the program revealed that Aetna could reap impressive cost savings. "By preplanning and making all employees aware of Aetna's environmental initiatives, the purchasing department was able to put this knowledge to use to attain a reduced-rate contract for these items," says Safety and Environmental Consultant Jim Woods. In fact, the company estimates that it is realizing some \$15,000 to 20,000 savings per year in paper products as a result of its closed-loop purchases! As is often the case, open communication, both internally and externally, proved to be the way to success.



## JTR Program Aids Wisconsin Tissue and Nature's Fire

**M**anufacturers of recycled-content products are receiving a big helping hand from EPA's Jobs Through Recycling (JTR) program. Through its state partners, JTR connects these businesses with agencies that provide technical assistance, financing, and marketing support. In the process, the JTR program stimulates local economic growth and overall recycling market development. The success of manufacturers of recycled-content products guarantees demand for recycled materials and makes it easier for consumers to find recycled-content products on store shelves. As consumers become more aware of the importance of buying recycled, they will increasingly demand such products. We note here two recycled-content products manufacturers assisted by JTR grantees: WasteWi\$e partner Wisconsin Tissue, a paper and paper products maker, and Nature's Fire, a manufacturer of organic fire starting products.

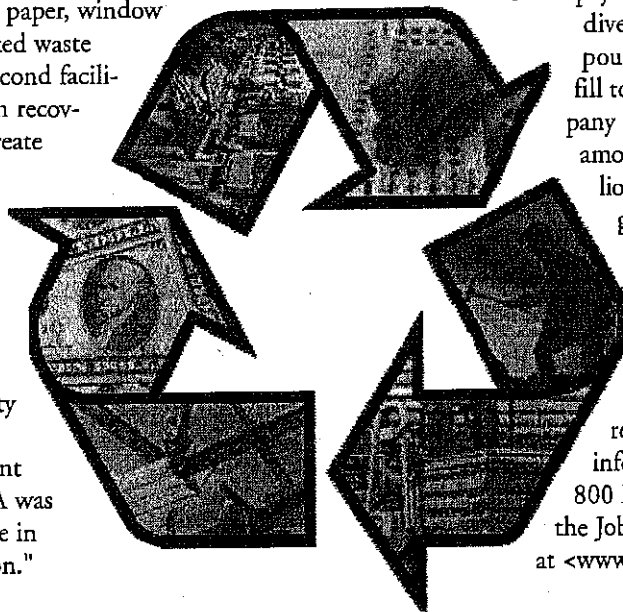
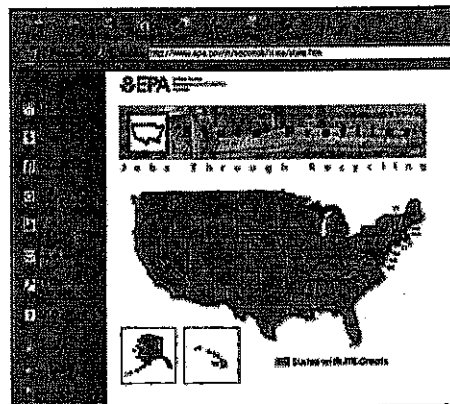
Wisconsin Tissue was looking to expand its operations into the Southwest when the Arizona Recycling Economic Development Advocate (REDA), a JTR grantee, first offered the company its assistance. The REDA lined up site visits and tours of Arizona localities, helped the company apply for an environmental technology tax credit, and assisted the company in preparing its bid for site locations. By 1996, the REDA had helped Wisconsin Tissue open a pair of facilities in Flagstaff, Arizona, that turn recycled material into quality recycled products. The first, a paper mill, processes polycoated paper, window envelopes, and higher grade mixed waste paper into white feedstock. A second facility uses this feedstock, along with recovered corrugated cardboard, to create finished products ranging from restaurant and food service napkins to bathroom tissue. The Flagstaff operation converts 40,000 tons of waste paper into 30,000 tons of tissue products each year. Mike Graverson, the converting facility general manager, and Mike Bogenschutz, the tissue mill plant manager, noted that "the REDA was very helpful to Wisconsin Tissue in locating our Southwest operation."

Nature's Fire, based in Ellsworth, Minnesota, produces fire starters for campfires, grills, and fire-

places. The company began production in 1988 and steadily increased its output until sales opportunities forced the company to expand its original facility. The increased product demand strained the company's resources and technical knowledge. In fact, Nature's Fire was close to shutting down when it first met with the staff of the Minnesota Recycling and Reuse Business Assistance Center (RBAC), also a JTR grantee. The RBAC assisted Nature's Fire with a variety of technical and financial issues. When Nature's Fire's only vendor of 100 percent recyclable and biodegradable packaging trays discontinued their product, for example, RBAC staff conducted Internet and telephone research to locate alternative packaging vendors. According to Leonard "Lindy" Stoltz, president and CEO of Nature's Fire, "We never would have been able to afford the services provided by RBAC staff if they had been private consultants. Without their assistance, we would have had to close our doors." With the RBAC's help, however, Nature's Fire has added 14 new employees to the original 6 employees

on its payroll. In 1996, Nature's Fire diverted more than 400,000 pounds of material from the landfill to make its products. The company expects to more than triple that amount for a 1997 total of 1.5 million pounds: a 300 percent growth in production.

While help is not available in every state, some states have resources to help businesses involved in collecting, processing, and remanufacturing recovered materials. For more information, please call 800 EPA-WISE (372-9473) or visit the Jobs Through Recycling web site at <[www.epa.gov/jtr](http://www.epa.gov/jtr)>.



# WASTE WISE pays off

## NORTHEAST UTILITIES TRACKING PROGRAM IS AS SIMPLE AS 1-2-3

Consumers can help protect themselves from identity theft by participating in the Northeast Utilities Tracking Program. The program is a free service that allows consumers to track their utility bills and detect any unauthorized activity. Consumers can enroll in the program by calling 1-800-345-3453 or visiting the program's website at [www.northeastutilities.com](http://www.northeastutilities.com). The program is available to all Northeast Utilities customers. For more information, please contact your local utility office or call 1-800-345-3453.

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**We'd Like to Hear From You!**



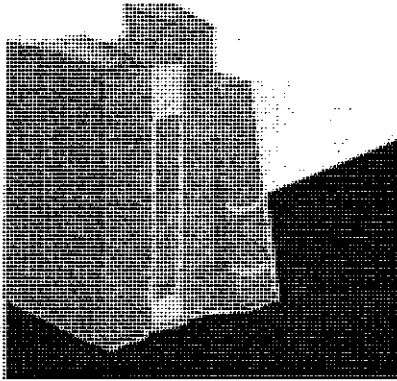
If you are not yet a WasteWi\$e partner and would like to join, please let us know. All partners are eligible to subscribe to the WasteWi\$e list server. Contact us at 800 EPA-WISE (372-9473), or by email at [ww@cais.net](mailto:ww@cais.net), for more information. Or visit our web site at [www.epa.gov/wastewise](http://www.epa.gov/wastewise).

**EPA**  
 United States  
 Environmental Protection Agency  
 (5306W)  
 401 M Street, SW.  
 Washington, DC 20460

Official Business  
 Penalty for Private Use  
 \$300

# Buy-Recycled

RESOURCE LISTING



## Publications

The following publications are sources of buy-recycled information. U.S. Environmental Protection Agency (EPA) documents are available through the RCRA Hotline. To order call 800 424-9346 (or 800 553-7672 TDD for the hearing impaired). In Washington, DC, the number is 703 412-9810 or TDD 703 412-3323. The RCRA Hotline is open Monday through Friday, from 9 a.m. to 6 p.m. e.s.t. Obtain other documents by contacting the organizations listed.

## General

▼  
*Guide to Buying Recycled Products for Consumers and Small Business, 1996.* This guide lists nearly 400 products made from recycled materials, shows their post-consumer and total recycled content, and tells where to buy them: 44 pages, \$3 postage paid for Pennsylvania residents, \$4 postage paid for out-of-state residents. For more information, contact the Pennsylvania Resources Council, 3606 Providence Road, Newtown Square, PA 19073. Phone: 610 353-1555. Internet: <www.prc.org/>.

▼  
*"Close the Loop. Buy Recycled."* Community Education Kit. Created by Keep America Beautiful and EPA, this kit allows your organization to educate others about the importance of "buying recycled." Useful for businesses, schools, and government agencies to educate employees. Includes a manual, video, and camera-ready brochure: \$40. For more information, contact Keep America Beautiful, Inc., 1010 Washington Boulevard, Stamford, CT 06901. Phone: 203 323-8987. Fax: 203 325-9199. Internet: <www.kab.org/loop.html>.

▼  
*10 Easy Ways to Buy Recycled.* This guidebook, published by the California Department of Conservation and California Integrated Waste Management Board, includes useful tips, resources, and product information for consumers and businesses alike. To order a copy, contact the California Department of Conservation, Division of Recycling, 801 K Street, Sacramento, CA 95814. Phone: 916 445-1490.

▼  
*The Official Recycled Products Guide.* This directory lists manufacturers and distributors for more than 5,000 recycled products. For more information, contact the Recycling Data Management Corporation, P.O. Box 577, Ogdensburg, NY 13669. Phone: 800 267-0707.

▼  
*Buy-Recycled Training Manual.* Provides general information on developing a buy-recycled program. For more information, contact the Northeast Maryland Waste Disposal Authority, 25 South Charles Street, Suite 2105, Baltimore, MD 21201. Phone: 410 333-2730.

## Paper

▼  
*1996 Buy-Recycled Series: Paper Products* (EPA530-F-96-014). This fact sheet provides details on EPA's efforts to promote buying recycled paper products through the Comprehensive Procurement Guideline (CPG). Products designated through this program include printing and writing papers, newsprint, tissue products, and paperboard and packing products.

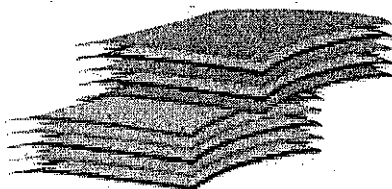
▼  
*Mills That Manufacture Printing and Writing Paper, Computer Paper, Office Paper, Envelopes, Bristols, and Coated Printing and Writing Papers Using Recovered Paper* (EPA530-B-97-008). This list identifies manufacturers and suppliers of paper products containing recovered materials.

▼  
*Mills Which Manufacture Newsprint Containing at Least 40 Percent Postconsumer Recovered Paper* (EPA530-B-95-009).

▼  
*Tissue Mills Which Use Postconsumer Recovered Paper* (EPA530-B-95-008):

▼  
*Paper Matcher, 4th Edition, 1996.* Contains hundreds of recovered paper dealers throughout the United States sorted by state. It also contains listings for paper and paperboard mills using recovered paper. For more information, contact the American Forest & Paper Association, 1111 19th Street, NW, Suite 800, Washington, DC 20036. Phone: 800 878-8878. Internet: <www.afandpa.org/>.

▼  
*National Office Paper Recycling Project.* The National Office Paper Recycling Project maintains a list of recycled-content paper producers and has published several guidebooks on setting up and promoting office buy-recycled and recycling programs. For more information, contact the National Office Paper



Recycling Project, 1620 Eye Street, NW, Suite 600, Washington, DC 20006. Phone: 202 223-3088. Fax: 202 429-0422.

▼ **Jaakko Poyry Recycled Gradefinder.** This quarterly publication provides a comprehensive, up-to-date directory of almost 1,000 brands of recycled-content paper. Entries include brand name, manufacturer, grade, postconsumer content, brightness, and basis weight. The entries are organized alphabetically by brand name, manufacturer or distributor, and grade. A 1-year subscription costs \$90. To order, contact Ronni Schram, Jaakko Poyry Consulting, Inc., 580 White Plains Road, Tarrytown, NY 10591-5183. Phone: 800 872-5792. Fax: 914 332-4411.

▼ **Guide to Purchasing and Using Recycled Content Paper.** This guide includes grades, brand names, and specifications as well as contact information for the paper merchants and vendors. To order, contact Recycled Pulp and Paper Coalition, 241 Dechert Drive, King of Prussia, PA 19406. Phone: 800 845-3207.

### Nonpaper Office Products

▼ **1997 Buy-Recycled Series: Non-Paper Office Products (EPA530-F-97-003).** This fact sheet provides details on EPA's efforts to promote buying recycled nonpaper office products through the CPG. Products designated through this program include recycling containers and waste receptacles, plastic desk-top accessories, binders, trash bags, toner cartridges, plastic envelopes, and printer ribbons.

▼ **Non-Paper Office Products Containing Recovered Materials (EPA530-B-97-011).** This list identifies manufacturers and suppliers of nonpaper office products containing recovered materials.

▼ **Resource Guide to Business Products Manufacturers' Recycling Products and Programs.** Provides information on how to purchase recycled-content office products. The guide costs \$20 for members

and \$40 for nonmembers. To obtain a copy, contact the Business Products Industry Association, 301 North Fairfax Street, Alexandria VA 22314. Phone: 800 542-6672 or 703 549-9040.

▼ **The Essential Guide to Recycled Office Products, King County Commission for Marketing Recyclable Materials.** This catalog includes a range of paper and nonpaper products made from recycled materials. Copies of the catalog are available from the King County Commission for Recyclable Materials, 400 Yester Way, Room 200, Seattle, WA 98104. Phone: 206 296-4439. Fax: 206 296-4366.

▼ **King County Recycled Procurement 1997 Annual Report.** This report summarizes King County's recycled product procurement policies and 1997 purchases. It is available from the King County Procurement Services Division, Room 620, Seattle, WA 98104. Phone: 206 296-4210.

### Plastics

▼ **Recycled Plastic Products Source Book.** Provides information on various recycled-content plastic products. To order, contact the American Plastics Council, 1275 K Street, NW, Suite 400, Washington, DC 20005. Phone: 800 2-HELP-90 (243-5790).

▼ **Directory of Companies Manufacturing Products From Recycled Vinyl.** Contains listings for companies manufacturing products from recycled vinyl. To order, contact the Vinyl Environmental Resource Center, One Cascade Plaza, 19th floor, Akron, OH 44308-1121. Phone: 800 969-8469. Fax: 330 376-9379.

### Rubber and Tires

▼ **Recycled Rubber Products Catalog.** This catalog contains listings of companies making products from scrap tires (about 100 listings). To order, contact the Scrap Tire Management Council, 1400 K Street, NW, Suite 900, Washington, DC 20005. Phone: 202 682-4880.

### Construction, Demolition, and Landscaping

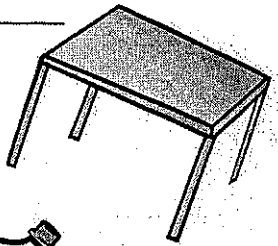
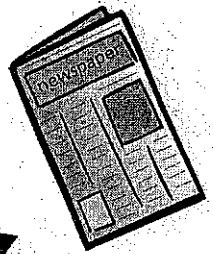
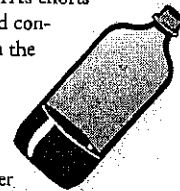
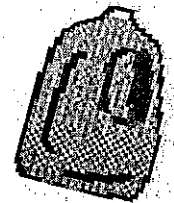
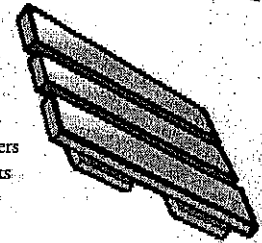
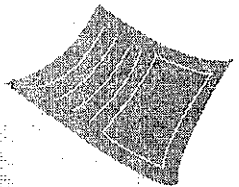
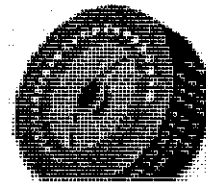
▼ **1997 Buy-Recycled Series: Construction Products (EPA530-F-97-035).** This fact sheet provides details on EPA's efforts to promote buying recycled construction products through the CPG. Products designated through this program include construction board, thermal insulation, floor tiles, carpeting, shower and restroom dividers, and reprocessed and consolidated latex paint in specific applications.

▼ **Construction Products Containing Recovered Materials (EPA530-B-97-014).** This list identifies manufacturers and suppliers of construction products containing recovered materials.

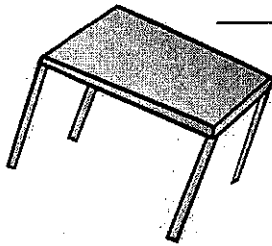
▼ **1997 Buy-Recycled Series: Landscaping Products (EPA530-F-97-034).** This fact sheet provides details on EPA's efforts to promote buying recycled landscaping products through the CPG. Products designated through this program include hydraulic mulch, yard trimmings compost, garden and soaker hoses, and lawn and garden edging.

▼ **Landscaping Products Containing Recovered Materials (EPA530-B-97-012).** This list identifies manufacturers and suppliers of landscaping products containing recovered materials.

▼ **The Harris Directory.** This computer database for Windows lists construction products made with recovered materials in a Construction Specifications Institute format. Contact B.J. Harris, 508 Jose Street, Suite 913, Santa Fe, NM 87501-1855. Phone: 505 995-0337. Fax: 505 820-1911.



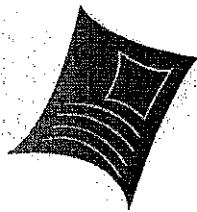




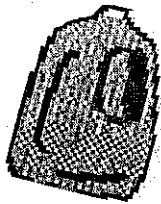
▼ *The Green Pages: The Contract Interior Designer's Guide to Environmentally Responsible Products and Materials.* To order, contact: Andrew Fuston, 45 East 25th Street, Eighth Floor, New York, NY 10006-2003. Phone: 212 779-3365.



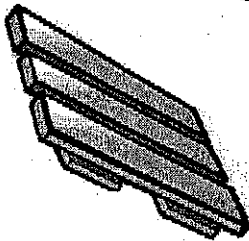
▼ *A Guide to Resource Efficient Building Elements.* In addition to tips on efficient design and job-site recycling, this guide lists several manufacturers that make products using recovered materials. To order, contact the Center for Resourceful Building Technology, P.O. Box 100, Missoula, MT 59806. Phone: 406 549-7678.



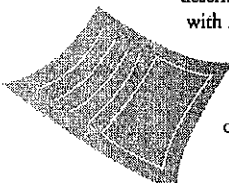
▼ *The Sourcebook for Sustainable Design, 1992.* This directory of environmentally responsible materials and processes contains listings of over 100 recycled products used in construction applications. Sorted by CSI division. To order, contact the Boston Society of Architects, 52 Broad Street, Boston, MA 02109-4301. Phone: 617 951-1433. Internet: <www.architects.org>



▼ *National Park Service's Sustainable Design and Construction Database.* The product listing portion of this database has approximately 1,300 entries from over 550 manufacturers; listings of over 7,000 recyclers of construction debris nationwide; and expanded listings of books, periodicals, organizations, and online (Internet) sources of sustainable information. The database can be searched by manufacturing plant location, CSI division, or product type. For more information, contact Roberta Bear, National Park Service, P.O. Box 25287, Denver, CO 80225. Phone: 303 969-2959. Internet: <www.nps.gov/dsc/susdb/index.htm>



▼ *Building for Tomorrow: Buy Recycled Guidebook for the Commercial Construction Industry.* This booklet describes construction materials available with recycled content and includes a resource list. In addition, National Recycling Coalition developed a series of case studies on buildings that have used recycled



content products in construction. To order, contact the Buy Recycled Business Alliance, 1727 King Street, Suite 105, Alexandria, VA 22314. Phone: 703 683-9025.

▼ *Environmental Building News.* This bimonthly newsletter on environmentally sustainable design and construction includes articles on new products and materials, technologies, and construction methods. Contact: R.R. 1 Box 161, Brattleboro, VT 05301. Phone: 802 257-7300. E-mail: <ebn@ebuild.com>

▼ *Directory of Recycled-Content Building and Construction Products.* This regional directory includes 500 construction and building products manufactured with recycled content. To order a copy, contact the Clean Washington Center, First Interstate Center, 999 Third Avenue, Suite 1060, Seattle, WA 98104. Free to Washington residents, \$20 for others. Phone: 206 464-7040. Fax: 206 464-6902. Internet: <www.cwc.org>

### Transportation

▼ *1997 Buy-Recycled Series: Transportation Products (EPA530-F-97-036).* This fact sheet provides details on EPA's efforts to promote buying recycled transportation products through the CPG. Products designated through this program include traffic cones and barricades, parking stops, and traffic control devices.

▼ *Transportation Products Containing Recovered Materials (EPA530-B-97-013).* This list identifies manufacturers and suppliers of transportation products containing recovered materials.

▼ *1997 Buy-Recycled Series: Pallets (Miscellaneous Products) (EPA530-F-97-031).* This fact sheet provides details on EPA's efforts to promote buying recycled pallets through the CPG.

▼ *Miscellaneous Products (Pallets) Containing Recovered Materials (EPA530-B-97-007).* This list identifies

manufacturers and suppliers of pallets containing recovered materials.

### Parks and Recreation

▼ *1997 Buy-Recycled Series: Park and Recreation Products (EPA530-F-97-032).* This fact sheet provides details on EPA's efforts to promote buying recycled park and recreation products through the CPG. Products designated through this program include playground surfaces, running tracks, and plastic fencing.

▼ *Parks and Recreation Products Containing Recovered Materials (EPA530-B-97-006).* This list identifies manufacturers and suppliers of park and recreation products containing recovered materials.

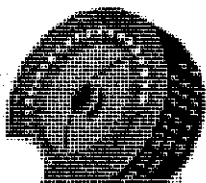
### Vehicular

▼ *1997 Buy-Recycled Series: Vehicular Products (EPA530-F-97-037).* This fact sheet provides details on EPA's efforts to promote buying recycled vehicular products through the CPG. Products designated through this program include re-refined oil, retread tires, and engine coolants.

▼ *Vehicular Products Containing Recovered Materials (EPA530-B-97-005).* This list identifies manufacturers and suppliers of vehicular products containing recovered materials.

▼ *Environmental Fact Sheet—Purchasing and Maintaining Retread Passenger Tires (EPA530-F-95-019).* This fact sheet provides information on waste prevention, proper tire maintenance, and tire retreading for fleet managers and vehicle operators.

▼ Contact the *Buy Recycled Campaign* for automobile manufacturers' warranty statements on the use of re-refined oil. Also available are fact sheets on purchasing re-refined oil and retreaded tires. Call the Buy Recycled Training Institute, 1620 Eye Street, NW, Suite 600,



Washington, DC 20006.

Phone: 202 293-7330. Fax: 202 429-0422.

## Textiles

**1995 Council for Textile Recycling Buyers Guide and Directory.** Lists contact information for companies that make products from recycled textiles. To order, contact the Council for Textile Recycling, 7910 Woodmont Avenue, Suite 1212, Bethesda, MD 20814. Phone: 301 718-0671.

## Current Web Sites

<[www.metrokc.gov/oppis/recycle.html](http://www.metrokc.gov/oppis/recycle.html)> King County, Washington, has placed a variety of information about its recycled product procurement program online including manufacturers and specifications for office construction and landscaping, and automotive products, among others. The site also lists other major Internet sources of information about recycled products including publications, associations, and other Internet sites.

<[solstice.crest.org/environment/GreenSeal/products.html](http://solstice.crest.org/environment/GreenSeal/products.html)> GreenSeal maintains a list of its certified products including cleaning products, paper, paper, and re-refined oil. The products featured are those GreenSeal has found to be environmentally preferable.

<[www.web.net/rco/wlts/products.htm](http://www.web.net/rco/wlts/products.htm)> The Waste Less Trade Show maintains a list of recycled-content and environmentally friendly products including recycled plastic lumber, office furniture, paper products, plastic bags, hardwood flooring, and recycling receptacles.

<[www2.plasticsresource.com](http://www2.plasticsresource.com)> The American Plastics Council makes it easy to shop for recycled-content plastic products ranging from pencil cups to foam packaging. Just take a stroll through its "Shop Recycled Mall." The mall lists manufacturers of recycled plastic products in five main categories: office and warehouse, auto and home, fashion, toys and sports, and general.

<[www.recyclingdata.com](http://www.recyclingdata.com)> The *Official Recycled Products Guide* is available on the Internet and updated on a regular basis. In order to access the guide, users will need to order a subscription that ranges from \$69 to \$295 depending on the type of subscription. For more information, call the Recycling Data Management Corporation at 800 267-0707.

<[grn.com](http://grn.com)> The Global Recycling Network web site is dedicated to providing recycled-content product information and recycling related information.

<[www.1800cleanup.org/text/main.htm](http://www.1800cleanup.org/text/main.htm)> The United States Environmental Hotline has put geographically specific information at your fingertips nationwide. The site can help you locate important environmental information and recycling options for a list of recyclables by typing in your zip code. In a special buy-recycled section of the web site, the Hotline discusses buy-recycled issues and gives examples of products available for each of four groups: home (interior and exterior), auto, office, and industrial.

<[www.prc.org/rpdirect.htm](http://www.prc.org/rpdirect.htm)> The Pennsylvania Resource Council has placed a listing of links to Recycled Products Directories including national association, building and construction, green products, and state and regional directories.

<[www.cwmb.ca.gov/mat/rcp/rcpdbint.htm](http://www.cwmb.ca.gov/mat/rcp/rcpdbint.htm)> This is your link to the California Integrated Waste Management Board's Recycled-Content Product (RCP) Database. The RCP Database has information on RCPs as well as manufacturers, distributors, reprocessors, mills, and converters who procure or produce these products or the recycled materials needed to make them. The result is a growing list of over 10,000 materials, products, and businesses.

<[www.recycleiowa.org/brbasum.html](http://www.recycleiowa.org/brbasum.html)> This is the web site of the Buy Recycled Business Alliance. By joining, your organization can gain valuable knowledge on buying recycled products and materials. The Alliance provides a forum for member companies to share success stories and other information. As an Alliance member, you will receive a 30-page guidebook binder on how to implement a recycled product purchasing program in your company; a quarterly newsletter, the Buy Recycled NewsLine, with information on recycled products and tips on buying recycled; important discounts on recycled product guides and publications; and industry-specific guides and briefs that will save you time and resources. There is no cost to join the Alliance. All that's required is your commitment to increase your purchases of recycled products.

## Future Web Sites

<[www.enr.com/marketplace/index.htm](http://www.enr.com/marketplace/index.htm)> The Environmental News Network is busy creating its Marketplace. To be completed by spring 1998, the center will offer databases of recycled products. Currently, you can look at product floors, how to build your store, and the advertiser index.

## WasteWise Helpline

The WasteWise Helpline—800 EPA-WISE (372-9473)—has additional resources available. These resources include:

<**Buy Recycled Guidebook.** This guidebook, developed by the Buy Recycled Business Alliance, is designed to help companies begin or expand a recycled products purchasing program. It includes sample policy statements, a notice for vendors, and other resources.

<**State Buy-Recycled Contacts.** The Helpline can refer you to a contact in your state. We also have information on a number of state directories.

<**Corporate Policy Statements.** The Helpline has sample policy statements from other WasteWise partners.

EPA

# WasteWise Update

## INSIDE

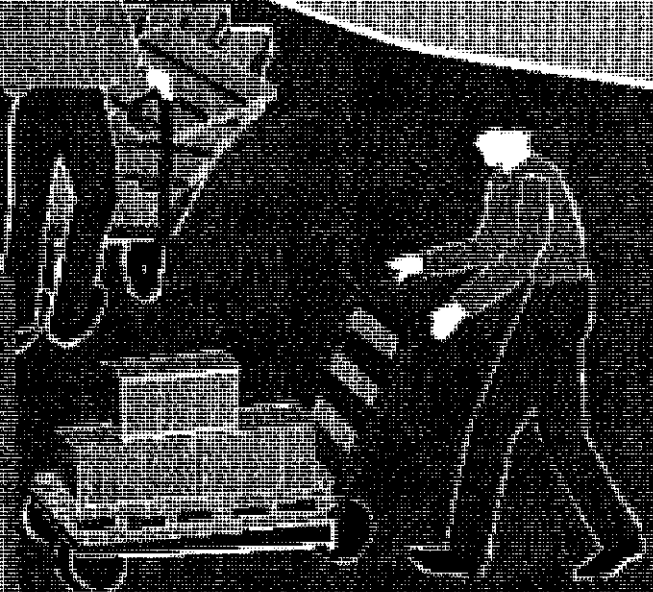
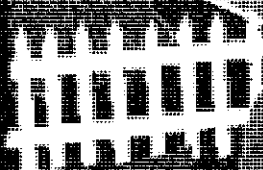
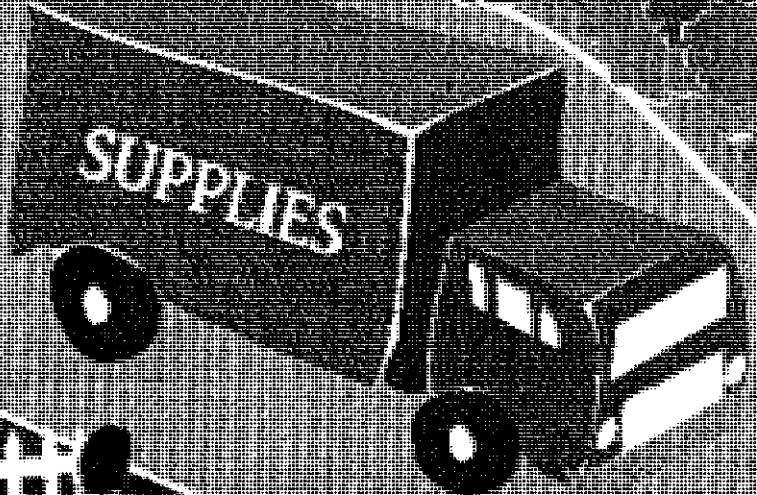
Helping  
suppliers  
reduce waste

Forming  
partnerships

Creating  
policies  
for suppliers

Resources

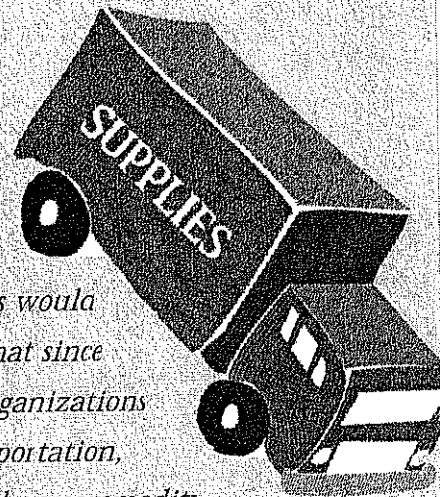
Government  
purchasing



## BUILDING SUPPLIER PARTNERSHIPS

# Building Supplier PARTNERSHIPS

**G**ARBAGE IN, GARBAGE OUT *refers not only to your computer but also to waste received from suppliers in the form of excess packaging, rejected products, and inventory that expires before it is used. While most organizations would not consciously pay suppliers for garbage, many do just that since suppliers include the cost of the packaging in all orders. Don't forget, organizations not only have to pay suppliers for the cost of excess packaging and transportation, they also have to pay another company to dispose of the waste or depend on commodity markets for recycling*

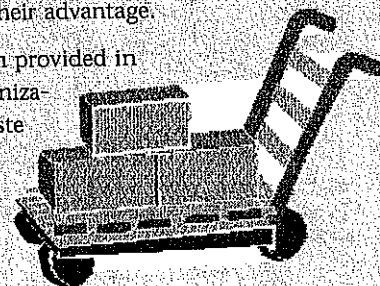


Convincing suppliers they should reduce packaging or change distribution systems is not always easy. Has your organization encountered any of the following reasons for not approaching suppliers? If so, this issue of *WasteWise Update* can help you by showing how other organizations have overcome these barriers.

- **We don't have the staff to evaluate options.** To overcome this barrier, one Maytag Corp. facility dedicated an intern to study the facility's distribution system. This study resulted in recommended options for cost savings and waste prevention.
- **We can't influence our supplier because we are a small company.** NACHI Technology, which employs only 115 people, convinced its customer General Motors to change the way it does business—resulting in mutual cost savings. Similarly, the Minnesota Chamber of Commerce, with only 26 employees, convinced its caterer to distribute employee lunches in bulk, thereby reducing waste by 50 percent. What was the caterer's incentive? Maintaining customer satisfaction *and* cost savings. In addition, when the supplier for Royal Crest Dairy couldn't provide a returnable packaging system, the company found a new supplier who could.
- **Our management hasn't made our suppliers aware of how important waste reduction is to our company.** In order to inform suppliers how much Roche Vitamins Inc. values the environment, the company officially requested that all suppliers reduce waste by

25 percent. SC Johnson Wax hosted a meeting with 70 supplier organizations from around the world to establish its Partners in Quality program.

- **Our supplier doesn't know how it can reduce our waste.** To build a team attitude and foster cooperative efforts, Clorox invited its supplier's shipping and distribution staff to visit Clorox, and the supplier invited Clorox's line personnel to visit its plant.
  - **We use multiple suppliers at each of our facilities, each of which has its own procurement system.** ComEd overcame this barrier by streamlining its procurement of inventory with short shelf lives. The company reduced its vendors from six to one, saving \$500,000 in the process.
  - **Our government agency is committed to large purchasing contracts that have limited flexibility.** The Commonwealth of Massachusetts offers advice to other government partners on how they can use large purchasing contracts to their advantage.
- We hope the information provided in this *Update* helps your organization to successfully find waste prevention opportunities through supplier partnerships.



# Though Small, NACHI Technology Achieves Big Results

**Y**ou don't have to be a large company to be a leader in waste prevention and recycling. Just ask NACHI Technology. Although it employs a modest 115 employees, NACHI has successfully worked with its customers—including automotive giants such as WasteWise partner General Motors (GM)—to implement packaging reduction and reuse. They've also achieved considerable savings in the process—almost \$55,000 per year.

NACHI manufactures precision ball bearings for the automotive industry. Although a relatively small company, its product is used in 60 percent of all vehicles on the road today. NACHI takes its environmental commitment seriously. In fact, it is the only company in Indiana to have won two Governor's Awards in the areas of pollution prevention and recycling.

"Our company knows that the environment and the economy go hand in hand," says Dan Nebesio, vice president of operations for NACHI. "We've worked hard to show our customers that waste prevention and recycling really pay off. Any savings we achieve, we share with our customers primarily through a reduced price for our product."

In particular, NACHI worked with GM to make two fundamental changes: switching to a more standard pallet size and adopting a smaller, reusable box with reduced packaging to ship its product. Convincing GM to make the switch, however, didn't happen overnight. It was a gradual process that took roughly a year to achieve. In fact, when NACHI first began working with GM, there was no discussion of packaging other than meeting GM's special standards for pallet size and for the boxes used in shipping raw material and finished bearings.

Now, when making shipments to GM, NACHI simply reuses the boxes and pallets that it receives from incoming deliveries to its facility. Making this switch allowed NACHI to avoid the cost of purchasing new boxes and custom-sized pallets. In the process, the company has gone from emptying its waste compactor two to three times a week to once every 10 days.

So how did NACHI convince GM to make the change?

NACHI took a multifaceted approach. First, the company put together a qualified team to work on the project and to

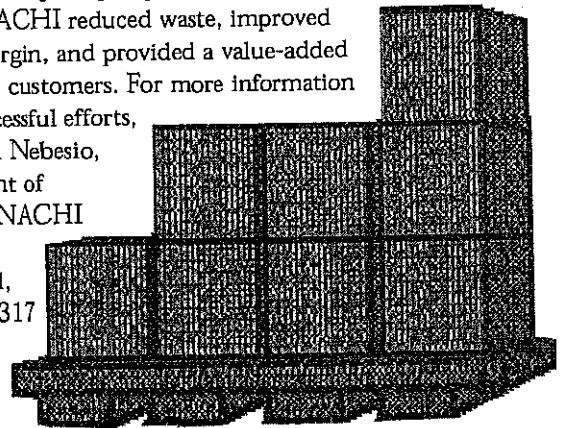
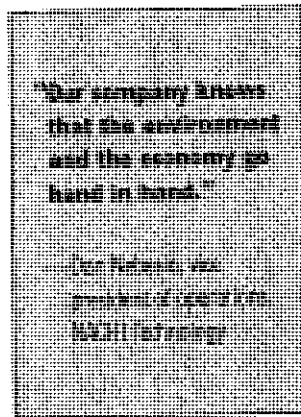
develop a strategy to implement the changes. This involved identifying a project champion to lead the effort and coordinate the project. NACHI worked hard to show GM that reducing and reusing packaging was a win-win situation that offered cost savings to both companies. NACHI also took a value-added approach. Since customers expect high-quality products, the company showed its customer that it is willing to go the extra mile. NACHI explained to GM that using smaller, 40-pound boxes, for example, was safer for GM's employees and could help reduce the risk of worker injuries.

"Maintaining a close relationship with your customers is also critical," adds Nebesio. "It's important to keep the lines of communication open so there's a constant exchange of information between you and the customer."

As an example, after substantial in-house testing of its new shipping method, NACHI conducted several trial runs with GM to work out any remaining issues. After the new system was in place, NACHI managers visited GM periodically to check in and see how it was working. In short, NACHI approached this project as it does all projects that involve its customers—as part of an ongoing, long-term relationship with the opportunity to grow and improve over time.

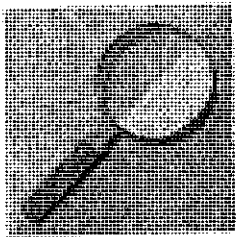
The team also solicited input from the plant floor. "In my opinion, the best ideas come from this area," remarks Nebesio. "These workers are the ones driving the company. Also, if an idea comes from the plant floor, it's a lot easier for others to buy into it."

Interestingly, the biggest barrier to making the switch was simple inertia and the attitude that "We've always done it this way, so why change?" Through it all, NACHI remained persistent, flexible, and creative. In the end, all of the hard work paid off. By adopting standard and reusable shipping methods, NACHI reduced waste, improved its profit margin, and provided a value-added service to its customers. For more information on their successful efforts, contact Dan Nebesio, vice president of operations, NACHI Technology (Greenwood, Indiana) at 317-535-5000.



# MAKING TIME TO FIND LESS WASTE

**W**hile the Maytag repairman might have time to spare, employees at the Maytag Corp.'s Herrin Laundry Products Facility are busy designing and manufacturing products such as washer and dryer units. For the Facilities and Industrial Engineering Department, finding time to investigate new waste reduction opportunities, especially those involving coordination with vendors, is a challenge.



## Investigating the Options

To help meet this challenge, facility staff encouraged a summer intern to scope out various waste reduction options—and the results paid off. The intern projected that by working with vendors to implement a wide range of packaging

reduction programs, the facility could save more than \$82,000 per year. The intern also estimated the facility could prevent nearly 200,000 pounds of cardboard and almost 150,000 pounds of wood—3,730 pallets—from entering the facility. The cornerstone of the facility's packaging reduction programs is a reusable container system designed, in close coordination with the vendors, to reduce packaging associated with shipments of washer and dryer timer parts. Vendors now use the containers to package and ship parts; Maytag uses the containers at workstations along the assembly lines and ships them back to the vendor for reuse.

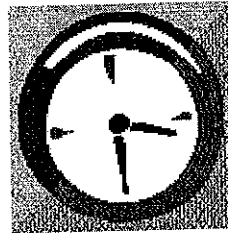
To make this project a reality, Dan Kantorski, an Illinois EPA intern assigned to the Herrin facility during the summer of 1996, worked closely with the facility's vendors. As part of this project, he performed a plantwide packaging audit, identified vendors from whom packaging could be reduced, and worked with those vendors to reduce excess packaging. Making this initiative a success also involved working closely with internal departments, such as Purchasing,

Environmental, and Facilities and Industrial Engineering, to identify feasible solutions. Rene DeGroof, a senior environmental engineer at the Herrin facility who worked in cooperation with Kantorski, advises, "The two key steps to a successfully coordinated project are finding a dedicated employee to oversee the project and involving all departments and vendors at the earliest stages."

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—Rene DeGroof, Senior Environmental Engineer  
Maytag Herrin Facility

the project and involving all departments and vendors at the earliest stages. Maintaining good lines of communication throughout the project is also essential."



## Finding Time and Dedicating Personnel

While DeGroof acknowledges that an assessment of incoming packaging use and the development of recommendations can be done by outside consultants, summer interns, or individuals

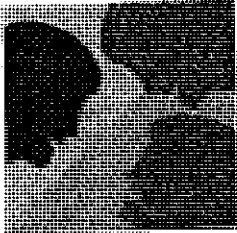
from within a plant, he emphasizes that the essential element is finding an individual or team that is dedicated to the project. "Typically, when a facility manager tries to perform this assessment on top of doing everything else required to keep a plant running properly, the assessment often gets pushed to the bottom of the stack because it is not an emergency," DeGroof explains. By assigning Kantorski the task of conducting background research and developing recommendations, it took less than 12 weeks to complete the plantwide audit of incoming packaging, analyze the vendor sources, and work with the selected vendors to develop recommendations. As part of the audit, Kantorski gathered data on the quantities of washer and dryer units produced per day, the parts used to make each product, the quantity of parts used per unit, the quantity of boxes used for each part per year, and the weight of each box and other internal packaging materials.

Kantorski's analysis revealed that, although the Herrin facility works with 27 vendors to receive parts and supplies on a regular basis, 8 vendors accounted for more than 60 percent of the total incoming corrugated cardboard packaging. Once he identified the vendors contributing the most packaging, he contacted them to discuss options for reducing it. For each item or part involved in the redesign project, he gathered data on current packaging practices including container dimensions, part weights, part dimensions, part volumes, and use of containers at workstations along the assembly line. He entered all the information

into a database and began developing new options to reduce the amount of excess packaging entering the facility. Options identified included reusable shipping containers, reusable bulk paint containers, and reusable corrugated cart liners.

### Involving All Departments and Vendors Early

Maytag asked for vendor input during the early stages of planning. This allowed Maytag to incorporate vendor suggestions into the final plan, facilitating movement of the containers within the



Maytag facility and between the facility and the vendors. Kantorski coordinated with the selected vendors and the trucking lines used to deliver the parts. Many of the vendors suggested ways to redesign trucking routes in order to simplify coordination and management of the reusable containers. Working with the trucking lines, Kantorski helped reschedule product delivery and pickup loops to optimize movement of the reusable containers. He also determined the optimum number of containers to store on site, which was a critical component of the program for two main reasons. First, the number of containers available in a given location must meet the needs of each vendor and its pickup schedule. Second, providing sufficient storage space for containers can often involve significant capital investments if a company needs to create the storage space or redesign their sprinkler system to meet any new storage requirements. After analyzing each option, based on cost-effectiveness and the potential for packaging reductions, the Herrin facility selected the reusable container system that best met its needs and began implementing its reusable container programs with a number of vendors early in 1997.

In addition to involving vendors early, DeGroof recommends involving purchasing officials from the start, "If everyone is involved from the beginning, it helps implementation run smoothly and quickly once the company decides on a reusable packaging system." As soon as the facility decided which reusable containers to use, Maytag's Purchasing Department readily approved the purchase of the reusable containers.

Commenting on the overall experience, DeGroof notes, "By letting a dedicated person take the project and run with it, setting aside time to examine incoming packaging and communicating effectively with our vendors, Maytag successfully modified its packaging system to save money and reduce incoming waste from vendors." For more information, contact Rene DeGroof, senior environmental engineer, Herrin Laundry Products (Herrin, Illinois) at 618 988-8431, Ext. 372.

## Royal Crest Dairy Moves to a Waste-Reducing Supplier

Royal Crest Dairy has moved to a waste-reducing supplier. The dairy industry is one of the largest in the country, and its products are essential to many diets. The company has been a leader in waste reduction, and its new supplier is helping it reduce its waste even further. The new supplier is providing Royal Crest Dairy with a more efficient and cost-effective way to receive its products. This is a significant step in the company's commitment to environmental responsibility.

The new supplier is providing Royal Crest Dairy with a more efficient and cost-effective way to receive its products. This is a significant step in the company's commitment to environmental responsibility. The supplier is using a more sustainable packaging system that reduces the amount of waste generated during the shipping process. This is a win-win situation for both the company and the environment.

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# SUPPLIER POLICY ENVIRONMENT

Establishing a formal policy can help companies take the importance of environmental performance to suppliers. Setting customer requirements on materials can have a positive impact on reducing costs.

## SC JOHNSON WAX DEVELOPS SUPPLIER PARTNERSHIP

**W**hen SC Johnson Wax set its first worldwide environmental goals in 1981, it was to reduce waste to zero. SC Johnson now enforces a full spectrum of all supplier environmental requirements on all suppliers. Working together, suppliers and SC Johnson have reduced waste to zero. SC Johnson's environmental goals are to reduce waste to zero and to reduce the amount of energy used in its products.

The sustainable program since 1981 reflects the commitment of SC Johnson and its suppliers to reduce waste and to reduce energy and pollution. SC Johnson's environmental goals are to reduce waste to zero and to reduce the amount of energy used in its products. SC Johnson's environmental goals are to reduce waste to zero and to reduce the amount of energy used in its products.

SC Johnson's global programs with suppliers in 70 countries around the world include the supplier requirements program in 1981. To help offset the environmental costs of doing business, SC Johnson has developed a program to help suppliers reduce their environmental costs. SC Johnson's environmental goals are to reduce waste to zero and to reduce the amount of energy used in its products.

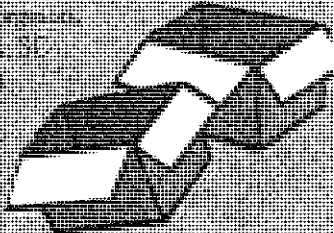
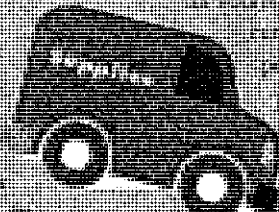
Suppliers are encouraged to reduce their environmental costs. SC Johnson's environmental goals are to reduce waste to zero and to reduce the amount of energy used in its products. SC Johnson's environmental goals are to reduce waste to zero and to reduce the amount of energy used in its products.

The biggest hurdle to success is how to set SC Johnson's environmental goals. The biggest hurdle to success is how to set SC Johnson's environmental goals. The biggest hurdle to success is how to set SC Johnson's environmental goals.

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Working closely with suppliers can help your company to reduce its environmental costs. SC Johnson's environmental goals are to reduce waste to zero and to reduce the amount of energy used in its products.

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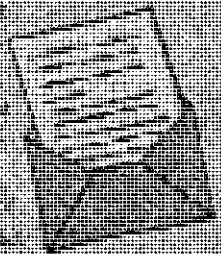




# COMPANIES PROMOTE ENVIRONMENTAL LEADERSHIP

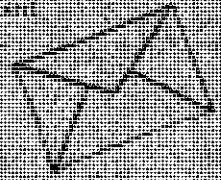
## ROCHE VITAMINS FORTIFIES ITS ENVIRONMENTAL COMMITMENT

**W**hen Roche Vitamins Inc. first set its ambitious environmental goals, it was committed to a 10% reduction in waste by 1990. The company has exceeded that goal, reducing waste by 25% since 1988. The company's commitment to environmental leadership is reflected in its ISO 14001 certification, which is a global standard for environmental management systems. Roche Vitamins is also a member of the GreenSource program, which is a voluntary program for companies to reduce their environmental impact. The company's commitment to environmental leadership is also reflected in its ISO 14001 certification, which is a global standard for environmental management systems.



The responsible efforts by Roche Vitamins Inc. are a testament to the company's commitment to environmental leadership. The company's commitment to environmental leadership is reflected in its ISO 14001 certification, which is a global standard for environmental management systems. Roche Vitamins is also a member of the GreenSource program, which is a voluntary program for companies to reduce their environmental impact. The company's commitment to environmental leadership is also reflected in its ISO 14001 certification, which is a global standard for environmental management systems.

- Reduce packaging materials used in product packaging
- Increase product life and reuse of materials
- Use the highest percentage of recycled materials possible in all aspects of the facility



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## Ways Your Supplier Can Reduce Your Solid Waste

### BY REDUCING OR ELIMINATING PACKAGING:

- Eliminate unnecessary secondary packaging such as extra bags, boxes, or film.
- Pack products more efficiently in the least packaging or smaller containers.
- Supply products in bulk or concentrate form to reduce packaging.
- Replace standard packaging sizes with variable or customized sizes.

### BY CHANGING DISTRIBUTION SYSTEMS:

- Send product information electronically rather than through paper notices.
- Establish electronic purchasing or billing systems.
- Supply materials using just-in-time techniques to reduce material inventory.
- Create a distribution system that encourages feedback concerning such as labels or notices.
- Increase a market for such product left with suppliers.

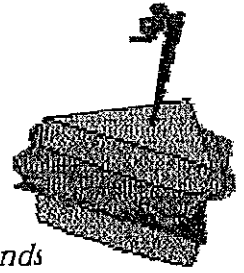
### BY PURCHASING OR TAKING BACK MATERIALS FOR REUSE:

- Take back unshrinkable or rejected products.
- Recycle waste for reprocessing or feedback of environmental waste and auxiliary waste requirements.

### BY SUPPLYING DURABLE PRODUCTS:

- Design products for long life.
- Provide warranties and extended service contracts to reduce product.

# Minnesota Chamber of Commerce Watches Its Weight at Lunch



**W**hen employees of the Minnesota WasteWise program at the Minnesota Chamber of Commerce realized how many pounds they were 'putting on' at their lunchtime meetings, they knew it was time for a change. They decided to put the organization on a diet of sorts to cut out the unnecessary 'fat' and trim down their waste as much as possible.

*Reducing food consumption had no part in this group's recipe for success, however. Rather, the group worked with its caterers to greatly reduce the amount of packaging in which food is served.*

The Minnesota Chamber of Commerce became interested in reducing its luncheon waste purely out of motivation to conserve resources. Staff noticed that the luncheons hosted by the organization several times a month were responsible for generating the majority of the nonrecyclable waste in the office. Meals were served in clam-style, single-serve, ridged polystyrene containers, which quickly piled up in the trash can. With disposal costs charged as a flat fee on top of rent, the organization stood to save no money in waste handling charges or tipping fees by cutting the containers out of the waste stream. As Karen Flannery, Minnesota WasteWise program director, put it, however, "It was just a matter of principle and common sense."

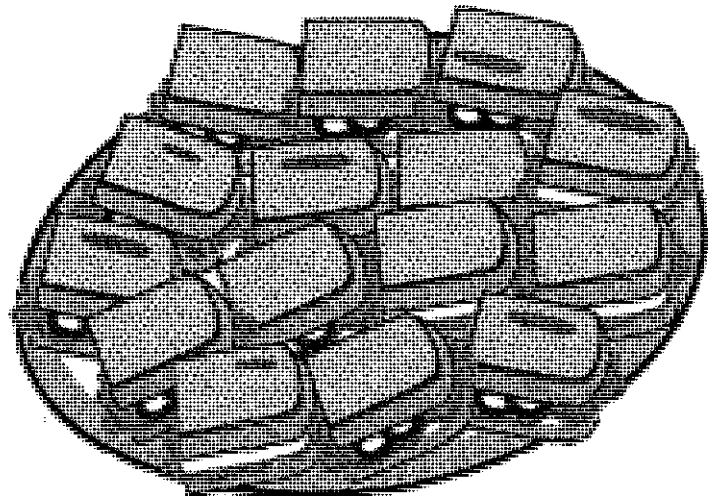
When Flannery approached the catering companies that regularly served the Minnesota Chamber of Commerce and requested that they reduce packaging used for lunches, the catering companies met her with mixed reactions. Some felt that most of their customers actually preferred individually packaged meals over a group buffet-style presentation and were reluctant to alter their service. One of the organization's principal caterers—Atrium Catering of Minneapolis—however, needed little convincing to adjust its delivery style. According to Flannery, "The challenge was to change the caterer's perception of customers' demands." Once she made it clear that reducing the amount of waste generated would accomplish the Minnesota Chamber of Commerce's objectives and benefit the caterer by reducing its supply costs, Atrium Catering was sold on the idea.

Now, instead of delivering the lunches in 20 to 30 individual one-use boxes per meeting, Atrium Catering provides the food on two large reusable trays and serves chips out of a large bowl rather than small bags. This simple change has considerably slimmed down the office's waste stream. Using trays in place of boxes for 40 weeks last year eliminated approximately 600 boxes, and the trays are so durable and versatile that staff members take them home to reuse for serving their own guests. As a result of the catering change,

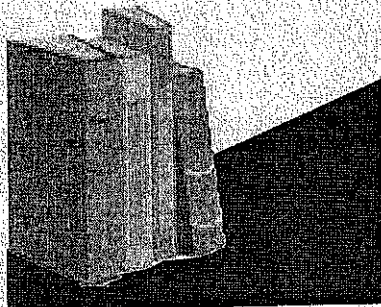
Flannery estimates the Minnesota Chamber of Commerce reduced its nonrecyclable luncheon waste by more than 50 percent. The buffet-style food service program has proven so successful that Atrium Catering now offers all of its customers the option to order their deliveries the "Minnesota Waste-Wise Way."

What is perhaps most inspirational about this cooperative waste reduction program is that, contrary to what one might expect, the Minnesota Chamber of Commerce found its small size wasn't a barrier to influencing its caterers. This is a hopeful sign for smaller WasteWise partner organizations that their size might not be of much consequence in affecting their suppliers' openness to new ideas. As the Minnesota Chamber of Commerce learned, the real keys to influencing suppliers are establishing a good rapport and maintaining an open line of communication.

For more information on the Minnesota Chamber of Commerce's success in working with its catering company to reduce waste, contact Karen Flannery, Minnesota WasteWise program director, Minnesota Chamber of Commerce (St. Paul, Minnesota) at 800 821-2230.



# Resources



## PUBLICATIONS

### **Selecting a Supplier, Hauler, and Materials Broker**

This fact sheet provides organizations with guidelines and questions to ask in negotiating with suppliers to reduce their waste streams. Developed by Resource Recycling Systems, Inc.

Contact: Office of Waste Reduction Services, State of Michigan, Departments of Commerce and Natural Resources, P.O. Box 30004, Lansing, MI 48909; Phone: 517-335-1178.

### **Reduce/Reuse/Recycle: Are You Buying Trash? Save Money and Prevent Purchasing Waste**

This fact sheet lists examples of waste prevention in which organizations have requested or required suppliers and contractors to reduce waste and save money. New York City Department of Sanitation, April 1994.

Contact: New York City Department of Sanitation, P.O. Box 156, Bowling Green Station, New York, NY 10274-0156; Phone: 212-837-8089.

### **Office Green Buying Guide**

A guide to Green Seal environmental papers. Topics include steps to implementing a green purchasing program and products to have in a green office (recycled paper products, tissue, facsimile machines, computers, lighting, photocopiers, cleaning products, paints, inks, toner cartridges, reusable envelopes and bags, suppliers, vendors, recommended products). Green Seal Environmental Partners, 1996.

Contact: Green Seal Environmental Partners, 1730 Rhode Island Avenue, NW, Suite 1050, Washington, DC 20036-3101; Phone: 202-331-7337.

### **Greening the Supply Chain: Benchmarking Leadership Company Efforts to Improve Environmental Performance in the Supply Chain**

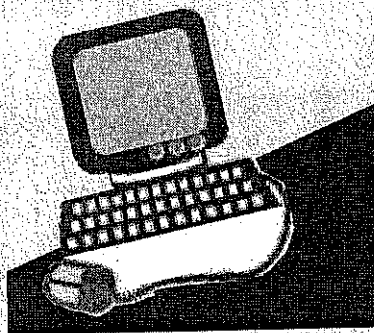
This paper documents a study that identifies model business practices in the area of supply chain environmental management. Expectations for nonbusiness or external stakeholder groups regarding the environmental performance of leadership companies and their suppliers also are provided. May 1997.

Contact: Business and the Environment Program, Business for Social Responsibility Education Fund, 1030 15th Street, NW, Suite 1010, Washington, DC 20005.

### **"Let the Supplier Beware: How a New Breed of Supply Chain Management Practices is Changing Procurement"**

This article explains how to work with supplier companies, gives examples of organizations that have developed environmental policies, and provides guidelines to consider when evaluating suppliers for environmental performance. *The Green Business Letter*, April 1997.

Contact: Tilden Press, Inc., 1519 Connecticut Avenue, NW, Washington, DC 20036.



## INTERNET

### **"Purchasing for Waste Reduction"**

This list of ideas was approved by professional procurement officers and is intended to help you jump start your waste prevention efforts and save money too.

<[www.ciwrmb.ca.gov/mrt/wpw/wpbiz/fspurcha.htm](http://www.ciwrmb.ca.gov/mrt/wpw/wpbiz/fspurcha.htm)>

### **"Questions to Ask Your Vendor"**

A checklist to help businesses make well-informed purchasing decisions and write form letters to send to vendors announcing that purchasing environmentally preferable products is a priority with your organization. <[www.epg.org/aa\\_ask.html](http://www.epg.org/aa_ask.html)>

### **"Publicizing Your Environmental Accomplishments"**

Recommends simple ways to inform vendors, manufacturers, coworkers, in-town and on-location crew about your organization's environmental policies. Recommends conversions to use in communicating the impact of your environmental policies.

<[www.epg.org/Publicizing\\_Your\\_Green.html](http://www.epg.org/Publicizing_Your_Green.html)>

### **"Using Your Buying Power"**

This Canadian web site recommends methods for improving office operations and suggests ways to adopt an office procurement policy that encourages the purchase of green products.

<[www.ns.doe.ca/udo/office/chap9.html](http://www.ns.doe.ca/udo/office/chap9.html)>

### **"Green Procurement: Moving Environmental Quality Up the Supply Chain"**

Gil Friend and Associates, a consulting group specializing in strategic environmental management including corporate environmental policy, EcoAuditing, and ecological reengineering, wrote this article explaining the steps an organization should take to initiate a supplier program. <[www.eco-ops.com/eco-ops/nbl/nbl.3.20.html](http://www.eco-ops.com/eco-ops/nbl/nbl.3.20.html)>

**We'd Like to Hear From You**



Questions? Comments?  
Contact us at 800-EPA-WISE (372-9473),  
or by e-mail at <[cjw@cajs.net](mailto:cjw@cajs.net)>. Or visit  
our web site at <[www.epa.gov/wastewise](http://www.epa.gov/wastewise)>

# Clorox's Efforts Trigger Comprehensive Savings

In the competitive consumer products industry, where cost controls are vital to a company's competitiveness, The Clorox Company continually searches for ways to increase resource efficiency and reduce its production costs. For decades now, the company has worked with its suppliers to eliminate extraneous costs wherever possible. Motivated primarily by the need for cost control, Clorox has successfully implemented a comprehensive supplier waste reduction program. This program encompasses many aspects of the customer-supplier relationship from product packaging specifications and electronic communications to shipping and distribution methods.

During a recent evaluation of its operations, Clorox found that the trigger sprayers used on various cleaning products were packed too few to a box to effectively supply production lines. Not only was this "lag in production...costing the company precious resources in labor expenses," according to Clorox's Manager of Environmental Programs, Terry Bedell, the small boxes were piling up quickly and adding unnecessarily to the company's disposal costs. Clorox realized that the process of unloading the spray triggers was causing a significant resource inefficiency, and Clorox's operators did not hesitate to take action to institute change.

Backed by the notion that the most obvious solution to the problem lay in switching to a larger container, Clorox's procurement department asked the company's trigger supplier to consider using bulk containers in place of 500-count corrugated boxes. To gain the supplier's support, Clorox emphasized that the packaging change was an opportunity for mutual savings and made it clear that it reflected Clorox's needs. In light of its long-standing positive working relationship with Clorox, the supplier was receptive to the idea.

Before either company could move ahead with implementing the necessary packaging and procedural changes, each had to assess whether a switch to bulk shipments would be feasible given the limitations of the companies' operations and the product itself. The vendor conducted tests on the spray triggers to see if they could withstand shipment *en masse*. Meanwhile, Clorox evaluated how it might accommodate the spray triggers' new form of packaging into its own production lines.

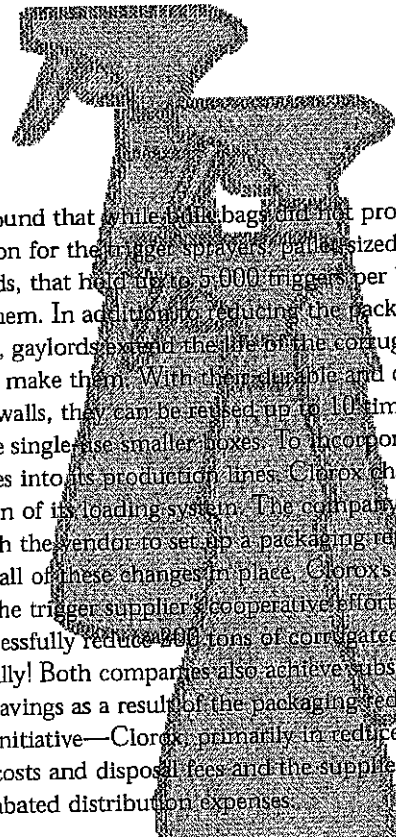
The supplier found that while the bags did not provide enough protection for the trigger sprayers, pallet-sized bulk boxes, or gaylords, that held up to 5,000 triggers per box would protect them. In addition to reducing the packaging-to-product ratio, gaylords extend the life of the corrugated material used to make them. With their durable and collapsible double walls, they can be reused up to 10 times, as compared to the single-use smaller boxes. To incorporate the pallet-sized boxes into its production lines, Clorox changed the configuration of its loading system. The company then coordinated with the vendor to set up a packaging return program. With all of these changes in place, Clorox's and

the trigger supplier's cooperative efforts successfully reduce 200 tons of corrugated annually! Both companies also achieve substantial savings as a result of the packaging reduction initiative—Clorox, primarily in reduced labor costs and disposal fees and the supplier in abated distribution expenses.

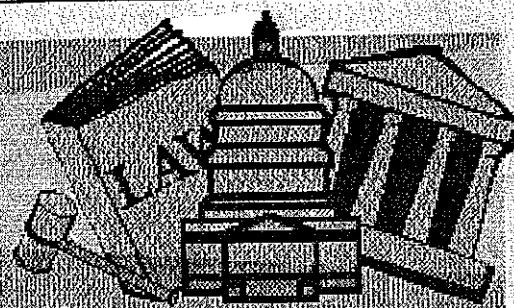
Clorox continues to search for new ways to increase resource efficiency in its operations. Bedell suggested that Clorox might next examine possibilities in its product specifications. Changing the weight and/or composition of the plastic caps used on product bottles, for example, could potentially yield cost benefits greater than or equal to those the company has already experienced.

According to Bedell, having strong working relationships with suppliers is integral to the company's success in initiating supplier waste reduction programs. Bedell found that vendors tend to be eager to accommodate needs of their long-time customers. The more successful they are at providing value to customers like Clorox, the better the chances that the customer will continue to purchase their products. "Another key point for partners interested in supplier reduction programs," Bedell stresses, "is to clearly let your suppliers know what your operations look like and what your needs are and to ensure that you communicate this information at the right level." In Clorox's case, the supplier invited Clorox's line personnel on site to visit their plant, and Clorox reciprocated by inviting the supplier's shipping and distribution personnel to their own facilities. This helped build a team attitude and fostered cooperative efforts.

"Another key point for partners interested in supplier reduction programs is to clearly let your suppliers know what your operations look like and what your needs are and to ensure that you communicate this information at the right level."  
— Terry Bedell, Manager of Environmental Programs, Clorox Company



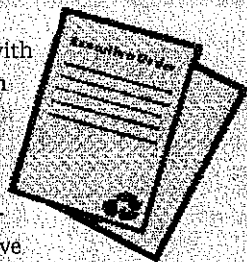
## SPOTLIGHT ON GOVERNMENT



# Massachusetts Advises Environmental Purchasers

**I**f you don't practice what you preach how can you encourage others to follow? This message rings true for many local and state governments that are beginning to look at environmental purchasing practices. How do you get started?

While most governments are organized differently, all have one source for procuring goods and services — the purchasing department. There is no better way to get a state, locality, or tribe to work toward environmental purchasing than an executive order or policy requiring the purchasing department and employees to consider environmentally sound goods. Eric Friedman, environmental purchasing coordinator with WasteWise partner, the Commonwealth of Massachusetts, has been purchasing environmentally preferable products for the Commonwealth for the past 5 years. Out of his top 10 tips for governmental purchasing, he places an executive order or policy as number one. "Not only will a policy or order state what is expected by the government, but it also establishes upper-level support," says Friedman.



### Other Steps for Environmental Purchasing

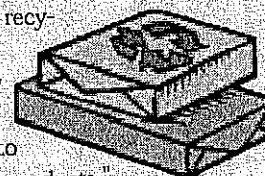
Below are some of Friedman's other tips for successful environmental purchasing.

**Involve the right people in the decision-making process.** Make sure your team includes all the principal partners in your program: employees from purchasing, facilities, public works, environmental, and any other departments you deem necessary.

**Talk with other states and localities.** Check to see what your peers are doing. They can give you great advice as to what works and what doesn't.

**Start off with what's easy.** If you are putting a purchasing policy together, Friedman suggests that you start with easy prod-

ucts so that you can gain employees' trust. "We started with envelopes," Friedman explains. "They were something that everyone uses and are easy to convert to a recycled product with no impact on performance or appearance. Once people knew that they [envelopes] were made from recycled-content material, it was easier to get them to use recycled paper and other products."

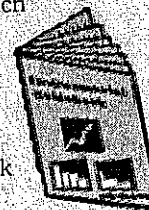


It's not all or nothing. "Many programs suffer from this syndrome," Friedman says. "Even if you only have one or two environmental products or practices, it's a start. The momentum will build, and, slowly but surely, you will see more and more success."

**Do your homework.** Include all the requirements for the product or practice (or be willing to send out amendments). Friedman recalls one mistake in this area. "We forgot to include the American Petroleum Institute's specifications in our re-refined motor oil bid. Vendors called us right away to let us know of our mistake, and we quickly corrected it in an amendment we sent out a few days later."

**Establish pilot programs.** Another way to gain the trust of your employees (and to try something different) is to establish a pilot program in a department or within a government.

**Publish a guidebook.** Give your employees as much information as possible. Also, the language of the guidebook needs to be instructive and not filled with "shoulds" and "wills." Friedman says that by using such words as "reasonable" and "acceptable" you will gain more support for your program. Check out the Commonwealth's purchasing department web site at [www.magnet.state.ma.us/osd/enviro/enviro.htm](http://www.magnet.state.ma.us/osd/enviro/enviro.htm) for more ideas on procurement guidebooks and fact sheets.



**Keep information flowing.** Nothing kills a program like lack of information. Keep researching new and upcoming products and practices and update your employees. Massachusetts conducts workshops, maintains a web site, and sponsors an annual vendor fair to spread the word.

For more information, contact Eric Friedman, environmental purchasing coordinator, Commonwealth of Massachusetts (Boston, Massachusetts) at 617-727-7500, Ext. 351.



## ComEd Cuts Waste By Streamlining Purchasing Process

As all suppliers alike, ComEd was creating a difficult problem for itself. While the purchasing process had been working for years, it was particularly tedious because it was a process that they had not designed for. For Tom Hall, procurement manager for WasteWise partner ComEd's utility business (ComEd), these problems included paper-based check and purchase order systems. Hall recognized that a "paper-based" system for high-dollar purchases could be a barrier to certain supplies he needed and reduce waste from obsolete and unneeded materials. This paper-based system also made it difficult to track the program, and since the company made more than \$500,000 a year, the program began.

That paper-based purchase check-out, inventory, and lab samples by ComEd requires that before ComEd ordered materials, the paper would be signed, signed for, and then the company had to make a trip to the supplier's office. Instead, it would purchase from its suppliers, each of which required a separate system. For years, ComEd had been using a system called "ComEd" for several years. They are now purchasing the material and paper from their business significant expense. In

addition, with orders processed waste from different suppliers, it was difficult to track.

Hall recognized that the use of the purchase order was a waste. ComEd's system. He recognized with the respect to design several new and better order systems by which ComEd could be improved. The system would include that no paper would be needed, a computer list of stock and orders, order forms. This system provided real-time information on the availability of purchases, items at ComEd, and the ability to order items. He also saw the need for a system to fill the orders for ready-to-delivery materials and that would make buying more work available to the supplier.

Following that, the first system was a list of orders, however, not including a third party buying system. ComEd wanted to make it more a simple system. By introducing a third party buying system, the supplier became responsible for tracking, ordering and shipping. Other companies are starting to use the system. It can easily extend ComEd's system to other different areas without suppliers and suppliers providing and delivery systems. The supplier also agreed to offer a more than 10% discount on their purchases which would not be there before.

ComEd has reported the million units in all of its facilities. In order to make it a complete system, ComEd needed a buying system for the supplier to connect to a ComEd for a long-term contract. ComEd asked the supplier to make an effort to meet ComEd's needs and ordering performance in programs pricing and delivery. Hall says, "It was only after the buying was put in place that ComEd's system was able to identify suppliers and their pricing and delivery. For more information, please contact Tom Hall, WasteWise manager, ComEd (Chicago, Illinois) at 630-654-1121."



United States  
Environmental Protection Agency  
(5306W)  
401 M Street, SW.  
Washington, DC 20460

Official Business  
Penalty for Private Use  
\$300

United States  
Environmental Protection  
Agency

Solid Waste and  
Emergency Response  
Division

EW-001-04-00-001  
October 1999  
www.epa.gov/wastewise



# WasteWise Update

## INSIDE

Design for the  
Environment

Partnerships

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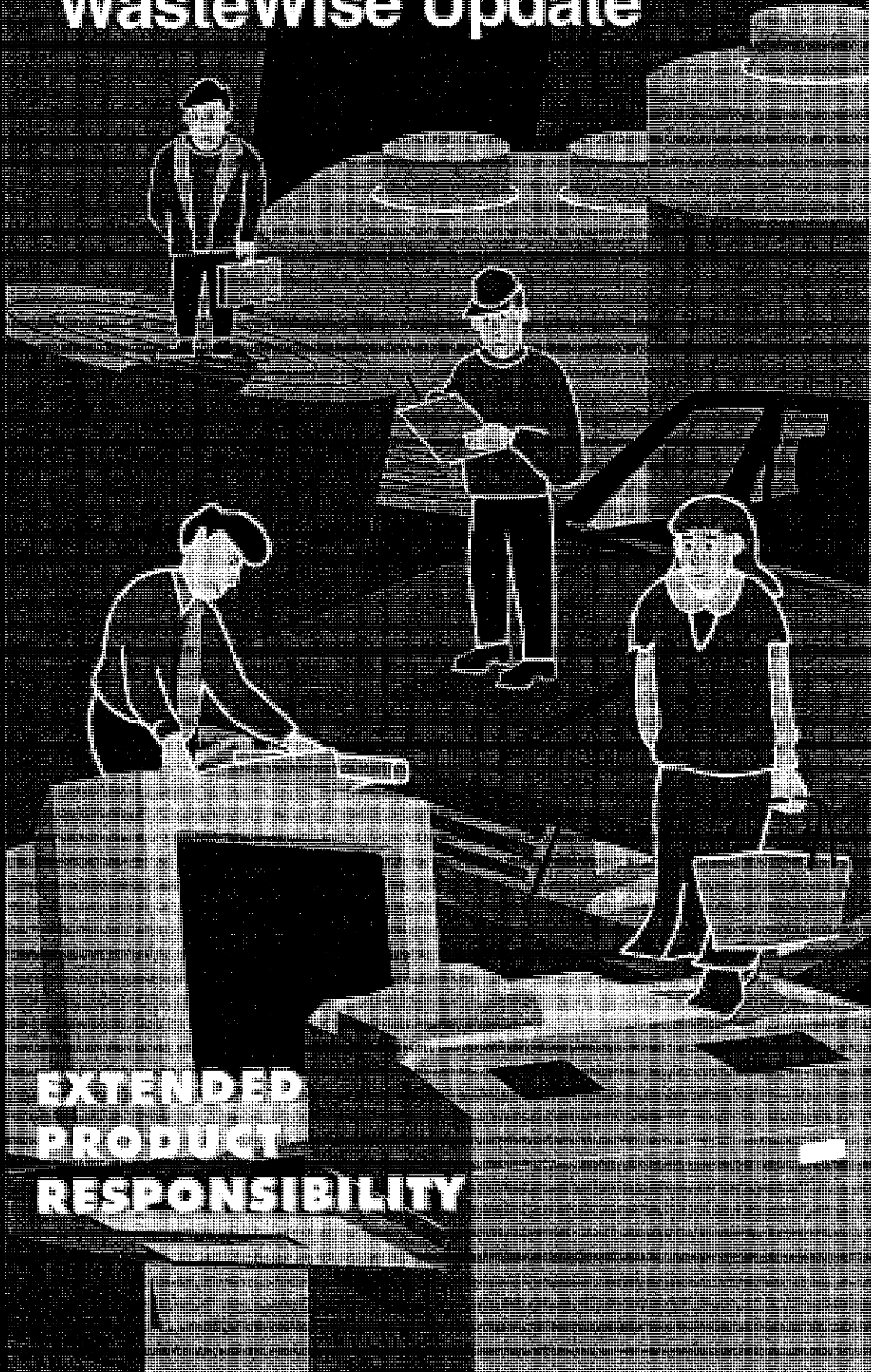
Take Back  
Programs

Inventory



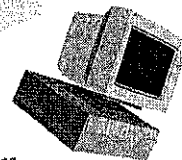
Preserving Resources,  
Preventing Waste

## EXTENDED PRODUCT RESPONSIBILITY



# Extended Product Responsi

**P**roduct stewardship. Lifecycle management. Design for the environment. Take back. These are but a few of the strategies that fall under the broad umbrella of extended product responsibility (EPR)—a new approach to pollution prevention embraced by WasteWise partners in the 1990s. EPR is a product systems approach to resource conservation and waste reduction. No longer is the focus on what an individual manufacturer can do to reduce waste produced at its facilities. EPR expands the frame to encompass entire product systems and asks how all the players in the product chain—from those who extract and process raw materials; through the product designers, manufacturers, distributors, and retailers; to the consumers, users, recyclers, and disposers of products—can collaborate to reduce environmental impacts and resource use associated with the product throughout its life cycle.

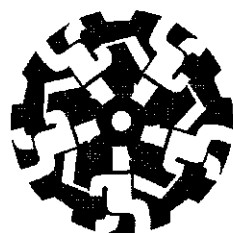


In Europe and parts of Asia, governments are giving product producers and importers primary responsibility for taking back or paying for management of some products at end-of-life (called "producer responsibility"). The focus in these countries is on shifting some or all of the cost of waste management from taxpayers to producers and creating a financial incentive for producers to design their products to make less waste.

EPR takes a broader view, recognizing that all actors in the product chain must work together to ensure more efficient use of resources and less waste. This means, for exam-

ple, that consumers have a role to play in choosing to buy less wasteful products, repairing and reusing products that still have "life," and recycling products at the end of their useful life. Moreover, EPR recognizes that product manufacturers are often in a unique position—through their capability to affect product design, material choices, manufacturing processes, and product delivery—to reduce the lifecycle environmental impacts of their products. In many cases, this means manufacturers can design products to use less material, more recyclable material, fewer toxic constituents, or greater recycled content. They also can design products to be more durable, energy efficient, readily repairable, upgradeable, or reusable. In addition, they can take back products for repair, reuse, or recycling. There are many different ways to extend product responsibility.

Consistent with this outlook, many WasteWise partners are embracing EPR in a variety of ways as a means to save money, drive product innovation, better serve customers, and enhance competitiveness. Not all of the examples below address all phases of the product life cycle. Indeed, incorporating all elements of EPR might not be feasible for all product systems at this time, but applying as many as possible will move partners closer to realizing the complete vision of EPR.



## Coming Soon— Cyber EPR

Watch out for announcements of EPA's new Web site on EPR. This site, linked to the WasteWise home page, will describe EPR and its history, review EPR developments around the world, provide more examples of EPR in action in the United States, and include resources for more information.





# bility



The rest of our *WasteWise* design highlights strategy to use for all products that address the following:

- Design for the environment.** Reducing environmental impacts over the product lifecycle and designing products to be as resource efficient as they can be are key by *WasteWise* partners to lower the environmental impact of their products. Allergan, for example, reduced more than 400,000 pounds of packaging by redesigning the transfer vials process to collect vials. This *WasteWise* initiative has also reduced the amount of wastewater generated and used in vial production.
- Expand chair and industry partnerships.** Partnerships, whether they are between suppliers and customers or between competitors, can lead to significant savings. Public Service Electric and Gas Company, for example, established a voluntary waste-to-energy program to reduce waste and improve efficiency. Such partnerships, along with competition and market size, *WasteWise* initiatives can create market or other value. The *WasteWise* logo is the example of the *WasteWise* Corporate Partnership logo.
- Limit liability arrangements.** Vendor, supplier and other claims are an important aspect of reducing waste. Limiting the amount of liability arrangements, responsibility of a partner's product life and other arrangements for the up-

## Extended Product Responsibility and Climate Change

Increasing competition for our products, product innovations and resource conservation are all associated with product responsibility.

**Reducing emissions from energy consumption.** Energy is measured or managed.

**Reducing and using toxic indicators.** Limiting certain materials.

**Reducing methane emissions from landfills.**

**Increasing absorption of carbon dioxide by trees.**

Less waste from recycling means less methane is sent off-site from the atmosphere.

rior to design and testing for raw costs, recyclability and recovery. Earth Resources and the City of San Diego eliminated the cartage process—and disposal—of food and beverage waste.

- Take back.** By establishing take-back programs with manufacturers, retailers, patients and other important partners, The *WasteWise* Corp., for example, saved millions of dollars with the nation's first take-back program and helped reduce disposal costs for its customers. In the United States, the program is a member of the National Battery Recycling Coalition, which designed the take-back for an entire product sector.

# DESIGN FOR THE ENVIRONMENT

**D**esign for the environment (DfE) programs incorporate environmental considerations into the design of manufacturing processes and finished products. WasteWise partners prevent millions of pounds of waste each year by redesigning manufacturing processes and products to be more energy and material efficient. Lifecycle analysis is one tool partners use to assess the environmental impact of their products, from choice of materials through manufacturing, distribution, use, and final disposal.



## Allergan's Strategy for Success

**S**even years ago, pharmaceutical manufacturer Allergan realized that its production processes were creating a lot of waste and were environmentally and economically unsound. Allergan developed a three-part waste reduction strategy to combat this issue.

First, Allergan looked for ways to reduce or eliminate the amount of materials flowing out of the manufacturing facilities as waste instead of product. Allergan identified wastes generated at each facility and then identified options for either reducing, eliminating, or reusing them. In some cases, Allergan found a way to reuse materials in the production process, for instance, regrinding plastic resins for reuse in the manufacture of new bottles. The company located markets for other materials, either for sale as commodities or for offsite recycling.

Next, Allergan looked at production processes to determine what caused process rejects. Previously, Allergan assumed rejects were inherent in the process and, therefore, could not be eliminated. According to Michael Whaley, director of environmental health, "Our understanding of the cause of rejects was based on anecdotal information rather than actual measurements." The company, for example, thought the cause for line rejects at one facility was labeling. After close examination of the process, however, Allergan found line rejects were primarily caused by filling level defects and cap defects in addition to labeling. Facility personnel used this information to eliminate these production problems, thus reducing waste generation.

Through its manufacturing process changes, Allergan significantly reduced product rejects during the packaging portion of the process. In 1997, the company eliminated 805,000 pounds of primary and secondary packaging, a 12 percent increase over 1996 reductions!

The third step in Allergan's strategy was to incorporate waste prevention into the design phase of products. The Allergan Environmental Product Design Criteria, created by an interdisciplinary team, help prevent the creation of waste and lessen Allergan product impacts on the environment. The criteria include methods for environmentally evaluating product materials, such as using nonhazardous materials instead of hazardous ones, and improving packaging attributes such as ensuring materials are recyclable and using recycled materials in packaging.

Allergan solidified the benefits of the Design Criteria by developing a quantitative scoring system to measure results. Comparisons of three newly designed products with products designed prior to the establishment of the criteria revealed a marked decrease in the newer products' environmental impact. While the existing product scores ranged from 20 to 60 out of a possible 100, all of the newly designed products rated between 67 and 70 out of 100! In addition, all three of the new products evaluated scored 10 out of a possible 10 for packaging material recyclability. Results like these demonstrate that Allergan product designers have become increasingly aware of the benefit of taking 'extended responsibility' for their products.

The key to Allergan's success? Whaley emphasizes, "The company was successful in its endeavors due to the integrated approach and the support from the manufacturing, marketing, R&D, and regulatory affairs employees. Both elements were absolutely essential." Contact Michael Whaley at 714 246-5942 for more information.

## Dan River Weaves Improvement Into Manufacturing Process

**W**asteWise partner Dan River, Inc., a leading textile manufacturer, went 'the whole 9 yards' while researching innovative process improvement opportunities. In 1997, Dan River conducted an extensive trial study of byproducts generated by cotton and polyester fiber production. Dan River, in conjunction with the Institute of Textile Technology (ITT), located in Charlottesville, Virginia, studied the feasibility of reusing portions of yarn production byproducts.

During a 2-week period, Dan River extracted the waste fiber byproduct that would normally be disposed and sent it

to a yarn production facility for blending with its regular fiber. ITT tested samples of the blended product against control samples of virgin yarn and discovered no significant difference in quality or efficiency. The trial study diverted 15,000 pounds of byproduct waste and saved \$7,000. Dan River projects the process will prevent 375,000 pounds of byproduct waste and save \$175,000 each year!

The driving force behind the study, Greg Boozer, vice president of Manufacturing Services at Dan River, initiated meetings with plant supervisors and managers and solicited help from ITT. Initially, some employees expressed concern about the possible impact on yarn quality and weaving efficiency. The addition of ITT's expertise and lab facilities proved to be the critical element to increasing the study's credibility and validity and in winning over skeptics.

New yarn manufacturing machinery, purchased in 1994, enabled Dan River to explore these fiber waste reclamation opportunities. These new machines also opened doors to new waste reduction and cost cutting methods through more efficient use of virgin material. With the success of the trial study, Dan River now can install additional equipment to extract the good fiber from the waste byproduct.

Dan River documented and publicized the trial study's measurements, analysis, and results in informal internal reports, newsletters, and memos. John Thompson, the liaison between Dan River and ITT, asserts "the combined effort of Dan River and ITT was key to the success of this project" and that "partnering with a scientific research organization ensured a completely unbiased approach with thorough, accurate testing of product quality and efficiency." Thompson encourages other textile manufacturers to investigate opportunities for reusing their fiber waste byproduct and recommends a scientific approach for trial studies. For additional information on Dan River's study, please contact John Thompson, Senior Industrial Engineer at 804 799-8898.

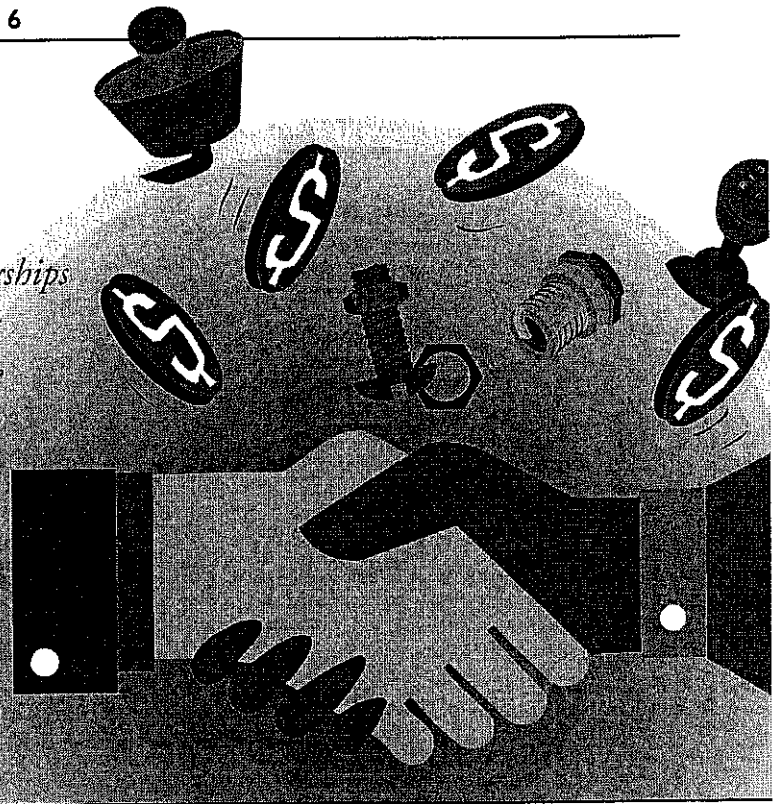
## Product Stewardship at Hewlett-Packard

### Product Stewardship

The text in this section is extremely faint and largely illegible due to the halftone printing process. It appears to be a list of bullet points or a detailed description of HP's product stewardship initiatives.

## PARTNERSHIPS

**P**ooling resources and creating partnerships to explore new approaches is another EPR strategy WasteWise partners are using to reduce waste. Partnerships between competitors and between suppliers and customers often result in a win-win situation for both the participants and the environment.



### PSE&G Takes Products Back to Their Source

Is old inventory taking up space and gathering dust in your warehouse? By overpurchasing products, you might actually be 'buying' waste that eventually needs to be discarded. WasteWise partner Public Service Electric and Gas Company (PSE&G) battled this issue when it discovered several of its facilities were overpurchasing numerous products from as many as 270 suppliers. PSE&G solved the problem by designing a streamlined purchasing process that prevents inventory waste. By cutting down its contracts to only nine suppliers and implementing a product take-back policy in 1997, the company saved more than \$2 million!

Christy Barone, a hazardous materials analyst on PSE&G's Materials Management Team, explained how the company analyzed its inventory's "life cycle," particularly that of chemical commodities and paints. The life cycle inventory analysis revealed each facility purchased supplies separately. Since most suppliers encouraged purchasing in bulk, many facilities ended up with excess product. Leftover inventory was sent to PSE&G's central resource recovery facility, where materials were sorted, sent to disposal facilities, or if possible, sold. PSE&G decided it could avoid having to find markets

*Your company, no matter how big or small, can negotiate to pay only for products that it will use.*

or disposal capacity for the extra inventory by simply improving its purchasing practices.

The Materials Management Team narrowed PSE&G's list of suppliers by maintaining only a few long-term contracts. The selected suppliers agreed to keep track of the inventory each PSE&G facility purchased. Now, when PSE&G facilities call to order products, the vendor checks to see if other PSE&G facilities already have the product in stock. If additional supplies are available at other PSE&G facilities, the vendor informs

the facility it can acquire them without purchase. The suppliers also take back any extra or discontinued products and sell them to other customers. By placing responsibility on its suppliers, PSE&G no longer disposes of its unused, excess products.

For those organizations interested in partnering with their suppliers to ensure better purchasing management, Barone suggests setting up a consignment policy. "Ask your suppliers to be responsible for products they sell to you and have them help you maintain your inventory. Your company, no matter how big or small, can negotiate to pay only for products that it will use." For more information on PSE&G's program, contact Christy Barone at 973 430-3670.

## Vehicle Manufacturers Disassemble Cars to Keep the Environment Together

Of all vehicles removed from service today, 95 percent are processed for recycling and, on average, 75 percent (by weight) of an end-of-life vehicle is reused or recycled. How is the automobile industry striving to increase this recycling rate? One way is through the Vehicle Recycling Partnership (VRP) established in 1991 by WasteWise partners Ford Motor Company (Ford), General Motors (GM), and Chrysler. The VRP promotes the development of economical recycling technologies to increase the reusability and recyclability of vehicle parts and materials. The aim is to promote a sustainable, market-driven vehicle-recycling infrastructure, while reducing the environmental impact of end-of-life vehicles.

The partnership enables each of the companies to achieve more through cooperative research in the precompetitive stage than they might individually. While each of the member companies set its own guidelines and strategies, their ultimate goal is the same—to conserve resources, increase recycled content materials included in the production of the vehicle, and increase recyclability of the vehicle at the end of its life cycle.

One of the key components of the partnership is the Vehicle Recycling Development Center. Through this center, engineers from Chrysler, Ford, and GM demolish old and new cars to learn how to improve car design for easier dismantling and better access to key parts for future removal. Auto makers are investigating the following options to improve recyclability:

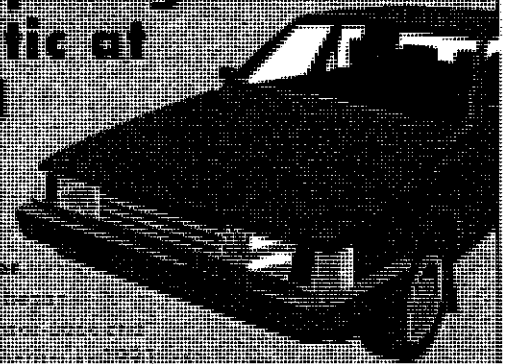
- Selecting materials for which proven recycling technologies exist.
- Reducing the number of materials and parts used in assembly.
- Facilitating disassembly by selecting fastener systems that ease disassembly after the vehicle reaches the end of its useful life.
- Reducing the number and types of fasteners used.
- Marking plastic parts to facilitate recycling and repair.<sup>1</sup>

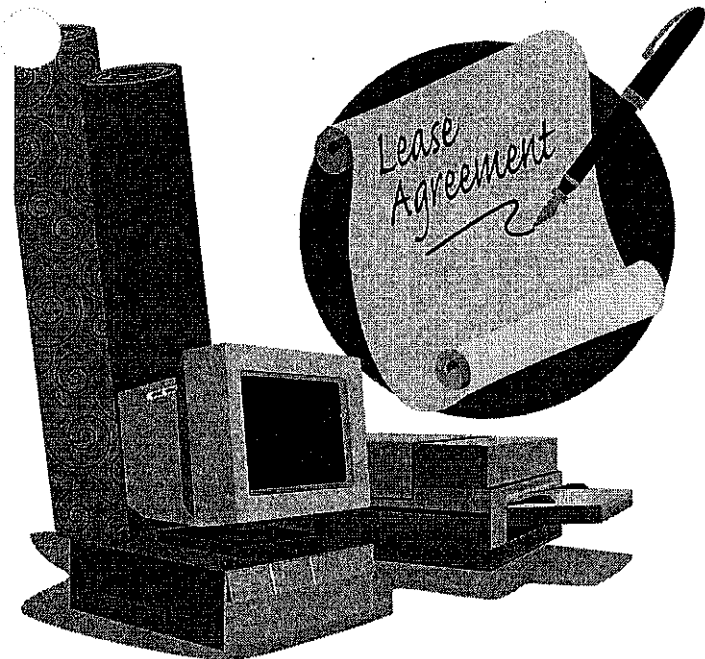
The result? Auto manufacturers hope to increase the recyclability of new vehicles from 75 to 85 percent by 2000. For more information see <[www.aama.com/environment/comaware.html](http://www.aama.com/environment/comaware.html)>.

<sup>1</sup>American Automobile Manufacturers Association, *What Manufacturers Are Doing to Improve Recycling*, 1996.

## Recycled Materials Bump Virgin Plastic at Ford

Ford Motor Company





## LEASING

**L**easing arrangements between customers and suppliers are another way our partners are keeping waste out of their dumpsters and getting more value at the same time. WasteWise partners are investigating leasing options for everything from computers to manufacturing equipment to carpeting.

### Monsanto and Dell Save Megabytes of Waste

Escaping the trap of computer obsolescence preoccupies many Information and Technology (IT) professionals. Together, WasteWise partners Monsanto and Dell Computer Corporation found a way to do just that. Since March 1997, Monsanto's production facility in Luling, Louisiana, has been leasing computer equipment

from Dell in an arrangement that not only reduces waste for Monsanto but also consistently provides them with high-quality computer workstations.

According to Monsanto IT team leader, Scott Conlin, "An examination of Monsanto's total cost of personal computer (PC) ownership showed that there were some compelling business reasons to move to computer leasing." When asked about some of the practical benefits of a leasing program, Conlin noted it "eliminated a number of ongoing problems including PC disposal, routine PC upgrades, and IT resource demands."

### Identifying the Waste Problem

Problems began to mount as Monsanto's PC network grew older and seemingly slower in a world where microprocessor speeds continually increase. Monsanto's PC network was becoming obsolete far ahead of the depreciation schedule. Additionally, the age-old practice of PC hand-me-downs was causing a torrent of IT service demands. As Monsanto purchased new systems and handed down old machines, IT team members continually scurried to update and reconfigure systems for their new owners. "With more than 600 PCs at Luling alone, we had a major problem on our hands," Conlin admitted.

That's when Monsanto got creative and worked out the finances for a leasing program. In late 1994 and early 1995, Monsanto identified leasing as a cost-effective solution to its growing problem. By 1997, the Luling facility became a leasing test site. Currently, the company is approximately 80 percent committed to leasing—with a system that could have as many as 15,000 PCs in service at one time.

### The Dell Option

Conlin explains "it is a great partnership for Monsanto as well as Dell." Monsanto leases high-end computer workstations for plant employees on a 24- or 36-month program that ultimately returns the used systems to Dell. John McDonald of Dell Financial Services (DFS), the company's leasing program, says returned PCs often continue to have valuable life after the lease ends. Dell's leased systems provide the company with a number of remarketing avenues including spare parts reclamation, sales to secondary markets, and re-leasing to organizations who don't need the latest technology.

Does Dell build leased systems differently than other units? "No," replies McDonald. "All Dell systems are built for serviceability, disassembly, and reuse. Component consistency and a modular chassis are features of Dell leased systems that make refurbishing and reclaiming parts easy."

### Disposal Issues

In addition to reducing disposal due to PC obsolescence, Conlin noted an additional benefit of leasing that helps reduce electronics waste for Monsanto. The leased PCs are covered by a 3-year warranty, freeing Monsanto from having to purchase replacement electronics and finding disposal solutions for the bad parts. WasteWise estimates the waste prevented with this program could be more than 210,000 pounds annually, with PCs averaging 56 pounds of materials per unit.

### Lessons Learned

Monsanto learned some valuable lessons in the switch to leasing. Conlin emphasizes what organizations should consider before making a decision to lease. "First, fully understand the financial implications of the decision." Conlin knows it might not always seem financially preferable at first look, "but considering the PC life cycle, your company is always going to be on the top of the technical curve." Secondly, PCs should be considered a tool for office use that must be replaced periodically; in Monsanto's case, every 3 years. Monsanto believes its leasing program is working and is phasing it into the rest of its U.S. facilities.

For more information on Monsanto's experiences, contact Scott Conlin at 504 785-3409. Additional information on the Dell leasing program can be obtained from its Web site at <[www.dell.com/dfs/index.htm](http://www.dell.com/dfs/index.htm)>.

## Waste Prevention Is Under Foot in San Diego

**T**hey're standing on their waste-prevention principles in the City of San Diego's Environmental Services Department. The carpeting that fills this WasteWise partner's halls and offices is designed to provide years of long life and to reduce waste.

In 1996, San Diego entered a carpeting lease agreement with Interface, an Atlanta-based carpet manufacturer. In this unique arrangement, San Diego never actually purchases the carpet from Interface, so it will never have to dispose of massive amounts of worn or damaged carpet. At 10 pounds per yard, San Diego will avoid disposing of 250,000 pounds of carpet waste over the life of this arrangement.

And the quality? According to San Diego's Sustainable Building Coordinator, Adam Saling, "The quality and durability, as well as the 12 percent recycled content, of the carpet were the main reasons for going with Interface." Interface uses post-industrial carpet waste in the production of the carpet squares. Durability is enhanced by using 18-inch carpet squares that can be rotated from high-to low-traffic areas.

But why the lease? Saling noted two reasons any business can understand. "We had a limited amount of capital outlay for the materials, and at the end of the carpet life, the manufacturer will remove the carpet and recycle the fibers and backing into new product." This waste reduction opportunity is enhanced by the ability to selectively replace damaged or over-worn squares.


When asked about the system performance 2 years after installation, Saling noted it is holding up well. The system is under a 5-year lease contract, but is backed by a 15-year warranty.

Saling noted several lessons San Diego has learned from the leasing approach. First, he encourages anyone interested in a lease to analyze costs of leasing versus purchasing. Comparative cost analysis of carpet squares and typical area carpeting indicates squares cost about 30 percent more. The longer life and lower replacement and maintenance costs, however, provide an economic advantage over the system life. Second, negotiate the best possible lease terms, such as high-quantity discounts and government rates. Finally, Saling notes that upon installation of the system your organization must commit to regular maintenance through rotation in high traffic areas and to diligently follow Interface's cleaning regimen.

For more information on San Diego's carpet square leasing experience, contact Adam Saling at 619 492-5018.

**No Lease?**  
**Choose REUSE!**

Before switching with Interface, Monsanto required new homes for existing PCs at the end of their useful lives. The program had several high volumes of materials requiring special disposal from Monsanto resulting in stockpiling the PCs until recycling programs were established.



By leasing PCs from Interface, Monsanto eliminated the need for a special disposal program. The program also eliminated the need for a special disposal program. The program also eliminated the need for a special disposal program.

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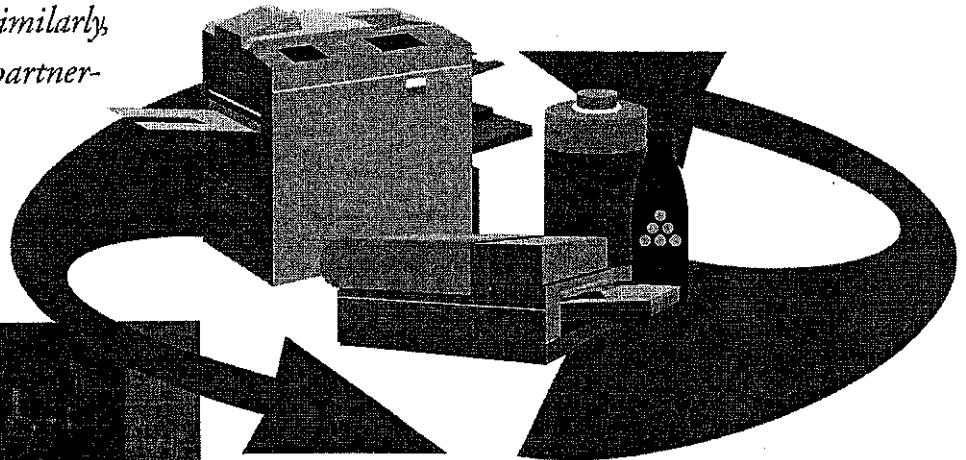
# TAKE-BACK PROGRAMS

**M**ost manufacturers work hard to convince customers to buy their products. But how many manufacturers worry about what happens to those products after their customers use them? Too often, products end up in landfills or incinerators, squandering a potentially reusable resource and adding to the environmental threats posed by disposal. Some companies are working to keep their products out of the waste stream by taking back products from customers for reuse or recycling. Similarly, some companies are establishing partnerships with vendors to facilitate recovery and reuse of what would otherwise be waste.



## Charge Up to Recycle! Ni-Cd Batteries: Panasonic and RBRC

If watching Al on television's *Home Improvement* has you charged up about your power tools, imagine how he could energize your thinking about power sources...rechargeable Nickel-Cadmium (Ni-Cd) batteries, perhaps? Imagine no more. Richard Karn, a.k.a., Al, is the national spokesperson for the Rechargeable Battery Recycling Corporation (RBRC), a nonprofit public service organization created by the industry in 1994, which collects



and recycles used household and commercial Ni-Cd batteries from retailers, communities, businesses, and public agencies.

### Founding RBRC

Best known by its Panasonic brand, WasteWise partner Matsushita Electric Corporation of America (MECA) is one of five founding companies behind RBRC and its Charge Up to Recycle! program. David Thompson, director of MECA's Corporate Environmental Department, and the first president of RBRC, commented on MECA's support of the program: "Panasonic (MECA) is pleased to have played a leadership role in promoting and achieving sustainable development in the battery industry. Today, our involvement remains strong. In fact, RBRC's current board chair, Charlie Monahan, is a colleague here at Panasonic." Other founding companies include Sanyo Energy (U.S.A.) Corporation; Eveready; SAFT America, Inc.; and Varta Batteries, Inc.

### Why Ni-Cds?

Of the more than 2.5 billion small sealed consumer batteries sold in the United States each year, 350 million are





## Electronics Take-Back Resources

All participants in a product's life cycle, including consumers, need to assure the most "environmentally friendly" disposal of products at the end of their usable 'lives.' In the case of electronics and computers, consumers too often stockpile or throw away equipment for lack of better alternatives. The resources listed below can help your organization locate outlets that reuse and recycle these items.

- **EPA's Electronics Reuse and Recycling Directory.** This directory is available from the RCRA Hotline at 800 424-9346, 703 412-9810 (greater Washington, DC metropolitan area), or 800 553-7672 (TDD for hearing-impaired) or online at <[www.epa.gov/epaoswer/non-hw/recycle/reuse/electdir/recycle1.htm](http://www.epa.gov/epaoswer/non-hw/recycle/reuse/electdir/recycle1.htm)>. It lists contact information for original equipment manufacturers that take back electronic products for reuse or recycling; scrap dealers that utilize certain materials or components within these products; businesses that dismantle, repair, or refurbish electronic items; community and charitable organizations that donate used goods to those in need; and materials exchanges that link buyers and sellers of electronic products.
- **The Institute for Local Self-Reliance's Plug Into Electronics Reuse Booklet.** This booklet presents information on 22 electronics reuse organizations. The booklet is available by mailing a publications order form available through the Institute for Local Self-Reliance's Web site at <[www.ilsr.org/recycling](http://www.ilsr.org/recycling)> or by calling 202 232-4108. The cost of the booklet is \$15 plus shipping and handling.
- **The National Safety Council's Environmental Health Center.** The center periodically publishes the *EPR2 (Electronic Product Recovery and Recycling) Update*, free of charge. To receive the update, fax a request to 202 293-0032, Attn: *EPR2 Update* or e-mail Dawn Amore at <[amored@nsc.org](mailto:amored@nsc.org)>. *EPR2 Update* also is available through the center's *EPR2 Web site* at <[www.nsc.org/ehc/epr2.htm](http://www.nsc.org/ehc/epr2.htm)>. This Web site includes conference information, related Web links, and ideas on what to do with used computer equipment.
- **The PEP's (Parents, Educators, and Publishers) Used Computer Donations Directory.** This online state, national, and international directory lists agencies that facilitate donations of used computer hardware for schools and community groups. The site is located at <[www.microweb.com/pepsite/Recycle/recycle\\_index.html](http://www.microweb.com/pepsite/Recycle/recycle_index.html)>.
- **The EPA Region 10 Web Site.** This home page includes a site discussing how to recycle computers and electronic equipment. Although some data is only applicable to Washington State, the site also contains national information. The home page is located at <[epainotes1.rtpnc.epo.gov:7777/r10/owcm.nsf/recycle/precycle](http://epainotes1.rtpnc.epo.gov:7777/r10/owcm.nsf/recycle/precycle)>.

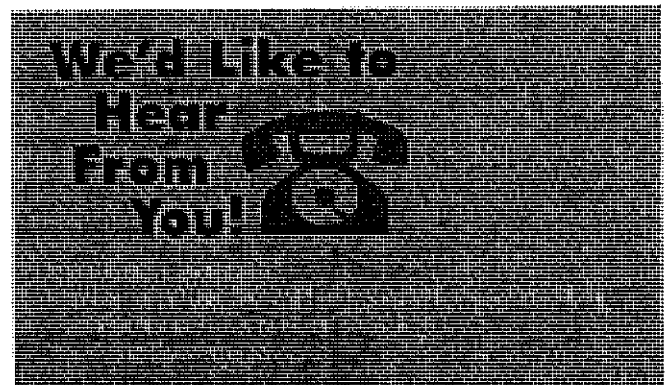
## Xerox' Take-Back Program Promotes "Waste Free Products" Goal

Xerox conserved more than 1.1 million pounds of plastic and 88 million pounds of metal in 1997 by setting up systems to facilitate the reuse and recycling of parts. The programs also have saved Xerox a substantial amount of money. Xerox estimates annual savings in raw material, labor, and disposal, as a result of asset reuse and recycling, exceed \$200 million. According to Xerox, "The company's asset recycling and Design for the Environment program merge environmentalism with good business sense."

Xerox initiated its asset recycling program by encouraging customers to return used copiers. Employees log, disassemble, and sort parts from returned copiers that meet internal criteria for remanufacturing. Today, Xerox takes back a range of other products, including printers and toner bottles. Xerox incorporates remanufactured parts into new products. Parts that do not meet remanufacturing criteria and cannot be repaired are often ground, melted, or otherwise converted into basic raw materials. The company integrates remanufacturing into the same assembly lines that produce new products. The aim of the asset recycling program is to prevent Xerox product assembly and disassembly from producing landfill waste.

For more information, contact Patty Calkins, manager, Environmental (Leadership) Marketing, for Xerox at 716 422-9506.

**According to Xerox, "The company's asset recycling and Design for the Environment program merge environmentalism with good business sense."**



# R E S O U R C E S



## PUBLICATIONS

### Eco-Efficiency: The Business Link to Sustainable Development

Authors Linda DeSovere and Frank Ruppert, chairman of 3M and Dow Chemical, respectively, discuss how corporations can "act responsibly" in this book from the World Business Council for Sustainable Development (WBCSD). The book includes many examples of how WBCSD members are changing the process of production and how more factories are reforming their business to focus on producing services rather than products. For more information, contact The World Business Council for Sustainable Development, 100 Grosvenor Street, Cambridge, MA 02142-1492.

Phone: 617-552-0343

E-mail: [info@wbcsd.org](mailto:info@wbcsd.org)

Web site: [www.wbcsd.org](http://www.wbcsd.org); book form: 019850141526

### Environmental Life-Cycle Management: A Guide to Better Business Decisions

The National Office of Pollution Prevention and the National Waste Research and Environmental Control Agency published this guidebook for small and medium-sized businesses. The guidebook helps companies take a lifecycle approach in business decision-making. The guidebook gives an overview of the concept of lifecycle management and offers a framework for applying it to five different functions. To purchase a copy, contact Environmental Protection Publications.

Phone: 817-913-6731

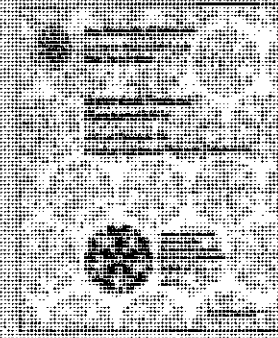
Fax: 817-953-7153

### Environmental Resource Guide, The American Institute of Architects (AIA)

The manual describes the environmental lifecycle performance of building materials and provides case study profiles. To order, contact John Wiley & Sons at 800-874-6100 or AIA at 800-345-2724.

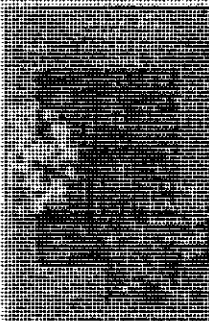
### Extended Product Responsibility: A New Principle for Product-Oriented Pollution Prevention (EPRI) Report #10

This report reviews the evolution of extended product responsibility, tracing its origins in Europe to its formulation in the United States by the Product's Council on Sustainable Development. The report also presents multiple case studies of U.S. companies in the appliance, automotive, electrical, battery, and printing services industries that practice extended product responsibility. These case studies demonstrate the important business advantages of embracing extended product responsibility. The report can be viewed online at [www.epri.com](http://www.epri.com) or printed copy of the EPRI volume of this 214-3746-7001 211-9810 (paper subscription, DC installation charge of 800-453-7432) for ordering material.



### Extended Product Responsibility: A Strategic Framework for Sustainable Products

(EPRI) Report #10



Whether for company-wide strategies, the authors provide a complete definition of extended product responsibility and describe how implementing it can reduce the risk of a company's bottom line. An order a copy, contact the EPRI, Volume of this 214-3746-7001 211-9810 (paper subscription, DC installation charge of 800-453-7432) for ordering material.

### Managing Eco-Design: A Training Solution

The U.S.-based Center for Sustainable Design published this training manual for environmental product design that offers practical exercises from a variety of business sectors. The interactive course covers how to increase the ecological product design key issues involved in developing an eco-design strategy. The manual is coordinated by a CD-ROM for additional fact sheets, and Web-based educational and training materials. The manual can

describes tools available to implement ecodesign, including lifecycle analysis checklists, and ideas for developing an environmental and financial value program. One module contains 11 case histories of such companies as The Body Shop, Hewlett-Packard, IBM, Kodak, and other North American and European companies. The publication is available for \$250 (print) \$350 (hardcover) from the Center for Sustainable Design, Faculty of Design, Palmer Road, Foxton, Surrey GU27 7PB, UK.

Phone: +44 (0)1483 731119

Fax: +44 (0)1483 731174

Web site: [www.design.ac.uk/eng/inf](http://www.design.ac.uk/eng/inf)

E-mail: [inf@design.ac.uk](mailto:inf@design.ac.uk)

**Pathway to Product Stewardship: Life-Cycle Design as a Business Decision-Support Tool.**

This report explains the reason that, in order to be competitive, companies must consider the strands of product design beyond the production stages. Product design needs to encompass environmental impacts of manufacturing, maintenance, and disposal, as well as the use, repair, and disposal stages of the products. The report provides case studies and checklists for specific methodologies, benefits, and accomplishments of the life-cycle design (LCD) program started at IBM, British Vickers, Shell, and Armstrong World Industries. A case can be selected through EPA's Pollution Prevention Information Clearinghouse's Web site at [www.epa.gov/p2/p2clearinghouse/p2clearinghouse.htm](http://www.epa.gov/p2/p2clearinghouse/p2clearinghouse.htm) or by calling 877-260-1034.

**Proceedings of the Workshop on Extended Product Responsibility: October 21-23, 1996.**

Volume #47-0701

The proceedings from the workshop, sponsored by the President's Council on Sustainable Development and EPA, explain the many benefits of EPR and its application. The document includes case studies featuring EPR activities of such companies as Xerox, including Xerox Life Cycle, Johnson White Corporation, Superflex, Corp., Ford Motor Company, and Reynolds Company. To obtain the document online see [www.epa.gov/p2clearinghouse/p2clearinghouse.htm](http://www.epa.gov/p2clearinghouse/p2clearinghouse.htm).

**Product Stewardship and the Coming Age of Take-Back.**

The report illustrates how some manufacturers have taken back programs a significant, and profitable, part of their operations. The document identifies Xerox, for example, which saved almost \$200 million in a few years by making new

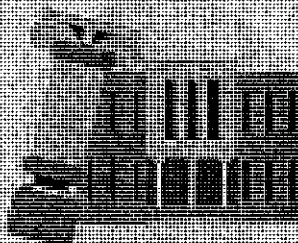
back and reusing old in an integral part of its operations. Other case studies detail the experiences of Agilent, Digital, Hewlett-Packard, IBM, Samsung, Matsushita, and Sony. The report looks companies through the decision-making process needed to set up take-back and recycling programs. The report highlights several areas of environmental responsibility, including product design, to obtain a printed copy, contact Center Information Corporation, 20 Broadway, Suite 1, Arlington, MA 02114.

Phone: 617-644-5135

**Sustainable America: A New Consensus for Prosperity, Opportunity, and a Healthy Environment for the Future.**

Published by the President's Council on Sustainable Development, the second chapter of the document includes an assessment of assessed product responsibility. The first chapter includes a review of environmental policy. For more information, contact the President's Council on Sustainable Development, 200 Jackson Place, NW, Washington, DC 20001.

Phone: 202-398-6200



**NATIONAL ORGANIZATIONS/PROGRAMS**

**EPA's Design for the Environment Program**

EPA's Design for the Environment (DfE) Program, in the Office of Policy, Prevention and Toxic Substances, has been in place to promote environmental information that helps decision-makers and promotes the implementation of cleaner technologies, materials, and processes. The program is currently looking for several sectors, including the printed and graphic communications printing, garment and textile and consumer products, residential fixtures, and the food, furniture and home industries. For more information, contact Bill Hanner, DfE Program, 405 EPA-14050, 404 M.S.B. East, Washington, DC 20460.

Phone: 202-260-7070

Fax: 202-260-0761

Web site: [www.epa.gov/dfep](http://www.epa.gov/dfep)

▼ **The Center for Clean Products and Clean Technologies at the University of Tennessee, Knoxville.**

The center's goals are to assist federal, state, and private entities in their efforts to present and induce solutions to current and future environmental problems and to assess the performance, economic feasibility, and environmental benefits of cleaner products and technologies, and to provide students with opportunities to gain experience in the emerging field of pollution prevention. For information, please contact Don Davis, The Center for Clean Products and Clean Technologies at the University of Tennessee, 6103 Hinkle Street, Suite 211, Knoxville, TN 37996-4134.

Phone: 423-974-4231

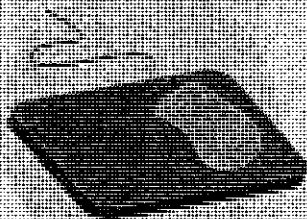
Web site: [www.mack.uci.edu](http://www.mack.uci.edu)

▼ **President's Council on Sustainable Development (PCSD).**

Founded in 1991 by President Clinton, PCSD addresses national and global issues in light of several principles of sustainable development. For more information, please contact David Morone, President's Council on Sustainable Development, 133 Jackson Place, NW, Washington, DC 20543.

Phone: 202-405-5796

Web site: [www.whitehouse.gov/PCSD](http://www.whitehouse.gov/PCSD)



**WEB RESOURCES**

▼ **[www.ce.cmu.edu](http://www.ce.cmu.edu): GreenDesign**



**Corporate Mission**

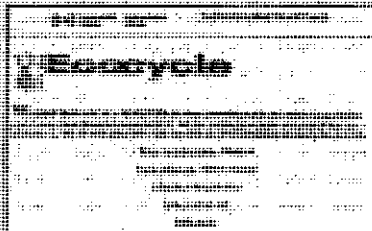
University Center for Environmental Design provides Green Design. Founded in 1997, the center provides environmental consultation, engineering, product and process design, manufacturing

and construction. Through its website, the university brings information and industry, corporations, foundations, and government resources to develop performance and education programs that promote environmental quality while ensuring long sustainable economic development. The Web site contains information on the website, published reports on extended product responsibility, current information on research and education, and links to related areas.

▼ **[www.tu.se/IEEE/research/products/epi/epi\\_old.html](http://www.tu.se/IEEE/research/products/epi/epi_old.html)**

This site concerns a database of extended product responsibility evaluations for product responsibility, and a list of national and international publications discussing the topic. The site is maintained by The International Institute for Product Environmental Assessment.

▼ **[www.ec.gc.ca/ecycle/](http://www.ec.gc.ca/ecycle/)**



Environment Canada maintains the Ecocycle Web site, which features an online national Eco Cycle. The website offers information on policy and technical issues related to end-of-life management (ELM). Some topics covered in the website include integrated waste management, life cycle assessment, and manufacturing efficiency in process operations. The site includes links to other related sites.

▼ **[www.ecosite.co.uk](http://www.ecosite.co.uk)**

This Web site, "World Wide Resources for ECA," contains up-to-date information on ECA standards, review of ECA software, and news stories on ECA.

▼ **[www.cullen.com/emvbus/](http://www.cullen.com/emvbus/)**

This Web site features the Product Environmental Analysis and evaluation service that provides clear and strategic life cycle management of electronics and flexible pack. To find out more information, please contact Cullen Information Corporation, 27 Broadway, Suite 1, Arlington, MA 02134. Phone: 800-354-5199. Fax: 800-883-1816.



**APPENDIX S**

Organics Article



# WasteWise Update


## INSIDE

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**RECOVERING ORGANIC  
WASTES—GIVING BACK  
TO MOTHER NATURE**



Preserving Resources  
Preventing Waste



# Recovering Organic Wastes

**E**very day, Americans fill their trash bins with paper, plastic, and many other types of organic wastes. Organic materials—paper, yard trimmings, food scraps, and manure—make up 20 percent of the weight of America's municipal solid waste stream, or more than 100 million tons in 1994. A significant portion of these materials, including newspaper, office paper, and corrugated cardboard, are recycled through municipal recycling and private industry facilities. However, about 80 percent of 400 million to 50 million tons per year of other organic waste generated in the WasteWise nation goes into the landfill, where it can pollute the ground and water.

## Composting Methods

### Home Composting

### Alternative Waste Recycling

### Industrial Composting

### Composting

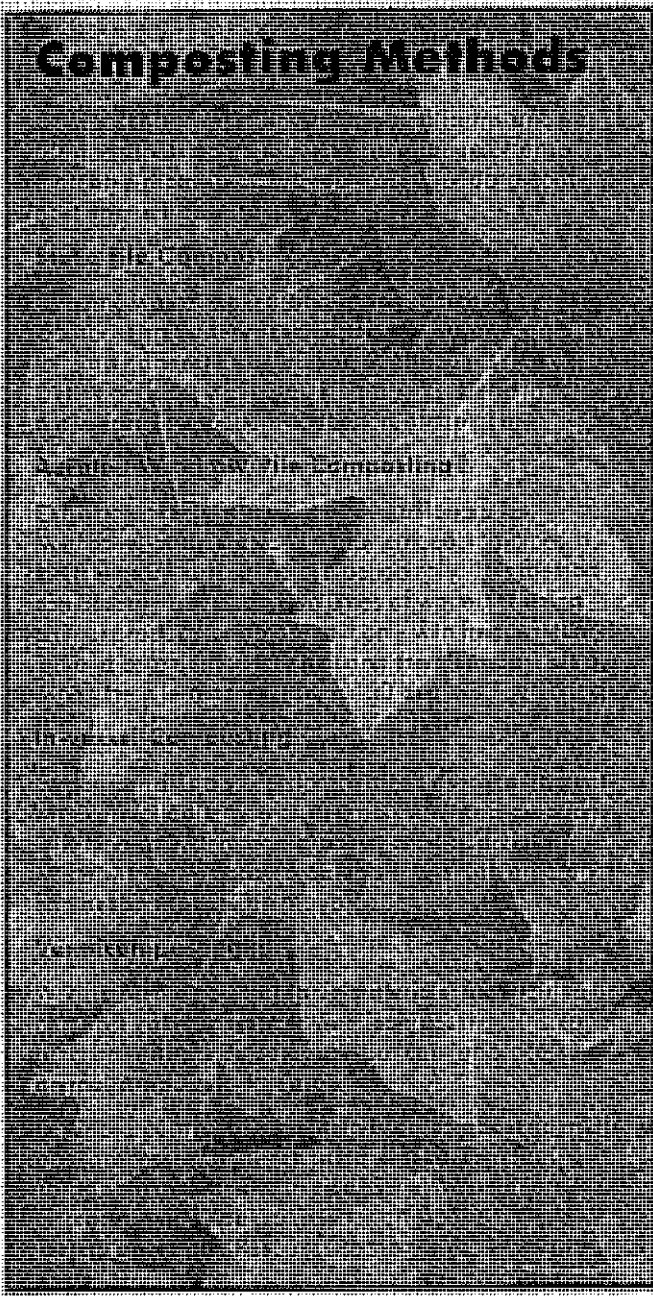
In 1994, WasteWise partners reported recovering more than 200,000 tons of food scraps and yard clippings. Taking advantage of the reduction potential of organic waste, partners have achieved significant cost savings and environmental benefits. Some partners have targeted yard trimmings, others have focused on food scraps, while still others have branched out to accept construction organic wastes. Most organizations find the recycling loop by using or selling the products resulting from their waste reduction, including compost, mulch, and wood chips. This issue of the Update highlights a number of organic waste diversion and recovery options implemented by WasteWise partners.

### Yard Trimmings: Worth Weeding Out

- **Grasscycling.** By simply leaving grass clippings on the lawn after mowing, rather than bagging them, Kalamazoo County, Michigan, reduced soil erosion, less ground keeping equipment's trouble.
- **Mulching and chipping.** For more than a decade, Eastern Illinois University has provided its own soil amendment by mulching by chipping and mulching yard waste on campus.
- **Composting.** For organizations that have more organic waste material, composting is a great option. **Palmer Bank Composting**, the Division of Forestry and Agricultural Resources, yard maintenance, and forest care at the University of Wisconsin, has implemented a landscaping program.

### Food Scraps: Feed the Earth

- **Charities.** One of the easiest ways for an organization to divert its organic waste stream is to give away its food or food scraps to food banks, shelters, day-care centers, or other charitable groups.

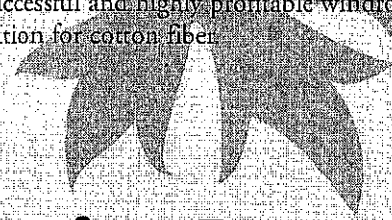


DaimlerChrysler Corporation has found that its charitable donation of nearly 150 tons of food each year pays off in annual cost savings of more than \$5,000. Some organizations, like Stonyfield Farm Yogurt, donate food waste for use as animal feed.

- **Composting.** Onsite food composting operations, such as the windrow systems at the Tennessee Department of Correction, the Eastern Band of Cherokee Indians Reservation, and UTC Carrier Corporation, have proven highly effective in diverting large volumes of food waste.
- **Vermicomposting.** A less conventional tactic is to feed food scraps to worms. Sligo Adventist School recovered 500 pounds of cafeteria food waste in 1998 with its vermicomposting program.

### Innovative Approaches and Unusual Materials

Recent studies have shown that compost can help prevent environmental problems in ways beyond its well-known use as a soil amendment. Putting these findings into action, King County, Washington, recently investigated using compost to help restore salmon populations. In addition, organizations that find themselves with compostable waste streams less typical than yard trimmings and food scraps would do well to follow the example of Johnston Industries' successful and highly profitable windrow composting operation for cotton fiber.



## Breaking Down the Composting Process

Composting, in nature or in backyards, is defined as the controlled decomposition of organic material. Municipal and commercial composting is defined as the thermophilic (heat-based) decomposition of organic material by microorganisms. In either case, composting is both a science and a balancing act. You have to find the right mix of inputs to allow microorganisms within the pile to decompose matter into compost containing the proper nutrient and moisture content. The following diagram describes some of the major inputs and outputs of the basic composting process.

### INPUTS

#### Organic Matter

The first step is to find the proper balance of carbon and nitrogen by mixing various amounts of "green" and "brown" organic feedstock into a pile. Greens, which include food scraps and grass clippings, are high in nitrogen. Browns, which include leaves, wood chips, and sawdust, are high in carbon. For most methods, adding animal products or grease into the pile is not recommended.

#### Water

Moisture, which is inherent in organic materials, makes nutrients available to the microorganisms. If a pile is too wet, however, nutrients leach out and become inaccessible to the organisms. Adding sawdust or paper can help reduce the moisture content of the pile.

#### Micro- and Macroorganisms

Once you've created a composting pile by mixing layers of greens and browns, naturally occurring microorganisms (e.g., bacteria and fungi), and macroorganisms (e.g., beetles and earthworms) start consuming and breaking down the organic matter.

#### Oxygen

Microorganisms require oxygen in order to consume and break down the organic matter, which is why compost piles are turned frequently. Another way to allow oxygen to flow through the pile is by adding materials of larger particle size, such as wood chips, which would result in a pile with more pores through which oxygen can enter. Larger particle sizes, however, reduce the surface area with which the organisms can work.

### OUTPUTS

#### Odor

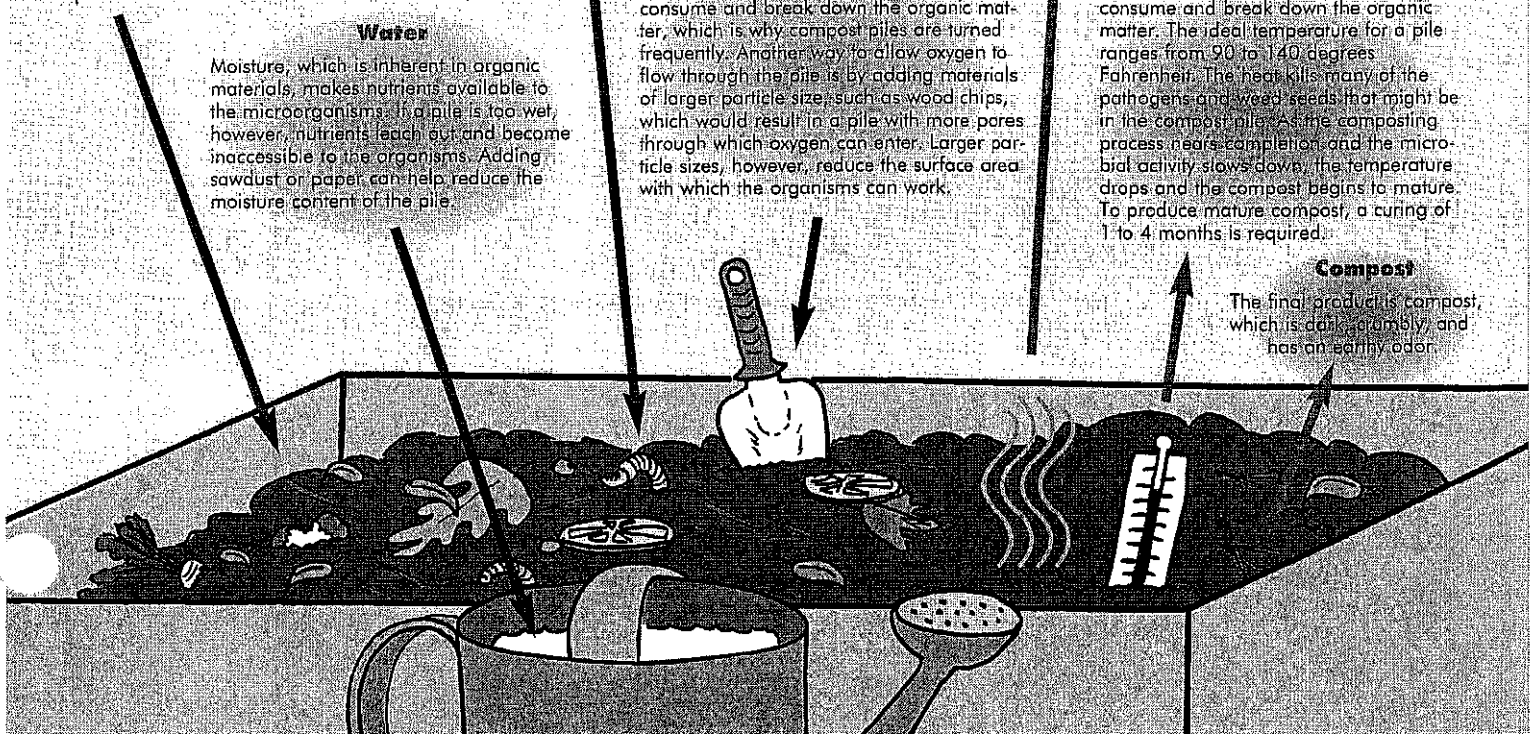
A smell emanating from the compost pile means the microorganisms are not getting enough oxygen. To deal with odor problems, adjust the inputs, especially oxygen.

#### Heat

Microorganisms generate heat as they consume and break down the organic matter. The ideal temperature for a pile ranges from 90 to 140 degrees Fahrenheit. The heat kills many of the pathogens and weed seeds that might be in the compost pile. As the composting process nears completion and the microbial activity slows down, the temperature drops and the compost begins to mature. To produce mature compost, a curing of 1 to 4 months is required.

#### Compost

The final product is compost, which is dark, crumbly, and has an earthy odor.



# Yard Trimmings: Worth Weeding Out

**Y**ard trimmings, including grass clippings and tree and shrub prunings—collectively, for nearly 45 million tons of waste generated in 1996, definitely make yard-cycling, mulching and composting can help divert these materials from the waste stream. In fact, 14 million tons of the national organic waste stream in 1996 could be completely diverted through recycling.

## Kalamazoo County Cuts Waste While Cutting Grass

**L**ooking for an easy way to save time and money while maintaining their lawns, many homeowners are turning to lawn care services to improve their lawns. In 1996, Kalamazoo County, Michigan, reduced its organic waste by 25,000 pounds and saved an estimated \$100,000 per week during the peak of the mowing season by diverting yard clippings to mulch. The county's success was due to its partnership with the Kalamazoo County Recycling Authority.

As a community partner, Kalamazoo County Recycling Authority provides the following tips:

...the following information... For... of Kalamazoo County... yard... mulching... composting... recycling... organic waste... 25,000 pounds... \$100,000 per week... Kalamazoo County Recycling Authority...

### Overcoming Mulching Mower Misconceptions

Although Kalamazoo County Recycling Authority reports that mulching mowers would divert 14 million tons of waste from the waste stream, the operation of the machine prevents the yard trimmings from being recycled. Mulching mowers chop grass clippings into small pieces that are not suitable for mulch. The county's Recycling Authority provides the following tips for mulching mowers:

- Use a mulching mower that has a mulching blade.
- Mow frequently and keep the grass short.
- Do not mow when the grass is wet.
- Do not mow on a slope.
- Do not mow on a hard surface.

For more information about Kalamazoo County's recycling program, contact Scott Lewis at 269-336-1111 or visit our website at [www.kalamazoo.org](http://www.kalamazoo.org).

### Grasscycling Tips

- Mow frequently and keep the grass short.
- Do not mow when the grass is wet.
- Do not mow on a slope.
- Do not mow on a hard surface.

# Mulch Doesn't Fall Far From the Tree At Eastern Illinois University

Eastern Illinois University's (EIU) first composting program has been a success. The program has been running for several years and has been successful in recycling 100% of the yard waste from the campus. The program has also been successful in reducing the amount of waste sent to the landfill.

## A Process for All Seasons

The university details its composting process for all seasons. The process involves collecting yard waste throughout the year and composting it in large piles. The piles are turned regularly to ensure proper decomposition.

The program has been successful in recycling 100% of the yard waste from the campus. The program has also been successful in reducing the amount of waste sent to the landfill. The university has also been successful in educating the campus community about the benefits of composting.

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While the program has been successful, there are still challenges. The university is working to improve the composting process and to increase the amount of waste recycled. The university is also working to educate the campus community about the benefits of composting.

# Composting Advice From Anheuser-Busch

Waste management is a key component of any business's environmental strategy. Anheuser-Busch has been successful in implementing a comprehensive waste management program that includes composting. The program has been successful in recycling 100% of the yard waste from the campus.

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# Food Scraps: Feed The Earth

**F**ood scraps accounted for nearly 22 million tons of waste generation in 1996. Activities such as donation, composting, and rendering can help divert these materials from the waste stream. In addition to the WasteWise partners featured in this Update, EPA has developed case studies on food scrap recovery programs (see Don't Throw Away That Food: Strategies for Record Setting Waste Reduction in the Resources section).

## DaimlerChrysler Helps Drive Out Hunger

**F**ood waste recovery can be both easy and rewarding. Just ask WasteWise partner DaimlerChrysler Corporation who donated nearly 150 tons of surplus food in 1998 through Forgotten Harvest, a nonprofit organization that collects and distributes donated food to shelters and soup kitchens in the metropolitan Detroit, Michigan, area. According to DaimlerChrysler pollution prevention specialist Doug Orf, "All it took was a desire to reduce waste, some extra space in the refrigerator, and one phone call to locate the nearest donation program." Through this donation program, DaimlerChrysler saved more than \$5,000 in avoided disposal costs in 1998.

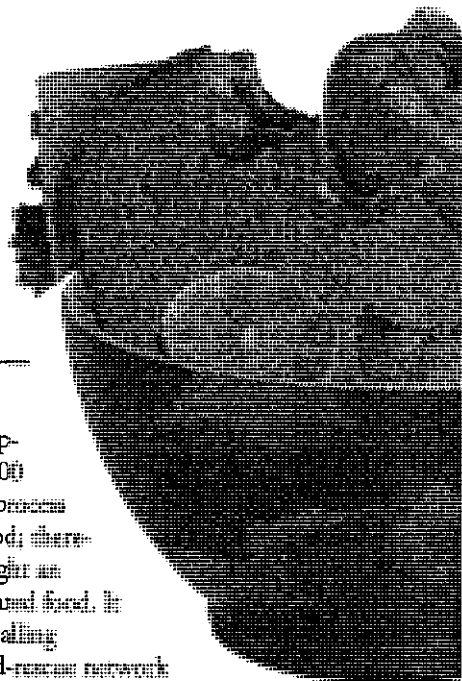
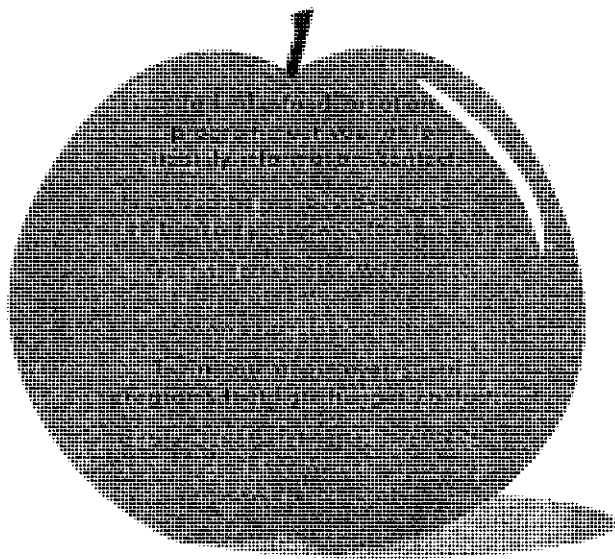
### Partnering Makes it Easy

At DaimlerChrysler's headquarters, sources of leftover food include five cafeterias. It's difficult to anticipate how many of DaimlerChrysler's 11,000 employees will use the


cafeterias each day, so DaimlerChrysler's food suppliers prepare food for 8,000 employees each day. This process often results in leftover food; therefore, DaimlerChrysler sought an outlet for the unsold prepared food. It found a helping hand by calling Foodchain, a national food-recovery network comprised of 140 food donation programs throughout the country. Foodchain connected DaimlerChrysler with the local organization Forgotten Harvest, and this partnership made donating surplus food simple and affordable. According to Orf, "Not only does Forgotten Harvest pick up our surplus food when there are at least 40 servings, which is usually once a week—there are no pickup fees involved! All we have to do is keep the prepared food refrigerated, which is not a problem since we have adequate refrigerator space."

Forgotten Harvest even provided training for DaimlerChrysler's food suppliers on the purpose and benefits of the donation program. The suppliers were initially concerned with liability issues; however, Forgotten Harvest assured them that donors who prepare and store food in good faith are protected from civil and criminal liability by the Federal Good Samaritan Food Donation Act. With that knowledge, the food suppliers quickly supported the program. Now DaimlerChrysler's food suppliers even box the surplus food for donation.

Orf strongly encourages other organizations to pursue food donation programs, and adds, "Partnering with a food donation program is a great opportunity that benefits the environment and saves a valued resource needed by others." The ongoing success of the program inspired the CEO, of then Chrysler Corporation, to produce a video on it. For more information on DaimlerChrysler's food donation program, contact Doug Orf at 248 576-7361 or via e-mail at <djo6@chrysler.com>.



## Pigs Diet on Stonyfield Farm's Excess Yogurt

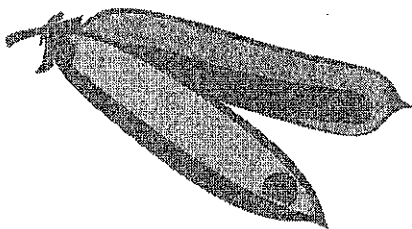


Ever wonder what flavor of yogurt pigs prefer? Turns out they're not particular at all. In 1998, Stonyfield Farm Yogurt donated more than 200 tons of excess yogurt—in a variety of flavors—to hog farmers in New Hampshire. Excess or inedible yogurt is left over from the company's stringent quality control testing process and from products with expired code dates. According to Nancy Hirshberg, director of natural resources at Stonyfield Farm, "Stonyfield Farm's motivation for initiating the program was twofold—it supports local farmers and reduces costs associated with the disposal of waste products." Stonyfield Farm also donated more than 100 tons of edible but unsaleable product to food banks and nonprofit organizations in the community.

Hirshberg credits Stonyfield Farm's successful donation program to its dedicated investment of time and labor. According to Hirshberg, "Directing staff time to waste prevention really pays off even for small companies." In fact, the combined programs saved Stonyfield Farm and its 150 employees more than \$20,000 in avoided disposal costs in 1998.

To get the program up and running, employees networked extensively with farmers in the community, designated storage space, set up a waste tracking system, developed a method for contacting the farmers, and learned how to prepare donated materials. Stonyfield Farm is building a farmer database to track the 10 or so farmers who pick up yogurt on a routine basis as well as the farmers who pick up less regularly. To make the donation program less labor intensive, Stonyfield Farm also is planning a new process to transfer yogurt from the production area to a storage trailer where farmers can pick up and load the yogurt themselves.

Stonyfield Farm's employees get an additional perk from the donation program. In exchange for the company's yogurt, farmers sometimes bring farm fresh ham and bacon for the employees to show their appreciation. For more information about Stonyfield Farm's donation program, contact the WasteWise Helpline at 800 EPA-WISE (372-9473).



## Cherokees Hit the Jackpot with Casino Food Waste Composting

Looking for advice on how to start a food composting program? "Quit talking about it and do it," recommends Calvin Murphy, executive director of tribal utilities for WasteWise partner the Eastern Band of Cherokee Indians. What began as a pilot composting program for the Tribe has grown into a successful full-scale composting operation. So successful, in fact, that nurseries, landscapers, and individual homeowners that want to purchase the Tribe's compost are placed on a waiting list. The Tribe also has enjoyed significant cost savings from avoided tipping fees and landfill disposal charges.

Despite the economic benefits, cost savings weren't the Tribe's main motivations for implementing the pilot composting program. Located near the Great Smoky Mountains National Park in Cherokee, North Carolina, the Eastern Band of Cherokee Indian reservation attracts 5 million tourists each year. Its casino alone draws 1 million visitors. The casino's opening in 1997, along with the closure of the reservation's MSW landfill, prompted the Tribe to explore composting as a method of diverting its food waste. The Tribe collects an average of 20 tons of food waste each month from the casino's steakhouse, fast food restaurant, and open food market.

According to Murphy, one key factor contributing to the success of the pilot program has been the integration of the composting process into employee training and routine procedures at the casino. The Tribe hired an additional employee to handle some of the composting responsibilities. Each morning, the collection containers are loaded onto a truck at the casino and transported to the reservation's composting site, located at the reservation's closed landfill. The containers are emptied, washed, and returned to the casino. The food waste is added to a composting windrow, which ranges in length from 50 to 125 feet and is approximately 8-feet wide and 5-feet high. After the compost meets temperature, turning, and processing time guidelines, it is transferred to a covered storage curing area for drying and screening.

While the Tribe experienced no problems with procedural changes, it did have initial problems with odor. The Tribe found, however, that turning the composting pile every day allows the pile to aerate properly and alleviates any foul odors. The Tribe's composting program has been so successful that, if odors continue to be effectively controlled, it plans to expand its composting activities and collect food waste from the other restaurants on the reservation. Three restaurants have already expressed strong interest in participating in the program.

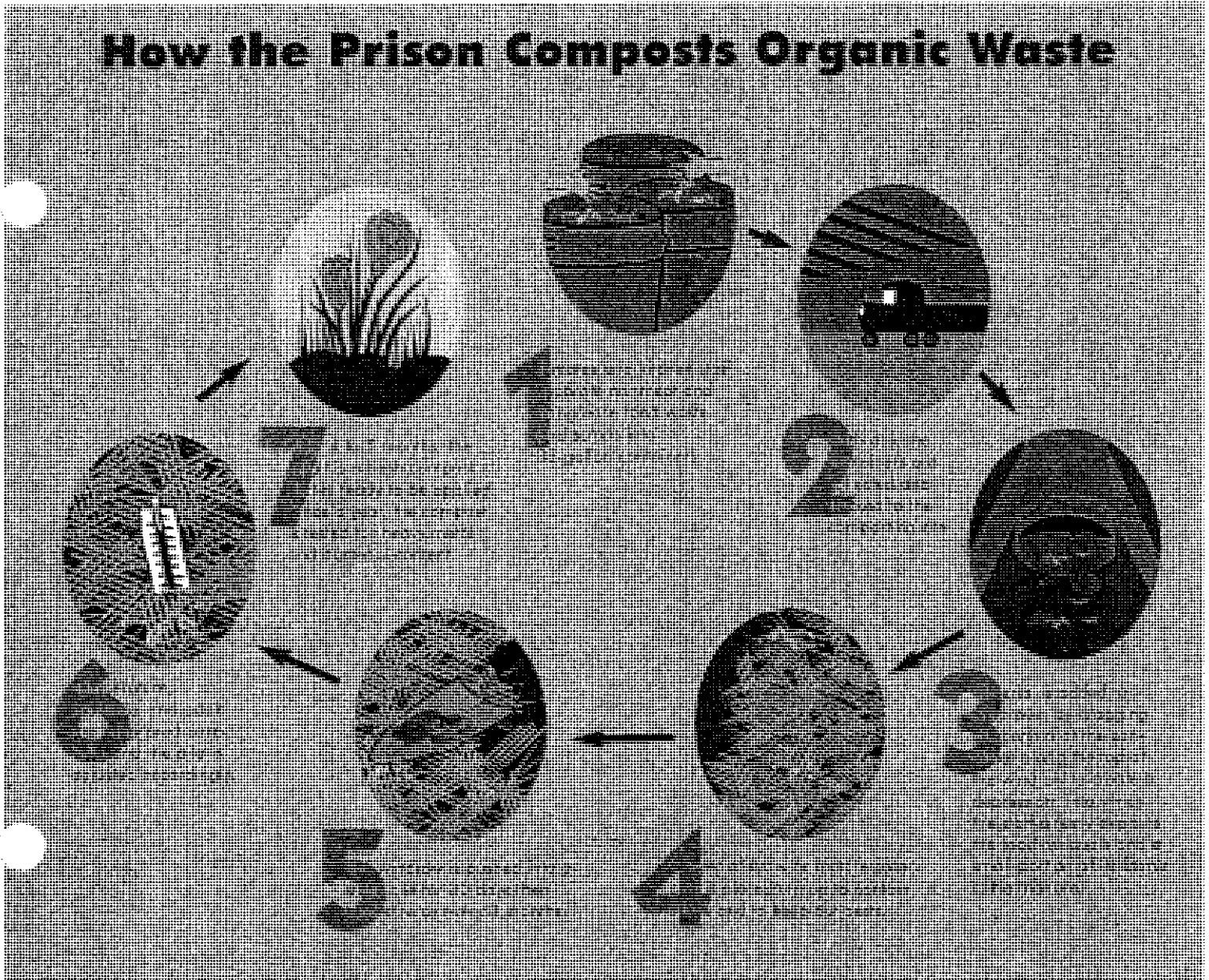
For more information, contact Calvin Murphy at 828 497-6977 or John D. Long, sanitation recycling manager, at 828 497-3908.

## Tennessee Correctional Facility Arrests Organic Waste

Facing state waste reduction mandates, skyrocketing disposal costs, and a challenge from the governor to reduce its solid waste by 75 percent, the Brushy Mountain Correctional Complex/Morgan County Regional Site in Wartburg, Tennessee, responded by reassessing its waste management practices. By aiming common sense and trial and error at their ample food wastes, the facility exceeded the state's waste reduction targets and thwarted a potential \$17,000 hike in annual disposal costs through onsite composting. The facility now serves as a model for institutions throughout the state. Along with various recycling activities, composting has helped push the facility's waste diversion rate as high as 77 percent—with more than 500 tons of food waste composted each year!

For years, the correctional facility disposed of its waste at an onsite county landfill for a mere \$0.85 per ton. As the landfill began to reach its capacity in the early 1990s, the correctional facility faced \$40 per ton disposal fees at an alternate landfill—a cost too steep for WasteWise partner Tennessee Department of Correction (TNDOC) to accept. Facility officials examined their waste stream and determined that the best option for waste recovery—and for reducing the burden on the county landfill—lay in composting the facility's organic waste. They found that with more than 1,500 inmates eating three meals a day, 60 percent of the facility's waste stream consisted entirely of food residuals. Since then, the facility's composting operation has become so successful that it attracts facility managers from across Tennessee—and other states—to learn how to compost at their own facilities.

### How the Prison Composts Organic Waste



### Selecting the Right Method

Facility unit manager Bob Walls shares some simple advice with those who want to start a composting operation, "It requires nothing more than a basic understanding of the composting process and some experience through trial and error." Walls learned the basics of composting from a bin he set up in his own backyard. He got additional help in the planning stages of the facility's operation from local university professors. The professors visited the facility and recommended constructing 10- by 10-foot aerated bins and alternating layers of sawdust, food waste, and cattle manure.

After a few trials with the bins, however, facility officials realized air was not circulating properly, causing the pile to rot, or decay without the presence of oxygen. To address this problem, the facility redesigned the piles into 4- by 100-foot windrows. The windrow method worked; however, it required mechanical turners and chippers. Facility officials drafted a proposal to the state, which lends out equipment such as chippers and turners to government institutions. The state accepted the proposal. Armed with a tractor, a turner, an industrial chipper, and plenty of inmate labor, the facility launched its composting operation (see page 8). The finished process yields a dark compost that is applied as a soil amendment on the facility grounds, which include a fully operational farm.

### The Benefits

Besides reduced disposal costs, Walls noted several other benefits of the facility's composting operation:

- **Improves soil.** The compost helps soil retain moisture and nutrients.
- **Prevents fertilizer runoff.** Using compost releases nutrients slowly into the soil and helps soil hold water better so that close to 100 percent of the fertilizer is used instead of a portion of it being washed away. This reduces the amount of fertilizer TNDOC must purchase.
- **Reduces costs for the community.** The facility helps reduce disposal costs for the county and other institutions. It accepts food residuals from a nursing home and occasionally the county will haul in yard waste, which is sent through the industrial chipper and placed on the windrows to help aerate the pile and provide a source of carbon.

Walls maintains that a good way for partners to learn about composting is simply to talk with someone who has done it before. Correctional facilities across Tennessee have done just that, and eight other facilities now run composting operations of their own thanks to TNDOC's help. If you'd like to learn more about Morgan County Regional Correctional Facility's composting operation, contact Bob Walls at 423 346-6641.

## Worming Through Waste at Sligo Adventist

For some worms, an apple a day just isn't enough. In fact, students at WasteWise partner Sligo Adventist School in Takoma Park, Maryland, find that the red-worms they use in their compost bin will eat just about any food material from the cafeteria except meat. What started as two students' vermicomposting science fair project 4 years ago has turned into an entire school affair. At peak production, Sligo's worms turn more than 1,000 pounds of food waste a year into vermicompost. More importantly, though, the project offers a great educational experience for the students.

Vermicomposting is a fairly easy project to implement, explains Ken Gair, Sligo's plant manager and supervisor of the project, "All you need is a bin, bedding, worms, and food waste." Sligo constructed its own bin in the school greenhouse using plywood and ordered 1 pound of red-worms from a grower in Wisconsin for \$18. Using a paper shredder donated by the National Aeronautics and Space Administration (NASA), another WasteWise partner, the school shreds used office paper for bedding. Sligo prepares the bedding for the worms by wetting 1 pound of shredded paper with 3 pounds (equal to 3 pints) of water. The worms thrive in this moist environment and will eat through the food waste and bedding, producing a rich organic vermicompost. Sligo changes the bedding every 3 to 6 months and uses the vermicompost on the flowerbeds around the school grounds. In addition, Sligo found that the excess water, which builds up in the bin, is another great source of nutrients for plants.

### Overcoming Challenges

To make the project a success, the school had to address three specific challenges. First, to help younger students who needed more supervision and assistance changing the bedding, a teacher oversees the project. Sligo also encountered space limitations. The greenhouse only holds a moderate-sized bin, so only 15 to 20 percent of the school's food waste can be vermicomposted at this point. Finally, when school is out during the summer months and no food waste is available, the worms tend to crawl out of the bin and dry up. As a result, Sligo must purchase new worms each academic year. Nonetheless, vermicomposting has been a great success for Sligo. "Even though we face special challenges at our school," Gair notes, "I highly recommend vermicomposting to any organization looking for an efficient and cost-effective way to reduce food waste." For more information on vermicomposting, see the Resources section of this *Update* or contact Ken Gair at 301 434-1417 or via e-mail at <klgair@aol.com>.



## Composting Heats up at UTC Carrier Corporation

Temperature matters to WasteWise partner UTC Carrier Corporation, a manufacturer of heating and air-conditioning systems. The same is true for composting, where the quality of the finished product depends on maintaining heat within the compost pile. Perhaps the company's long experience in temperature control is one reason Carrier was able to implement a highly effective windrow composting operation at its Syracuse, New York, facility, diverting 100 tons of diverse organic wastes from the landfill and saving the company \$40,000 in disposal costs in 1998.

Carrier operates a closed-loop system. Four thousand employees in 18 buildings, three large cafeterias, and two carpentry shops provide the food scraps, sawdust, and wood chips that supply the composting operation year-round. Grounds maintenance generates grass clippings, leaves, and yard trimmings for composting during the fall and summer months. The finished compost goes to meet Carrier's extensive landscaping requirements at its 3.4-million-square-foot facility.

Carrier's recycling coordinator, Angie Scafidi, attributes the company's composting success to management support and employee education, both of which were cultivated as carefully as their compost.

### Starting With a Plan

Carrier did its homework before jumping into composting. The company formed a research team, which visited several local correctional facilities to learn about their institutional composting programs. The team then applied what they had learned to Carrier's facilities. They studied where the company generated food scraps, where source separation should occur, and who would be responsible for collecting and emptying the containers. They also collected cafeteria food waste for several weeks to determine the amount of compostable material generated each week.

To keep the procedures simple, the team limited roles in the project to cafeteria workers and grounds crew. The group also chose the composting method that required the least labor of all the options they considered—turned windrow composting.

Armed with solid research and well-thought-out procedures, the team sold Carrier management on the program by demonstrating how composting would save the company money, enhance Carrier's corporate image, and begin a new phase of waste reduction at the facility.

### Implementing Through Employee Education

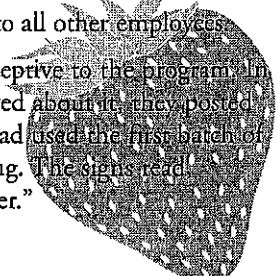
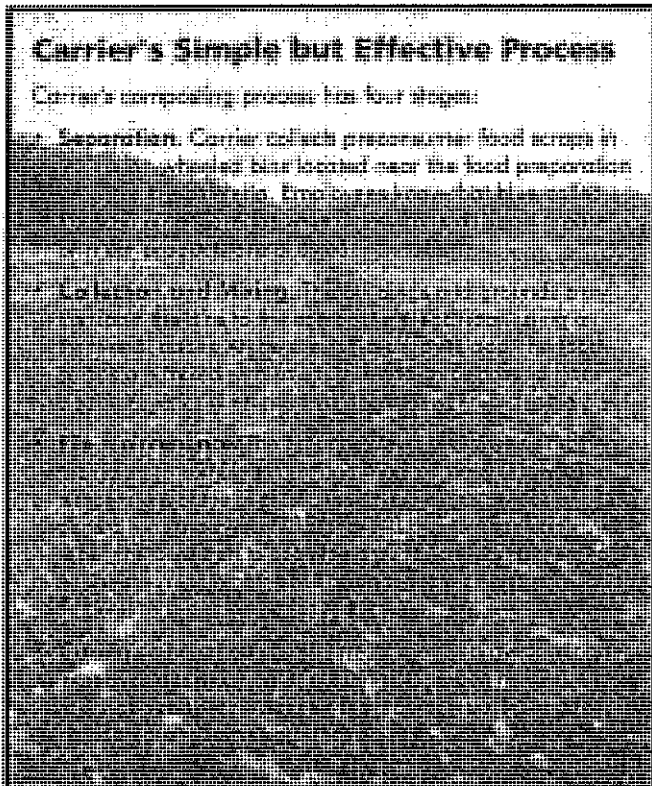
To smoothly roll out the new program, Carrier conducted training classes for the grounds crew and food service workers involved. The company also distributed an informational pamphlet explaining the program to all other employees.

Carrier employees were very receptive to the program. In fact, the grounds crew was so excited about it, they posted little signs indicating where they had used the first batch of compost for tree and shrub planting. The signs read "Compost Home Grown By Carrier."

### Evaluating the Program

Adding composting to the company's reuse and recycling programs demonstrated to employees that waste reduction was a high priority for the organization. "Aside from economic savings and environmental concerns," Scafidi noted, "we wanted to show our employees that we were serious about the whole concept of waste prevention." Carrier also showed employees that composting is a waste reduction method they can take home. In celebration of Earth Day 1998, Carrier offered employees home composting equipment and classes on composting techniques. For Earth Day 1999, Carrier offered its employees free compost, and employees took home 10 tons of it to use in their home gardens.

Carrier's program emphasizes low-cost simplicity and a sense of pride in contributing to the company's waste reduction program and wider environmental goals. With these elements in place, composting at the company shows no signs of cooling off. For more information about Carrier's composting program, contact Angie Scafidi at 315 432-6791.



# Compost Innovations

**C**ompost can provide a healthy boost for farmers seeking hearty corn crops or for homeowners tending prize-winning roses. Beyond its well-known uses as a soil amendment, however, compost can play a much larger role—as a cost-effective solution to and safeguard against environmental problems.

The microbial activity within mature compost, as well as its physical and chemical properties, can be used for a number of beneficial activities such as pollution prevention and pollution remediation.

## Pollution Prevention

As topsoil erodes, it allows rainwater to flow directly into streams and lakes rather than being absorbed and filtered by the soil. This runoff brings with it harmful fertilizers and pesticides. Compost can reduce the need for fertilizers and pesticides by at least 50 percent by adding organic bulk and humus to poor soils and by suppressing certain plant diseases and parasites. Compost also helps soil better retain water. This property makes compost useful in projects involving wetlands

restoration, soil erosion prevention, and storm-water runoff prevention.

## Pollution Remediation

Compost can provide cost-effective remediation of contaminated soils and water from areas such as Brownfields or Superfund sites. The microorganisms in mature, cured compost can sequester or break down contaminants in water or soil, transforming them into humus and harmless byproducts such as water, carbon dioxide, and salts.

For more information on beneficial uses of compost, order *Compost—New Applications For an Age-Old Technology* (EPA530-F-97-047) by calling EPA's publications center at 800 490-9198.

## King County Explores Using Compost to Aid Salmon Recovery

**W**asteWise partner King County, Washington, is playing a key role in a regional effort to protect and restore salmon populations, now listed as a threatened species under the Endangered Species Act. Local



water quality and wetland habitats are threatened by urban development and landscaping practices that remove or compact native soils and vegetation cover, thereby damaging their capacity to retain water and filter out pollutants. Rainwater that runs off of impervious surfaces can carry sediment,

pesticides, and fertilizers into water bodies, posing a threat to aquatic life such as salmon.

According to King County organics program manager Josh Marx, the county is looking closely at using compost as another tool in its wide array of salmon recovery efforts. "The combination of a rainy climate and the quick pace of development has led to excessive runoff. When compost is added to the soil," Marx explains, "it improves the soil's water absorption and retention capabilities as well as pollutant binding properties. What's good for the soil, is good for water resources, which in turn supports fish." He added that the county plans to replenish soils with compost—especially on urban land—through best management practices and site development standards.

In the meantime, the King County Department of Natural Resources has formed an organics team, incorporating representatives from different divisions to examine opportunities to integrate various organic programs. A study is now under way to determine how best to increase the capacity of organic materials being composted. The study also will analyze different facility options for handling organic feedstocks such as yard debris, soiled paper, food and wood waste, biosolids, and agricultural waste.

The mention of any company, product, or process in this publication does not constitute or imply endorsement by the U.S. Environmental Protection Agency.

# Composting Cotton at Johnston Industries

A

## How It All Got Started

## Fiber vs. Feed for Compost

measuring the amount of fiber composted in a year." The difference between the amount of fiber that enters the plant for processing and the amount of discarded fiber that exits the plant is the amount of waste fiber used for composting.

Johnston uses window composting to break down the 900,000 pounds of waste fiber. Employees turn piles using front-end loaders and aerate them with a Whelan compost turner. With careful care and attention, the composting process takes 90 to 120 days.

According to Wood, "Composting is a natural process—higher moisture materials break down faster. Without the right moisture and oxygen levels, however, you add moisture to the material and you're back to square one. The fiber is not a natural source of nitrogen, so you have to add it. We use a mixture of manure and straw to provide the necessary nutrients."

## Marketing Composted Fiber

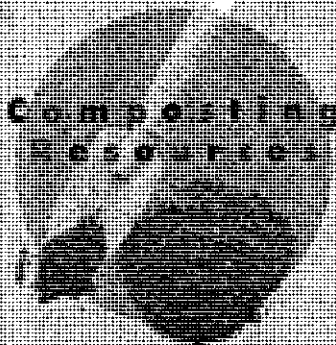
If you have received this publication in error, or want to be removed from the WasteWise Update mailing list, please call the WasteWise Helpline at 800 EPA-WISE (371-9473) or send a copy of this page, with the mailing label, back to WasteWise at the address below. Many WasteWise publications, including the WasteWise Update, are available electronically on the WasteWise Web site at [www.epa.gov/wastewise](http://www.epa.gov/wastewise).



United States  
Environmental Protection Agency  
15004  
Washington, DC 20460

Official Business  
Penalty for Private Use  
\$300

# RESOURCES



## **EPA Composting Resources (available at [www.epa.gov/compost/](http://www.epa.gov/compost/))**

### **Compost—New Applications for an Old Technology (EPA/520-F-97-007)**

This report is intended for those interested in applying compost for a variety of uses, from soil conditioning to filling landfills. It includes information on how to use compost, how to produce it, and how to market it. For more information, contact the EPA Office of Solid Waste, Washington, DC 20460. Phone: 202-554-1111. Fax: 202-554-1112. [www.epa.gov/compost/](http://www.epa.gov/compost/)

### **Composting of Yard Trimmings and Municipal Solid Waste (EPA/520-R-92-001)**

Compost from municipal programs has become an important part of many municipal composting programs. This report describes the process and methods for producing compost from yard trimmings and municipal solid waste. For more information, contact the EPA Office of Solid Waste, Washington, DC 20460. Phone: 202-554-1111. Fax: 202-554-1112. [www.epa.gov/compost/](http://www.epa.gov/compost/)

### **Organic Materials Management Strategies (EPA/520-R-97-002)**

This report describes the different strategies for managing organic materials and provides a number of the benefits and costs of each strategy.

### **Other Composting Resources**

#### **City Farmer**

For information about local composting, and the steps involved in creating and maintaining a worm bin in your home or office, visit [www.cityfarmer.org](http://www.cityfarmer.org).  
EPA/520-R-97-002

### **A Guide to Commercial Food Composting**

This publication provides food service businesses with information on the benefits of composting, strategies for determining what is a composting program, and how to implement such a program. Available for \$10. To order, contact the U.S. Composting Council, Environmental Education Foundation, P.O. Box 1017, Seattle, WA 98101. Phone: 206-461-1000. [www.compostcouncil.org](http://www.compostcouncil.org)

### **BiCycles, Journal of Composting and Recycling**

This exciting magazine is one of the only publications on composting and recycling. It provides information on how to compost and recycle, and how to create a composting program. It includes articles on composting and recycling, and is available for \$10. To order, contact the U.S. Composting Council, Environmental Education Foundation, P.O. Box 1017, Seattle, WA 98101. Phone: 206-461-1000. [www.compostcouncil.org](http://www.compostcouncil.org)

### **Compost Waste Management Institute Cooperative Extension**

This organization provides information on composting for businesses and individuals, including a number of books, manuals, guides, and videos. Great articles are available on-line and for sale. Available for \$25. For more information, contact the Institute of Composting, P.O. Box 1017, Seattle, WA 98101. Phone: 206-461-1000. [www.compostcouncil.org](http://www.compostcouncil.org)

### **Don't Bag It—Compost It**

This publication is an excellent resource for those interested in yard waste management. It includes information on how to compost yard waste, and how to use compost. Available for \$10. To order, contact the U.S. Composting Council, Environmental Education Foundation, P.O. Box 1017, Seattle, WA 98101. Phone: 206-461-1000. [www.compostcouncil.org](http://www.compostcouncil.org)

### **The Compost Resource Page**

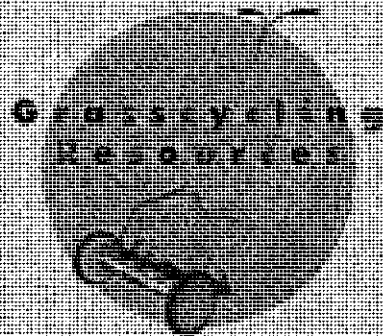
This page provides a list of information on composting, including links to various resources on the Web. [www.compostcouncil.org/compost/](http://www.compostcouncil.org/compost/)

### **University of Maine Cooperative Extension (UMCE)**

In cooperation with the University of Maine, the UMCE provides a number of resources on composting, including a number of books, manuals, guides, and videos. Available for \$10. To order, contact the UMCE, P.O. Box 1017, Seattle, WA 98101. Phone: 206-461-1000. [www.compostcouncil.org](http://www.compostcouncil.org)

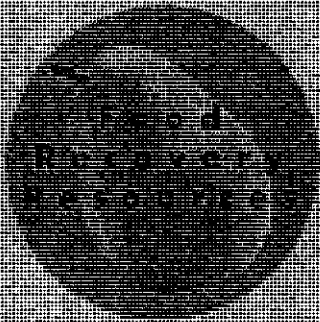
### **U.S. Composting Council**

This organization is involved in research, public education, composting and recycling standards, and providing technical support for composting. Phone: 202-554-1111. Fax: 202-554-1112. [www.compostcouncil.org](http://www.compostcouncil.org)



### **Maryland Department of Public Works & Transportation**

The state's largest agency for the Department of Public Works & Transportation provides information on composting, including a number of books, manuals, guides, and videos. Available for \$10. To order, contact the Maryland Department of Public Works & Transportation, P.O. Box 1017, Seattle, WA 98101. Phone: 206-461-1000. [www.compostcouncil.org](http://www.compostcouncil.org)



### EPA Food Recovery Resources

▼ [Don't Throw Away That Food: Strategies for Reducing Selling Waste Reduction \(EPA 530-F-03-001\)](#)



▼ [Composting Organic Food to the Right: The Right Way to Do It](#)

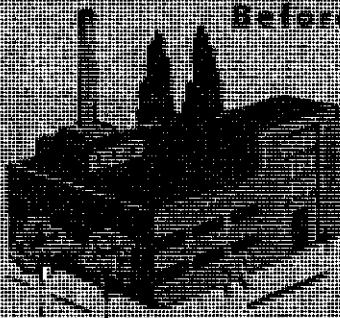
▼ [Composting Organic Food to the Right: The Right Way to Do It](#)



▼ [Managing Food Service as Organic Food \(EPA 530-F-03-001\)](#)

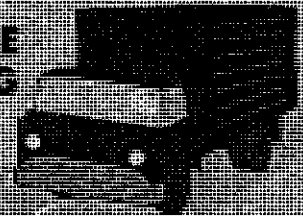
## Questions to Consider

### Before Getting Started With Composting



#### ONSITE COMPOSTING

#### OFFSITE COMPOSTING



1. Assess the resources available

1. Locate a composting facility

2. Select a composting method

2. Arrange for transport of the organics

3. Determine how the organics will be collected, stored, and transported within the facility

4. Educate your employees

5. Monitor and assess the program

**APPENDIX T**

Waste Reduction Cost Estimates

**WASTE REDUCTION COST ESTIMATES**

Central Tennessee Solid Waste Planning Region

**CANNON COUNTY**

- |  |        |
|--|--------|
| 1. Obtain Accruate Data  | \$0.00 |
| 2. Establish Education Campaign  | \$0.00 |
| 3. Expand Waste Reduction Activities<br>Purchase Bins (Utilize grant monies) | \$0.00 |

# WASTE REDUCTION COST ESTIMATES

## Central Tennessee Solid Waste Planning Region

### COFFEE COUNTY

|  |              |
|--|--------------|
| 1. Obtain Accurate Disposal Data             | \$0.00       |
| 2. Establish Education Campaign              |              |
| Part Time Employee                           |              |
| \$12.50/hour @ 20 hours/week                 | \$13,000.00  |
| Mass Media Initiative/Supplies               | \$5,000.00   |
| Subtotal Education                           | \$18,000.00  |
| 3. Expand Waste Reduction Activities         |              |
| Purchase bins for convenience center         |              |
| 10 bins @ \$6,000 per bin                    | \$60,000.00  |
| Purchase bins for county/city recycle center |              |
| 2 bins @ \$6,000 per bin                     | \$12,000.00  |
| Class IV Transfer Station (if needed)        |              |
| Capital costs                                |              |
| Land   | \$5,000.00   |
| Building and/or site improvements            | \$50,000.00  |
| Loader                                       | \$16,000.00  |
| Scales                                       | \$40,000.00  |
| Subtotal - Capital Costs                     | \$111,000.00 |
| Operating Costs                              |              |
| Labor - \$12.50/hour with benefits           | \$31,200.00  |
| Fuel   | \$2,600.00   |
| Maintenance                                  | \$1,000.00   |
| Utilities                                    | \$1,200.00   |
| Subtotal - Operating Costs                   | \$36,000.00  |
| 4. MSW Composting                            |              |
| Current Tipping Fee                          | \$23.75      |
| Tipping Fee in 3 Years                       | \$25.95      |
| Assume county to divert 12% of waste stream  | 3,827 tons   |
| MSW cost per ton                             | \$65.00      |
| Disposal Cost - 3927 tons @ \$65.00/ton      | \$248,755.00 |
| Haul cost - 3927 tons @ \$24.84/ton          | \$95,062.68  |
| Subtotal - Annual MSW Costs                  | \$343,817.68 |
| Cost Tonnage not Disposed in Class I LF      |              |
| 3827 tons @ \$25.95                          | \$99,232.80  |
| Additional cost associated with MSW compost  | \$244,584.88 |



**WASTE REDUCTION COST ESTIMATES**

Central Tennessee Solid Waste Planning Region

**RUTHERFORD COUNTY**

|  |                |
|--|----------------|
| 1. Obtain Accurate Disposal Data                       | \$0.00         |
| 2. Establish Education Campaign                        |                |
| Part Time Employee                                     |                |
| \$12.50/hour @ 40 hours/week + benefits                | \$32,500.00    |
| Mass Media Initiative/Supplies                         | \$7,500.00     |
| Subtotal Education                                     | \$40,000.00    |
| 3. MRF   |                |
| All tasks by Alliance Recycling                        | \$0.00         |
| 4. Expand Waste Reduction Activities                   |                |
| Purchase bins for convenience center                   |                |
| 14 bins @ \$6,000 per bin                              | \$84,000.00    |
| Recycle Center - one each Smyrna/LaVergne              |                |
| Capital Costs  |                |
| Land   | \$5,000.00     |
| Building - Modular office                              | \$25,000.00    |
| Bins - 4 @ \$6,000                                     | \$24,000.00    |
| CDD bin - 1 @ \$6,000                                  | \$6,000.00     |
| Subtotal - Capital Costs                               | \$60,000.00    |
| Operating Costs  |                |
| Labor - 1 @ \$9.00/hour @ 20 hours/wk                  | \$11,700.00    |
| Utilities  | \$1,200.00     |
| Subtotal - Operating Costs                             | \$12,900.00    |
| 5. Class IV Landfill                                   |                |
| Improve Existing Operations                            | \$0.00         |
| (No additional costs)                                  |                |
| 6. MSW Composting                                      |                |
| Assume county to divert 12% of waste stream            | 27,400 tons    |
| MSW cost per ton                                       | \$65.00        |
| Disposal Cost - 27,400 tons @ \$65.00/ton              | \$1,781,000.00 |
| Haul cost - 27,400 tons @ \$6.67/ton                   | \$182,758.00   |
| 400 tons/month @ 9 tons/load = 46 loads                |                |
| 2283 tons/month @ 9 tons/load = 254 loads              |                |
| average miles = 30 miles RT                            |                |
| 254 loads x 30 miles x \$2/mile = \$15,240             |                |
| Yearly haul cost = \$15,240 * 12 = \$182,880           |                |
| \$182,880 total haul cost/27400 tons/year = \$6.67/ton |                |
| Subtotal - Annual MSW Composting                       | \$1,963,758.00 |

# WASTE REDUCTION COST ESTIMATES

Central Tennessee Solid Waste Planning Region

## WARREN COUNTY

|   |              |
|---|--------------|
| 1. Obtain Accurate Disposal Data                          | \$0.00       |
| 2. Establish Education Campaign                           |              |
| Part Time Employee  |              |
| \$12.50/hour @ 20 hours/week                              | \$13,000.00  |
| Mass Media Initiative/Supplies                            | \$5,000.00   |
| Subtotal Education  | \$18,000.00  |
| 3. Expand Waste Reduction Activities                      |              |
| Purchase bins for convenience center                      |              |
| 13 bins @ \$6,000 per bin                                 | \$78,000.00  |
| Class IV Collection Site at TS                            |              |
| Capital Costs   |              |
| Site Improvements   | \$2,600.00   |
| Bins - 4 @ \$6,000  | \$24,000.00  |
| Subtotal - Capital Costs                                  | \$26,600.00  |
| Operating Costs - No additional costs                     |              |
| 4. Class IV Landfill - If Needed - To Be Determined Later |              |
| Capital Costs   |              |
| Office  |              |
| Land  |              |
| Equipment   |              |
| Scale   |              |
| Subtotal - Capital Costs                                  |              |
| Operating Costs   |              |
| Labor (40 hours/week @ \$9.00/hour + benefits)            |              |
| Subcontract - earthwork                                   |              |
| \$500/day @ 4 days/month                                  |              |
| Subtotal - Operating Costs                                |              |
| 5. MSW Composting   |              |
| Assume county to divert 12% of waste stream               | 3,874 tons   |
| MSW cost per ton  | \$65.00      |
| Disposal Cost - 3,874 tons @ \$65.00/ton                  | \$251,810.00 |
| Haul cost - 3,874 tons @ \$20.00/ton                      | \$77,480.00  |
| 400 tons/month @ 9 tons/load = 46 loads                   |              |
| 3874 tons/month @ 9 tons/load = 430 loads                 |              |
| average miles = 90 miles RT                               |              |
| 430 loads x 90 miles x \$2/mile = \$77,400                |              |
| \$77,400 total haul cost/3,874 tons/year = \$20.00/ton    |              |
| Subtotal - Annual MSW Costs                               | \$329,290.00 |
| Cost Tonnage not Disposed in Class I LF                   |              |
| 3874 tons @ \$26.00                                       | \$100,724.00 |
| Additional cost associated with MSW compost               | \$228,566.00 |

**APPENDIX U**

**Waste To Energy  
Manufactuer's Data**



## FAX MEMORANDUM

---

**DATE:** May 24, 2000

**TIME:** 9:15 AM

**TO:** Ingrid van Praag  
American REF-FUEL

**PHONE:** (281) 649-4945  
**FAX:** (281) 649-4860

**FROM:** Trent Smith  
Southern Consulting

**PHONE:** (615) 740-8777  
**FAX:** (615) 740-0504

**RE:** Solid Waste Plan

**CC:** File

Mike Norris 6/29/00  
x 4915 @ 9:30am

will look for info to  
send, however, in  
general tip fee at  
\$50 to 60 per ton

**Number of pages including cover sheet: 2**

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It was a pleasure meeting you and your associates at the WTE conference in Nashville. Southern Consulting is preparing a Solid Waste Plan for a multi county region in Tennessee. As part of the Plan, we are investigating the various solid waste disposal and solid waste "diversion" options. Our investigation of the various options includes the determination of the costs (both capital and operating etc.).

Our client has asked that we investigate WTE as a disposal option. At this time I would like, with your help, to compile information that would allow us to provide a reasonable cost estimate to provide our client. It is my understanding that your company would own and operate the facility. The current wastestream is 300,000 tons per year (and growing). Please provide information relative to costs etc. as outlined below:

- Various Sized Facility from 100,000 to 300,000 tons per year
- Land requirements for various sized facilities
- Land purchased and owned by whom?

# Fax Memorandum

Page 2

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- Impact to cost structure if recoverable materials are collected (e.g. Steinert System or American Ash Recovery System)
- Requirements of local "Host" County
- Host County incentives provided by your firm
- Permitting to be performed by whom?
- Other issues impacting cost to Counties

If you have any questions please contact me at the above listed telephone number.

Thank You



**FAXED**

---

**FAX MEMORANDUM**

---

**DATE:** May 24, 2000                      **TIME:** 9:45 AM  
**TO:** Mark R. Lyons                      **PHONE:** (603) 929-3403  
Wheelabrator Technologies              **FAX:** (603) 929-3123  
**FROM:** Trent Smith                      **PHONE:** (615) 740-8777  
Southern Consulting                      **FAX:** (615) 740-0504  
**RE:** Solid Waste Plan  
**CC:** File

**Number of pages including cover sheet: 2**

---

It was a pleasure meeting you at the WTE conference in Nashville. Southern Consulting is preparing a Solid Waste Plan for a multi county region in Tennessee. As part of the Plan, we are investigating the various solid waste disposal and solid waste "diversion" options. Our investigation of the various options includes the determination of the costs (both capital and operating etc.).

Our client has asked that we investigate WTE as a disposal option. At this time I would like, with your help, to compile information that would allow us to provide a reasonable cost estimate to provide to our client. It is my understanding that your company would own and operate the facility. The current wastestream is 300,000 tons per year (and growing). Please provide information relative to costs etc. as outlined below:

- Various Sized Facility              from 100,000 to 300,000 tons per year
- Land requirements for various sized facilities
- Land purchased and owned by whom?

# Fax Memorandum

Page 2

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- Impact to cost structure if recoverable materials are collected (e.g. Steinert System or American Ash Recovery System)
- Requirements of local "Host" County
- Host County incentives provided by your firm
- Permitting to be performed by whom?
- Other issues impacting cost to Counties

If you have any questions please contact me at the above listed telephone number.

Thank You



**Southern Consulting, LLC**

Engineering • Materials Testing

**FAXED**

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**FAX MEMORANDUM**

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**DATE:** May 24, 2000                      **TIME:** 10:20 AM  
**TO:** Donald E. Wolfram                      **PHONE:** (727) 573-2482  
Resource Recycling, LLC                      **FAX:** (727) 573-2527  
**FROM:** Trent Smith                      **PHONE:** (615) 740-8777  
Southern Consulting                      **FAX:** (615) 740-0504  
**RE:** Solid Waste Plan  
**CC:** File

**Number of pages including cover sheet: 2**

---

It was a pleasure meeting you at the WTE conference in Nashville. Southern Consulting is preparing a Solid Waste Plan for a multi county region in Tennessee. As part of the Plan, we are investigating the various solid waste disposal and solid waste "diversion" options. Our investigation of the various options includes the determination of the costs (both capital and operating etc.).

Our client has asked that we investigate WTE as a disposal option, however, in order to meet the states 25% diversion of waste law, a system such as yours would probably be necessary to improve the regions diversion/recycling quantities. I have requested information regarding costs etc. from both Wheelabrator and American REF FUEL. As part of my request, I requested that they provide me with the impact, if any, to the cost structure associated with including/incorporating your system into the overall WTE facility.

While the cost of operating your system is critical in making an informed decision regarding implementation, the quantity of recovered materials (those not landfilled) may prove to be as critical for the client. At



# Fax Memorandum

Page 2

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this time I would like, with your help, to compile information that would allow us to provide a reasonable estimated quantity of recoverable materials. The current wastestream is 300,000 tons per year (and growing). Please provide information relative to costs and quantity of recoverables etc. as outlined below:

- Quantity of material by type from other similar sized facilities, with general description of demographics, e.g. highly industrial area, rural etc.
- Land requirements for storage of recoverables
- Responsible party for recoverable disposition (who markets recoverables etc.)
- Requirements of local "Host" County
- Typical Host County incentives, e.g. host fees?, shared revenue, or typically none
- Other issues impacting cost to Counties

If you have any questions please contact me at the above listed telephone number.

Thank You



**WHEELABRATOR TECHNOLOGIES INC.**  
A WASTE MANAGEMENT COMPANY

4 Liberty Lane West  
Hampton, New Hampshire 03842  
(603) 929-3000

June 20, 2000

Mr. Trent Smith  
Southern Consulting, LLC  
101-B West Railroad Street  
Dickson, TN 37055

Dear Mr. Smith:

Thank you for your May 24, 2000 fax transmission regarding a possible waste-to-energy (WTE) option for your client, a multi-county region in Tennessee. You asked several questions about WTE in your fax which I have answered below:


1. A WTE facility which can reliably process 300,000 tons a year would need to be sized at about 900 tons per day, because the facility will operate at 90% availability. In other words, the facility's boilers will be down about 10% of the time for maintenance. A 900 TPD WTE facility will have an order of magnitude capital cost of about \$100 million.
2. The land requirement for a 900 TPD facility will be about 15 acres.
3. The facility site could either be purchased and owned by your client or by Wheelabrator. We would prefer that your client provide a properly zoned site for the facility to Wheelabrator at no cost. A site with city water, access to electric utility transmission lines, and an adjacent landfill for ash disposal would be ideal.
4. The impact on WTE facility costs/tip fees could be greatly impacted by the sale of metals recovered from the ash or by free ash disposal. The impact could be as great as \$10 per ton on the tip fees.
5. Your client would be required to enter into a long-term (20 year) put-or-pay agreement with Wheelabrator to deliver a minimum amount of waste each year at a fixed price. Such put-or-pay agreements are required by lenders to finance construction of the facility.
6. Wheelabrator could provide a variety of benefits to the host county such as tax revenues, host community payments, reduced fees for trash disposal, enhanced recycling programs, etc.

Mr. Trent Smith  
June 20, 2000  
Page 2

7. Wheelabrator would be responsible for permitting the facility.
8. The most important factor influencing the tip fee that Wheelabrator would charge for waste disposal is the rate paid by the local utility for the electricity the facility generates. Generally speaking, Wheelabrator would need to be paid at least 5¢/Kwh for the electricity for the tip fee to be in the range of \$60/ton.

Thank you for your interest in Wheelabrator and WTE. If I can be of further assistance, please contact me.

Sincerely,



Mark R. Lyons  
Project Vice President

t:\lyons\2222

WHEELABRATOR ENERGY PROJECTS

| Operating Facilities         | Tons/Day      | Fuel Type | Plant Size (MW) | Start-Up Date | Current Status | Type of Contract | Project Costs (\$ in Millions) |         |      | Construction Time (Months) |
|------------------------------|---------------|-----------|-----------------|---------------|----------------|------------------|--------------------------------|---------|------|----------------------------|
|                              |               |           |                 |               |                |                  | Equity                         | Finance | Year |                            |
| Saugus, MA                   | 1500          | MSW       | 40              | 1975          | O              | BOO              | 10                             | 30      | 1975 | 30                         |
| Pinellas, FL                 | 3000          | MSW       | 75              | 1983          | O              | B-O              | N/A                            | 160     | 1981 | 36                         |
| Westchester County, NY       | 2250          | MSW       | 64              | 1984          | O              | BOO              | 52                             | 157     | 1982 | 30                         |
| Baltimore, MD                | 2250          | MSW       | 60              | 1985          | O              | BOO              | 63                             | 191     | 1983 | 30                         |
| North Andover, MA            | 1500          | MSW       | 40              | 1985          | O              | BOO              | N/A                            | 160     | 1983 | 30                         |
| Tampa, FL                    | 1000          | MSW       | 22              | 1985          | O              | -O               | N/A                            | 116     | 1983 | 30                         |
| Claremont, NH                | 200           | MSW       | 5               | 1987          | O              | BOO              | 8                              | 18      | 1985 | 24                         |
| Millbury, MA                 | 1500          | MSW       | 45              | 1987          | O              | BOO              | P                              | P       | 1985 | 30                         |
| Bridgeport, CT               | 2250          | MSW       | 67              | 1988          | O              | BOO              | 60                             | 137     | 1985 | 30                         |
| Concord, NH                  | 500           | MSW       | 14              | 1989          | O              | BOO              | 16                             | 48      | 1987 | 30                         |
| Gloucester County, NJ        | 575           | MSW       | 14              | 1989          | O              | BOO              | 21                             | 63      | 1988 | 30                         |
| S. Broward County, FL        | 2250          | MSW       | 70              | 1991          | O              | BOO              | 63                             | 267     | 1989 | 36                         |
| N. Broward County, FL        | 2250          | MSW       | 70              | 1991          | O              | BOO              | 48                             | 239     | 1989 | 36                         |
| Spokane, WA                  | 800           | MSW       | 26              | 1991          | O              | B-O              | N/A                            | 105     | 1989 | 30                         |
| Falls Township, PA           | 1500          | MSW       | 45              | 1994          | O              | BOO              | P                              | P       | 1992 | 30                         |
| Lisbon, CT                   | 500           | MSW       | 14              | 1995          | O              | B-O              | N/A                            | 128     | 1993 | 30                         |
| <b>Total Trash-to-Energy</b> | <b>23,825</b> |           | <b>671</b>      |               |                |                  |                                |         |      |                            |

TRASH-TO-ENERGY FACILITIES

**Abbreviations**  
**MSW:** Municipal Solid Waste  
**TBD:** To Be Determined  
**P:** Private Placement of Debt  
**Note:** Technical data/information on major equipment components is supplied on the reverse side of the photographs of the facilities. Additional information is available upon request.

**D:** Development      **-OO:** Own, Operate      **--O:** Operate      **B-O:** Build, Operate  
**BOO:** Build, Own, Operate (Wheelabrator is Owner/Leasee)      **N/A:** Not Available or Not Appropriate

3/00      wtproj.doc