

NORTH CAROLINA RECYCLING BUSINESS STUDY

North Carolina Department of Environment, Health, and Natural Resources
James B. Hunt, Governor, North Carolina
Jonathan B. Howes, Secretary

For further information on the North Carolina Recycling Business Study, contact:

**Bob Schall
Self-Help
409 East Chapel Hill Street
P. O. Box 3619
Durham, NC 27702-3619
(919) 956-4400
Fax (919) 688-3615**

**Bobbi Tousey
North Carolina Office of Waste Reduction
NC Department of Environment, Health, and Natural Resources
Post Office Box 29569
3800 Barrett Drive, Suite 300
Raleigh, NC 27626-9569
(919) 571-4100
Fax (919) 571-4135**

**David Kirkpatrick
KirkWorks
Post Office Box 15062
Durham, NC 27704-0062
(919) 220-8065
Fax (919) 220-9720**

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Employment, Capital Demands,
and Technical Assistance Needs

Study Sponsors



North Carolina Department of Pollution Prevention and Environmental Assistance

The NC Department of Pollution Prevention and Environmental Assistance offers free non-regulatory technical assistance and education on methods to eliminate, reduce, or recycle waste before they become pollutants or require disposal.

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Study Author
David Kirkpatrick



Study Co-Authors
Allan Rosen, Self-Help

Michael Shore, University
of North Carolina at Chapel Hill
Department of Environmental
Sciences and Engineering

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Introduction

North Carolina recycling businesses are a growing sector in the state's economy. More than 474 companies in the state are involved in recycling as a primary business activity. Located throughout the state, they are involved in a wide variety of commodities and processes. These enterprises collect, process, broker, reuse, and remanufacture vast quantities of materials discarded from homes and businesses. Presently employing more than 7,700 citizens, recycling businesses have added new jobs at six times the rate of private industry as a whole in the last four years.

This study documents employment, capital demand, and technical assistance needs in this vibrant commercial sector. Specifically, the purpose of this study is to determine:

- o Employment Trends - The number of jobs in recycling businesses in the state, job growth in the industry, and compensation levels.
- o Capital Demands - The financial status of recycling companies and upcoming demand for external financing.
- o Technical and Business Assistance Needs - The types of technical and business assistance that have been and will be most helpful to recycling enterprises.

This study presents employment results that include historic and projected employment growth trends, employment by industry sector, and compensation levels. Financial results include revenues, assets, and net worth; capital demands; projected uses of funds; and financing obstacles. Current sources of business and technical assistance as well as additional assistance needs for business expansion are also examined. Finally, basic company statistics such as legal structure, age, minority or women ownership, and growth projections are reported.

The data for this study were gathered primarily from a written survey mailed to all identified recycling companies in the state. Additional information was gathered through a follow-up telephone survey and from NC Employment Security Commission data.

The two sponsors for this research are the NC Department of Pollution Prevention and Environmental Assistance (DPPEA) and Self-Help. The DPPEA is responsible for assisting local governments and businesses with achieving the state's waste reduction goals. DPPEA has recently established a Recycling and Reuse Business Assistance Center to foster the state's recycling, reuse, and composting industry. DPPEA is also concerned with the employment and economic development impacts of expanded recycling in the state.

Self-Help, which includes the Center for Community Self-Help, Self-Help Credit Union, and Self-Help Ventures Fund, serves as a North Carolina community development bank. Its mission is to stimulate economic development in disadvantaged communities by providing financial and technical assistance to small businesses, non-profit organizations, and home buyers. Self-Help co-sponsored this study to have a better profile of recycling companies that may be assisted by its financial services. Self-Help is interested in expanding access to capital for small enterprises such as those common to the recycling industry.

David Kirkpatrick of KirkWorks is the primary author of this report. KirkWorks is a recycling economic development firm dedicated to fostering the recycling industry through creative financing strategies, business assistance, market research, and program development.

Study Development

The capital demands component of this study began with a proposal by KirkWorks to Self-Help that sustainable enterprises for expanded commercial lending be targeted. In turn, Self-Help staff asked that the capital demands of these enterprises be characterized in order to better serve them. After discussions, Self-Help and KirkWorks decided to conduct a capital demands survey of a sustainable enterprise sector, recycling companies. Self-Help employed Allan Rosen, a graduate student in the Department of City and Regional Planning at the University of North Carolina at Chapel Hill (UNC-CH), to assist in survey development, implementation, data input, and analysis. Allen conducted much of the analysis and documentation of capital demands and of technical and business assistance needs for this report.

The NC Department of Pollution and Environmental Assistance agreed to co-sponsor the recycling business study with Self-Help to allow for more thorough research that could provide guidance to its recycling market development efforts. DPPEA had also independently contracted with Michael Shore, a graduate student in the Department of Environmental Sciences and Engineering at UNC-CH, to conduct a study on the impact of recycling on jobs in the state. Since the same businesses were to be surveyed for both projects, the research teams decided to collaborate on a combined survey so that response rates may be increased and paperwork for participating companies be decreased. As part of his DPPEA work and his master's thesis, Michael also independently surveyed local governments in the state on recycling employment and assessed job losses in the virgin materials and solid waste industries that resulted from recycling. Some of the conclusions on employment in this study are excerpts from his January 1995 report to DPPEA "The Impact of Recycling on Jobs in North Carolina ."

Acknowledgments

This study would not have been possible without the cooperation of hundreds of business managers and owners of recycling companies who took the time to complete the survey. Their willingness to share information on both the setbacks and successes in their companies will help to foster the entire industry. This report is being shared with all survey respondents who requested a copy on the survey form

Mary Beth Powell, Matt Ewadinger, John Nelms, and Bobbi Tousey of DPPEA helped assure the study's success through support, review, and guidance. Bob Schall and Self-Help's Ventures Fund brought their expertise in assisting and financing hundreds of new and expanding businesses across the state to this project. As noted, the work of Allan Rosen and Michael Shore was essential to the team effort to generate a comprehensive study of the recycling enterprise.

Several other individuals contributed invaluable assistance on survey design. They include Dr. Angell Beza of the Institute of Research in Social Sciences at UNC, Ed Feser of the UNC Department of City and Regional Planning Dr. Douglas Lober of the Duke School of the Environment. Will Ferretti of the New York State Office of Recycling Market Development, Coy Smith of the Materials for the Future Foundation. Anne Aitchison of SunShares, Chuck Cooper-Harris of Polymer Reclaim and Exchange, John McSween of Bish Enterprises, Ed Norris of Paper Stock Dealers, and Jill Fulmer of Full Circle Paper. Craig Barry of the North Carolina Recycling Association and Evelyn Haught of the Institute of Scrap Recycling Industries assisted in the compilation of the NC recycling company database. Craig Barry also helped review the final report.

Executive Summary

Recycling reuse, composting, and remanufacturing companies have been growing rapidly in North Carolina in the last five years. They have added thousands of jobs for citizens across the state and plan to continue this expansion. The companies are involved in a diverse array of activities -- collecting upgrading refurbishing brokering compacting manufacturing reusing composting, and selling secondary materials. A summary of the most salient findings from the NC recycling business survey is listed below.

A Growing, Diverse Industry

- o More than 474 NC companies are involved in recycling as a primary business activity. They collect, process, broker, reuse, and remanufacture a wide variety of materials.
- o North Carolina recycling businesses, an entrepreneurial and growing sector of the state's economy, add new jobs at six times the rate of all private industry in the last four years. Nearly 70% of recycling companies report that their business is either starting up or growing.
- o Four out of five NC recycling firms are independent, locally owned small businesses with annual revenues and total assets each averaging about \$1.1 million per company.
- o With 120 companies across the state in operation, on average, for more than 30 years and employing about 12 citizens per company, scrap metal processors are the most financially stable and mature firms in the industry.
- o End-use manufacturers and multimaterial processors are the fastest growing sectors of the industry; there are at least 163 active companies in the state that employ about one-half of all workers in the industry.
- o More than eight out of ten responding companies foresee business expansion if financial, regulator, and market obstacles can be overcome. Areas identified for growth include (1) increasing sales of existing products and services, (2) generating sales of new products and services, and (3) improving the company internally.

New Employment for NC Citizens

- o Recycling, a significant industry in North Carolina, supports over 8,800 private and public sector jobs, or about the same number of jobs as the state's biotechnology industry.
- o The recycling industry has added new jobs at six times the rate of private industry as a whole in the last four years
- o Private recycling companies project that they will create another 6,700 jobs in the next three years.
- o Recycling is a net job creator for North Carolina. For every 100 jobs created by recycling in the state, only 13 jobs are lost in solid waste collection and disposal and virgin material extraction.

- ◇ The typical NC recycling company has about 16 employees who earn approximately \$9.00 per hour on average.

New Capital Demands

- ◇ The surveys noted that limited access to capital, cash flow problems, lack of markets, and environmental regulations, in that order, are the four primary obstacles to further growth in the recycling business. More than 60% of all respondents are currently planning new expansion, and another 25% would expand if these obstacles could be overcome.
- ◇ With equity ownership at 63% of total assets, responding recycling enterprises are financially sound.
- ◇ Nearly two thirds of responding companies expect additional capital demands of over \$100,000 in the next three years. They expect to finance this amount with 50% debt/ 50% equity.
- ◇ Aggregate capital demands for the next three years for existing NC recycling firms is estimated at \$170 million.
- ◇ Recycling companies primarily plan to use new capital for fixed asset purchases -- equipment, buildings, and land -- with working capital a secondary use for some companies.
- ◇ No financing obstacles were expected by 43% of surveyed companies. Of the remaining firms, lack of collateral, poor cash flow and unproved markets, in that order, were the primary financing obstacles. About one in six firms had been denied a loan or had been unsuccessful in raising equity investment in the last three years.

Technical and Business Assistance Needs

- ◇ Most recycling managers rely on in-house expertise, peers in the industry, and trade associations, in that order, for technical or business assistance. Only about 5% of respondents currently rely on assistance from local universities or community colleges.
- ◇ The NC Department of Pollution Prevention and Environmental Assistance is the primary governmental source of business and technical assistance for responding recycling businesses.
- ◇ About 37% of all companies indicate a need for business or technical assistance to expand. Assistance requests mentioned most frequently concern business and financial planning, marketing, and technology.

Chapter I: Survey Development, Implementation, and Population

The development and implementation of the survey as well as the identification of the target population was conducted during the summer of 1994. The written survey was designed with assistance from DPPEA and Self-Help staff and review from other recycling market development and survey experts. The initial draft was pretested with the managers of five NC recycling companies. Pretest results and comments resulted in further improvements to the survey form.

On June 17, 1994, an introductory letter was mailed to all businesses in the database notifying them that they would receive a survey in the mail within the next week, describing the survey's purpose, and encouraging them to complete it. (Appendix A.)

The survey was mailed on July 1, 1994. (Appendix B.) The questionnaire was formatted such that the address label adhered to a panel of the sideways brochure, which was folded into thirds. To return the survey, the respondent needed only to fold the panel of the brochure underneath a pre-addressed, pm-stamped panel. This format avoided the need for both mailing and return envelopes. That the address label also stayed with the survey ensured that the respondent was properly identified

On July 15, 1994, two weeks after the original survey was sent, a postcard encouraging survey completion was mailed to those who had not returned their survey. (Appendix C.) Of the target population of 474 companies, 118 completed written surveys, i.e., a 25-percent response rate on the mailed survey.

At least one attempt by telephone was made to reach each business that did not complete the written survey. Business contacts were asked for the following information:

- ◇ Employment, employment growth, and compensation. (Survey questions A2a, A2c, A2d, A2e)
- ◇ Need for technical assistance for expansion. (Survey question B15)
- ◇ Need for additional capital in the next three years. (Survey question B17)

An additional 160 companies (or 34% of the target population) provided responses to the telephone survey. Including mail survey responses, the telephone survey brought the response rate on the three key questions up to 59% of the target population.

NC Employment Security Commission Data

Employment Security Commission (ESC) data were also examined for companies classified in the Standard Industrial Classification (SIC) code 5093, which covers primarily scrap metal and textile recycling firms. The ESC data provided information on company employment, employment growth, and compensation. (Survey questions A2a, A2d, A2e)

ESC data were available on an additional 94 companies (or 20% of the target population) beyond those which provided mail or telephone responses. Including mail and telephone survey responses, the ESC information brought the response rate on the three key employment questions up to 79% of the target population. ESC data were available on several of the companies that responded to the mail and telephone surveys. For these companies, the mail and survey data were used as they are the most recent and accurate.

Survey Population

The survey was targeted to all companies in North Carolina for which recycling is a primary business activity. For this study, a comprehensive database was compiled from the following lists of recycling business:

- ◇ The NC Department of Pollution Prevention and Environmental Assistance *Directory of Markets for Recyclable Materials*.
- ◇ The membership directory of the North Carolina Recycling Association.
- ◇ Employment Security Commission company records for SIC code 5093, “Scrap and Waste Materials.”
- ◇ The Institute of Scrap Recycling Industries (ISRI) membership list for North Carolina.
- ◇ *The Lockwoods Directory of Paper Manufacturers and Companies*.

Not all businesses included on these existing lists were appropriate to receive this survey. Thus, once a master database was developed, business classifications were removed which were either tangential to the recycling industry or not involved in recycling. Business categories removed included auto salvage yards, automobile crushers, and consultants.

The initial mailing of the survey went to 675 companies. This mailing list included 31 companies whose primary business is not recycling but were on the list because of their extensive in-house recycling efforts. Also included in the initial mailing were 107 paper converting and packaging companies and 4 pulp and paper mills that may use some recycled feedstock but whose business does not primarily depend on recycling. Finally, 9 duplicates and 49 undeliverable or out-of-business addressees were included in the initial mailing. When all these companies or addressees were removed from the database 474 companies remained as the target population of active companies in NC whose primary business is recycling.

The survey did not document employment or business activity related to in-house recycling programs or to the utilization of recyclable materials in enterprises such as paper converters, plastic molders, and metal companies. Several other companies or organizations involved in material reuse and reclamation such as Goodwill and Salvation Army facilities were also not included in the survey population because mailing lists for these enterprises were not readily available. *Thus, the NC recycling, reuse, and composting industry is larger in number of companies and employment than reported in this survey.*

Population Subsets

The target survey population was divided into fourteen company types for the purposes of data analysis. Companies were categorized according to *the DPPEA Directory*, survey responses industry information, SIC code, or company name. This segmentation of recycling companies demonstrates the diversity of recycling, reuse, and remanufacturing opportunities in the state. The four main types, i.e., collectors, multimaterial processors, scrap metal dealers, and end-use manufacturers, are the well-known sectors of the recycling industry that handle the majority of post-consumer and post-industrial recyclables. However, many niche sectors were identified in the survey process that deal with specific materials such as tires, pallets, oil, or textiles; or they perform specialized functions such as reusing, brokering, or selling equipment. Although some of the companies in these smaller sectors could also be categorized as processors or end-use manufacturers, they were analyzed separately to highlight the special aspects of their business sector.

The company types, in descending order by number of companies surveyed, are listed below. Also noted are the code letters for each company type as used in the tables and figures and in the survey database in Appendix D, are noted.

- o **Scrap Metal Processors** (120 companies, **S**) -- Scrap metal dealers and processors that primarily handle metal scrap but also have diversified into other recyclable materials.
- o **End Use Manufacturers** (84 companies, **E**) -- Manufacturers that use recyclable materials as a feedstock to manufacture products.
- o **Multimaterial Processors** (**79** companies, **P**) -- Processors that clean, sort, densify and process a variety of recyclable materials for shipment to end-use manufacturers.
- o **Recycling Collectors** (44 companies, **C**) -- Companies that collect recyclables from homes, businesses, and industry.
- o **Equipment Dealers** (22 companies, **Q**) -- Dealers that sell trucks, balers, and other equipment to recycling companies
- o **Reuse Companies** (19 companies, **U**) -- Companies that refurbish and reclaim laser cartridges, metal drums, and building materials.
- o **Oil and Chemical Recyclers** (21 companies, **H**) -- Businesses that reprocess and recycle chemicals, oils, and paints.
- o **Textile Recyclers** (19 companies, **L**) -- Companies that reuse or recycle textiles and fibers.
- o **Paper Stock Processors** (18 companies, **PS**) -- Processors that sort and bale paper and cardboard.
- o **Materials Brokers** (17 companies, **B**) -- Firms that broker metal, paper, and plastic.
- o **Pallet and Wood Companies** (15 companies, **A**) -- Companies that refurbish pallets and process scrap wood.
- o **Tire Recyclers** (10 companies, **T**) -- Companies that retread or recycle tires.
- o **Education Groups** (4 organizations, **D**) -- Groups that provide recycling education.
- o **Recycling Retailers** (2 stores, **R**) -- Small retail stores that specialize in recycled-content products

Table 1: Survey Population, Company Types, and Response Rates

Company Type	Survey Code	Number of Companies	Mail Survey Responses	Mail Response Rate	Telephone Survey Responses	Telephone Response Rate	NC ESC Data	NC ESC Response Rate	Cumulative Response Rate
Scrap Metal Processors	S	120	26	22%	42	35%	47	39%	96%
End-Use Manufacturers	E	84	20	24%	35	42%	4	5%	70%
Multimaterial Processors	P	79	27	34%	24	30%	7	9%	73%
Recycling Collectors	C	44	16	36%	9	20%	5	11%	68%
Equipment Dealers	Q	22	4	18%	8	36%	0	0%	55%
Reuse Companies	U	19	4	21%	8	42%	2	11%	74%
Oil and Chemical Recyclers	H	21	3	14%	5	24%	6	29%	67%
Textile Recyclers	L	19	2	11%	1	5%	15	79%	95%
Paper Stock Processors	PS	18	5	28%	5	28%	3	17%	72%
Materials Brokers	B	17	3	18%	11	65%	1	6%	88%
Pallet and Wood Companies	A	15	4	27%	7	47%	1	7%	80%
Tire Recyclers	T	10	1	10%	4	40%	4	40%	90%
Education Groups	D	4	2	50%	1	25%	0	0%	75%
Recycling Retailers	R	2	1	50%	0	0%	0	0%	50%
Total	ALL	474	118	25%	160	34%	95	20%	79%

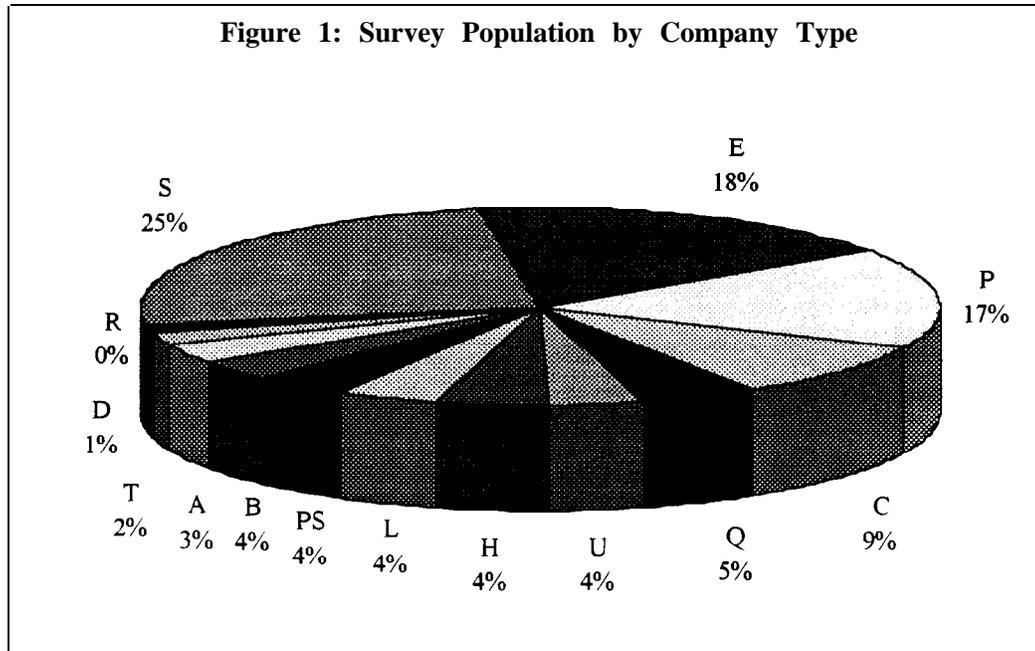


Table 1 lists all the companies surveyed by type, along with mail, telephone and ESC data response rates by type of company. *The four largest business types -- Scrap Metal Processors (S), End Use Manufacturers (E), Multimaterial Processors (P), and Recycling Collectors (C) -- represented 69% of the targeted population of companies and completed 75% of the written surveys.*

Interpreting Report Tables and Figures

The results presented below are reported in aggregate for all responding companies (**ALL**) and by company type for the largest four company types (C, **P**, **E**, S), when illustrative. Most tables are labeled by the company type code, that is. ALL and C, P, E, S.

*Tables and figures are numbered according to the survey question data they present. The first section of the written survey, 'Part A, focuses on employment issues. Business, technical assistance, and capital demands are covered in the second section of the survey, Part B. If more than one figure or table is presented for a question, it is lettered a, b, and so on. For example, the second graph of data from the Part B survey question 12 is entitled *Figure B12b*, or the table of data from question 2 on Part A is entitled *Table 42*. If a table or figure is not directly related to a survey question, it is numbered separately, starting with Figure 1 and Table*

For the exact wording of any survey question, always refer to the actual copy of the written survey in Appendix A. In addition to survey response data, most tables also note the number of responses to the questions as well as the "answer rate": that is, the number of respondents that answered the question to the written survey. Some written survey respondents only answered the most general questions. The answer rate on particular questions is different from the overall response rates for the surveys as a whole. Table 1 summarizes the company types and the response rates to the mail surveys, telephone surveys, and ESC data searches.

Chapter II: Business Information and Prospects

Managers and owners of North Carolina recycling companies provided information on their legal structure (question B1), minority- or woman-ownership status (B23), subsidiary status (B2), age (B3), and growth prospects (B5, B10 - B14), as summarized below.

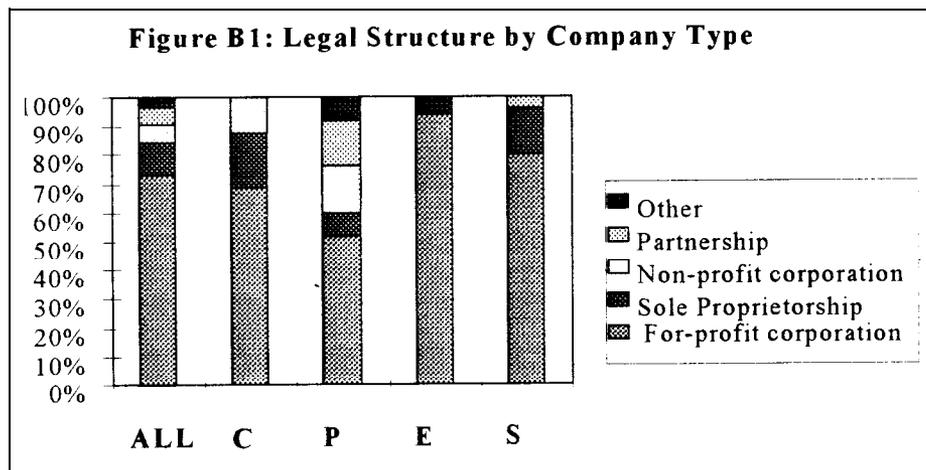
Legal Structure (B1)

Nearly three out of four responding recycling companies are for-profit corporations. Eleven percent are sole proprietorships. Non-profit organizations (non-profits) and partnerships each comprise six percent of the responses. Finally, four percent identify themselves as "other," some of whom are limited liability companies, a new form of business organization recently authorized by the state of North Carolina.

Table B1: Legal structure

Responses:	ALL	C	P	E	S
Sole Proprietorship	11%	19%	8%	0%	16%
Non-profit corporation	6%	13%	16%	0%	0%
Partnership	6%	0%	16%	0%	4%
For-profit corporation	73%	69%	52%	94%	80%
Other	4%	0%	8%	6%	0%
Responses	108	16	25	17	25
Answer Rate	92%	100%	93%	85%	96%

End-users, usually manufacturers, are primarily for-profit corporations. Scrap dealers are also either for-profit corporations, sole proprietorships, or partnerships. Non-profits, primarily vocational training centers, are active in processing and in some collections.



Independent or Subsidiary Status (B2)

Most NC recycling companies are independent, NC-based and -owned enterprises. Only one in five of the respondents reported that it is a branch, division, or subsidiary of another firm. Collectors, processors and scrap dealers closely mirror this ratio. End users, on the other hand, are equally divided between subsidiaries and independents with nine end-users each answering yes and no to question B2.

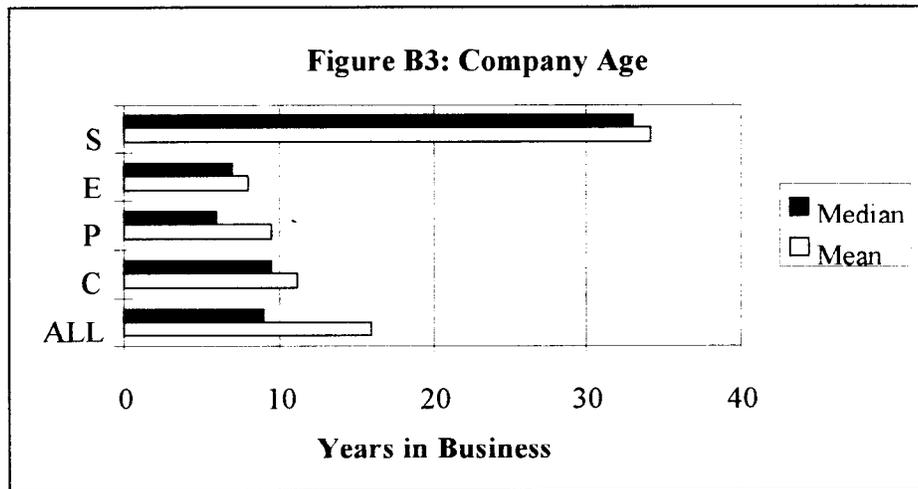
Responses:	ALL	C	P	E	S
Yes	20%	25%	15%	50%	16%
No	80%	75%	85%	50%	84%
Responses	110	16	27	18	25
Answer Rate	94%	100%	100%	90%	96%

Age of Company (B3)

The recycling industry has some older companies (scrap metal processors) and some younger start ups (multimaterial processors). The median age of 9 years. For the oldest sector, scrap dealers, the median age is 33 years. on the other end of the scale, the median age of

Responses:	ALL	C	P	E	S
2 years or less	11%	6%	19%	18%	0%
3 - 5 years	23%	31%	26%	18%	4%
6 - 10 years	21%	25%	22%	47%	13%
11 - 20 years	17%	31%	19%	12%	13%
more than 20 years	27%	6%	15%	6%	71%

processors and end-users is 6 and 7 years, respectively. More than one-third of all responding companies have started up in the last five years, i.e., since the passage of NC Senate Bill 111, the state's comprehensive solid waste act in 1989 and the ensuing growth in new recycling programs across the state.



Minority- or Woman-Owned Status (B23)

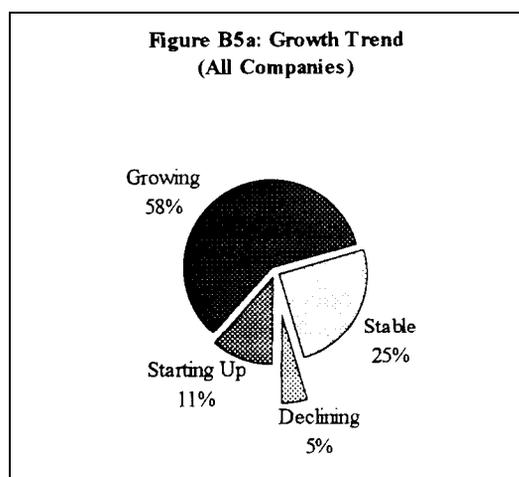
Few NC recycling companies are owned and controlled by either women or minorities. Only twelve of the companies responding to question B23 were not owned by white men.

	No. companies	Percent of companies
Minority-owned	3	3%
Woman-owned	9	9%
Neither	90	88%

Prior Three Years' Business Growth or Contraction (B5)

The results from question B5 indicate that *the recycling industry is healthy and growing*. A total of 59% of the companies characterize their business as in a growth stage, and 25% indicate that their business is stable. Furthermore, 11% of all recycling companies reported that they were just starting up, By contrast, only 5% of the companies indicated that their business is declining.

These healthy trends are even better for collectors, processors, and end-users. Three out of four collectors and end-users and more than three out of five processors characterize their business as growing. Furthermore, at least 85% or more of the companies in these sectors are either growing or stable. *This dynamism is most apparent for end-users. In this sector, not only did no company report that its business was declining but also the rate of start-ups among end-users, 13%, is approximately twice the amount for collectors and processors (6% and 7% respectively).*



(Figure 5b). Only the scrap dealers vary substantially from this pattern. Fifty percent of the scrap dealers report their business to be stable.

	ALL	C	P	E	S
Starting Up	11%	6%	7%	13%	4%
Growing	59%	75%	63%	75%	42%
Stable	25%	13%	22%	13%	50%
Declining	5%	6%	7%	0%	4%
Responses	106	16	27	16	24
Answer Rate	91%	100%	100%	80%	92%

Opportunities for Growth (B10)

'The main opportunities for recycling business growth noted by respondents on survey question B 10 can be divided into three general strategies: (1) increasing sales of existing products and services;

(2) generating sales of new products and services; and 3) improving the company internally. Different approaches were suggested for each of these strategies. Tables B 10(1 a) through B10(3) list comments from the written surveys to the question “what are the main opportunities for growth of the company’s recycling business?”

Increasing Sales of Existing Products and Services

Market Growth

Many comments anticipated growth in sales of existing products or services through a general economic expansion in their region and higher rates of recycling. Indeed, the boom in recycling markets in 1994 was attributed primarily to the upturn in the broader economy as well as to increased utilization of recyclable materials by industry

Education and Participation

Many respondents noted that participation in recycling programs needs to increase. These companies recognize that their business success is tied to widespread adoption of new methods of handling discarded materials. Many companies realized that continued broad educational programs are needed to foster the movement towards recycling and to help strengthen the market for their services and products.

New Customers for Existing Services and Products

In addition to expanding sales to existing customers and markets, many businesses are actively seeking new markets for their current services and products. Collectors and processors were marketing their services more broadly geographically and to a larger clientele. End-use manufacturers and sellers of secondary materials are looking for new customers for their products.

Government Mandates

Several companies noted that government mandates and regulations help to strengthen their markets. Both by encouraging

Table B10(a): Written Survey Comments: Market Growth Opportunities

- 1) Nationwide increases in post-consumer recycling
- 2) Growth within 100 mile radius of our plant
- 3) Locating other markets
- 4) Expansion of volume recycled
- 5) Processing for others
- 6) Continued use of disposable toner cartridges
- 7) Better collection of old corrugated containers and newspapers
- 8) Increased company and individual recycling
- 9) More business moving into Charlotte area
- 10) PET fiber - demand exceeds supply
- 11) Increase in the number of convenience centers in the county
- 12) Demand increases for recycled materials
- 13) Difficulty for small businesses to grow in rural areas
- 14) Population expansion
- 15) Putting local governments out of the business
- 16) Strong economy
- 17) Producing more recycled Kraft paper
- 18) Increased sales resulting from marketing plan implementation
- 19) Increased market share from more competitive pricing
- 20) Collecting more material for recycling that would otherwise go to landfill

Table B10(b): Written Survey Comments: Education and Participation

- 1) Acceptance of concept of recycling construction & demolition material rather than landfilling it
- 2) More awareness by original equipment manufacturers of expanded polystyrene recycling
- 3) Public awareness
- 4) Increases in population and participation rate of current population
- 5) Massive culture change effort will be required
- 6) Improved removal of recyclables from waste stream
- 7) Increased participation in recycling programs

recycling and reuse rather than disposal as well as recycled-content products, government can create an atmosphere conducive to recycling businesses. The view is that this governmental role is important in helping to change existing disposal and procurement practices.

**Table B10 (d): Written Survey Comments:
Government Mandates**

- 1) ISTEA (Mandates use of crumb rubber from tires in asphalt)
- 2) Governmental regulations
- 3) Having mandatory recycled-content for plastics molders
- 4) Regulatory changes causing increased demand
- 5) State interest in do-it-yourself oil recycling programs
- 6) Rising landfill and transportation costs

**Table B10 (c): Written Survey Comments:
New Customers for Existing Services and Products**

- 1) Industrial growth in eastern NC
- 2) New industries that generate paint waste
- 3) Waste haulers coming from other counties as their programs grow
- 4) Strong textile trade
- 5) More companies recycling
- 6) Wider distribution of brick nugget products
- 7) Municipal and commercial expansion
- 8) Market penetration
- 9) New businesses locating in our area
- 10) Increased industrial demand for pallets
- 11) New plants moving into area
- 12) Accepting waste from adjacent counties
- 13) Expanding high-profit processing programs
- 14) New industry entering county

Sales of New Products and Services

New Services

Recycling businesses are also planning to offer many new services. Diversification plans include handling new materials such as organics and reusables as well as scrap computers.

**Table B10 (f): Written Survey Comments:
New Services**

- 1) Expanding services and markets
- 2) Hospital plastic waste
- 3) Begin pick-up service of recycling material
- 4) New clients/programs such as rural curbside
- 5) Collection of *new* materials
- 6) Expand into other organic refuse such as top soil, mulches, agricultural spreads
- 7) To expand office paper and full office programs
- 8) Creating a drop-off/retail center
- 9) Increase categories of collected recycled materials
- 10) Industrial wood waste grinding
- 11) Recycling wood waste by hand
- 12) Selling recycled paper to existing recycling collection customers
- 13) Pick up and disposal of chemicals
- 14) Computer and telephone salvage

**Table B10 (e): Written Survey Comments:
New Recycled-Content Products**

- 1) Establishing other uses of end product
- 2) Reuse of plastics in products
- 3) pulverizing non-repairable wooden pallets into by-product
- 4) Development of finished manufacturing products
- 5) Becoming end-user
- 6) Recycling non-hazardous industrial by-products into brick and other media
- 7) Technology development to accept more diverse feedstocks
- 8) Sell reusable consumer goods that we salvage from our collection service
- 9) More uses for tire shreds
- 10) Reclaiming goods as is and reselling
- 11) Replacement of virgin fiber with recycled
- 12) New manufacturing of metal products
- 13) Producing more grades with increasing content of recycled fiber
- 14) producing post-consumer recycled market Pulp
- 15) produce highway crash barriers
- 16) Manufacturing of useful items from post-consumer recyclables
- 17) Dismantling pallets to obtain recyclable lumber
- 18) Establishment of cellulose processing plant to handle newspapers, magazines, and telephone books

New Recycled-Content Products

More than 18 comments on survey forms addressed the development of new recycled-content products. Some end-users are seeking to enhance their product line while some processors and other companies are seeking new strategies for adding value to the materials they process

Internal Company Improvement and Expansion

Several companies noted that business improvement could also be achieved through more efficient operations, better equipment and facilities, and expanded capacity.

Table B10(g): Written Survey Comments: Company Improvements and Expansion	
1)	New building to keep up with regional growth
2)	Increase productivity
3)	Lower overhead
4)	Expand staff/space devoted to recycling
5)	Reduce contaminants in waste
6)	Buy building
7)	Company purchased new equipment to increase production
8)	Expand capacity to receive more material

Main Obstacles to Growth (B11)

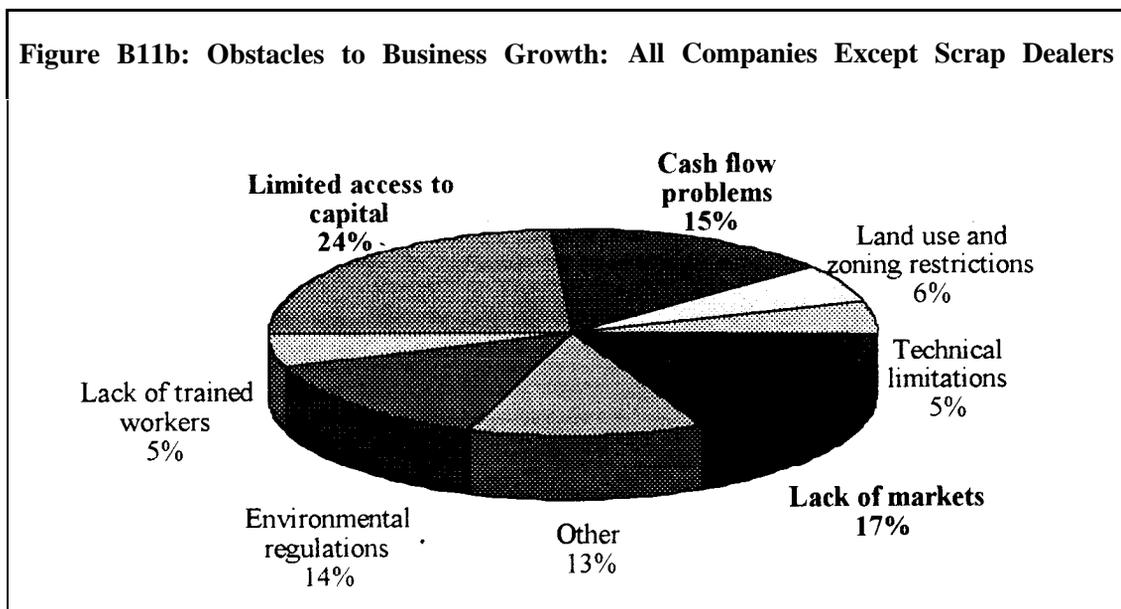
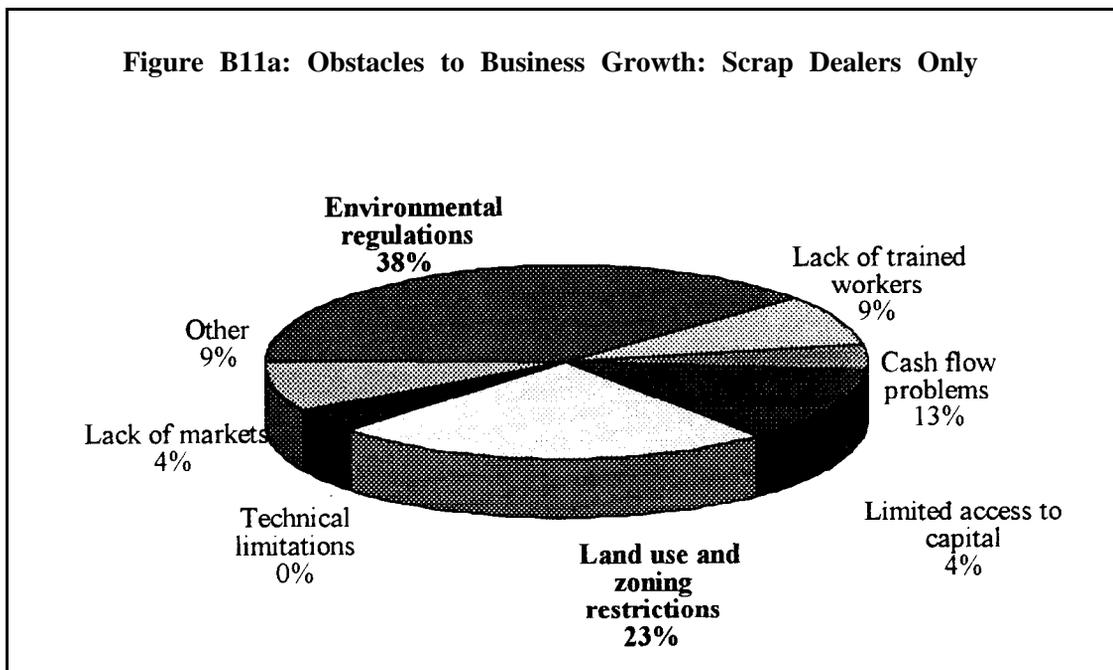
Companies noted the following several obstacles to their growth plans in question B 11.

Table B11a: Main Obstacles to Business Growth					
Responses:	ALL	C	P	E	S
Limited access to capital	38%	46%	52%	53%	9%
Technical limitations	9%	23%	17%	0%	0%
Land use and zoning restrictions	15%	8%	26%	0%	32%
Cash flow problems	29%	46%	30%	13%	27%
Lack of markets	27%	23%	35%	27%	9%
Environmental Regulations	40%	38%	17%	20%	77%
Lack of trained workers	13%	0%	17%	13%	18%
Other	23%	23%	13%	40%	14%
Responses	93	13	23	15	22
Answer Rate	79%	81%	85%	75%	85%

Mentioned by 40% of the companies, environmental regulations head the industry-wide obstacles list. However, this response is from *three-quarters of the scrap dealers who listed environmental regulations as a main obstacle to growth*. Their particular concern is the liability associated with some of the materials they handle, such as batteries, when they are classified as a hazardous waste or carry Superfund liability. Another factor mentioned substantially more often by scrap dealers as an obstacle to growth is land use and zoning restrictions, which were mentioned by nearly one-third of the scrap dealers

Limited access to capital is the primary barrier for all companies other than scrap metal dealers. Cash flow problems are also a major barrier for collectors, processors, and end-users, with lack of markets their second most significant concern. Environmental problems are mentioned by 28% of the non-scrap companies, with technical limitations, lack of trained workers, and land use and zoning restrictions each mentioned about ten percent of the time Other reasons are listed in one-quarter of the cases. Less important but frequently mentioned obstacles include technical limitations and lack of trained workers. About 23% of the collectors and 17% of the processors listed technical limitations, and 17% of the processors and 13% of the end-users listed

lack of trained workers as an obstacle to company growth. The obstacles frequently cited by scrap dealers, environmental regulations and land use and zoning restrictions, were also cited by the other sectors. Land use and zoning restrictions were mentioned by 26% of the processors but only by 8% of the collectors and none of the end-users. *Interestingly, responding end-users did not perceive technical limitations as an obstacle to growth.*

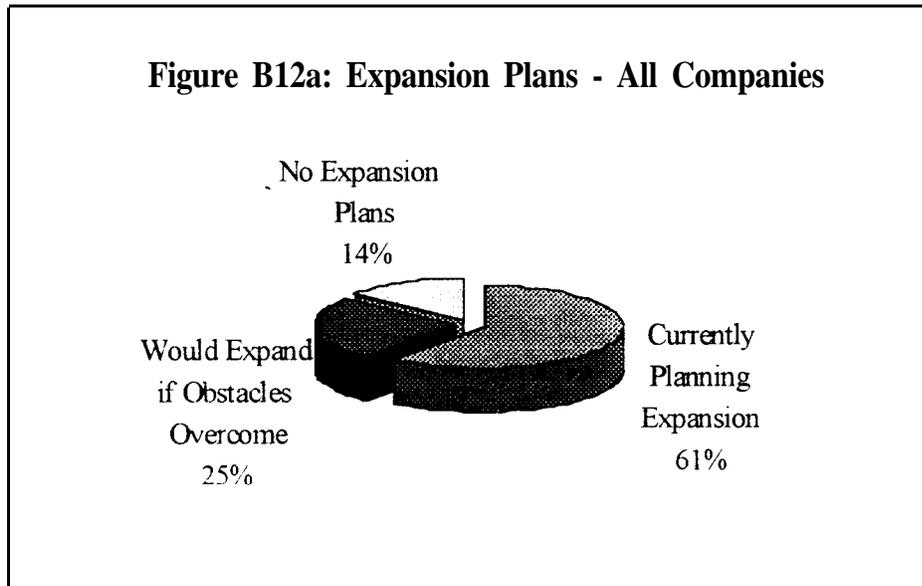


Comments on other obstacles to business growth are noted in Table B11b

Table B11b: Written Survey Comments: Other Obstacles to Business Growth	
◇ More customers are recycling internally instead of contracting out services	◇ Low demand for post-consumer recyclables and low prices
◇ Government mandates have forced local governments to sign contracts with waste haulers	◇ Need local government to implement incentives for recycling by public
◇ Growth of management staff has not kept up with company growth	◇ Not enough scrap-producing businesses in our area
◇ Lack of concern about land filling and illegal dumping of C&D debris	◇ Potential customers not educated on aspects of recycling non-traditional materials
◇ High cost of insurance, taxes	◇ Relatively low landfill tip fees
◇ Insufficient raw material supply	◇ Significant competition
◇ Availability of quality scrap copper	◇ Textile imports
◇ Lack of markets for wood waste	◇ Upgrading equipment
◇ Lack of supply	◇ Very high transportation costs
◇ Cannot receive permits	◇ Banks do not understand scrap business
◇ Lack of supply of good material	◇ Very thin operating margin

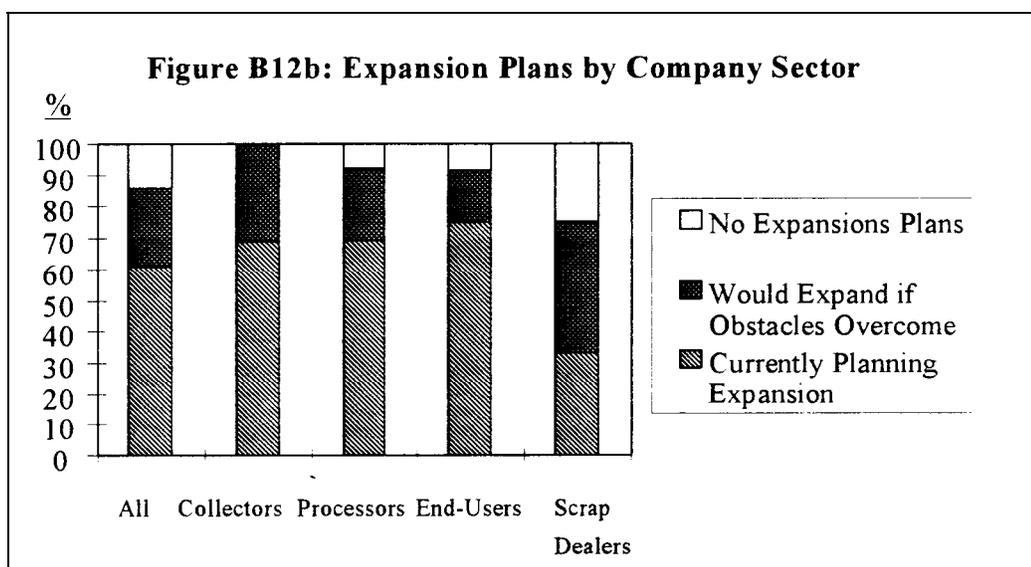
Business Expansion Plans (B12 and B13)

Most recycling companies are planning to continue the expansion of the last few years. Indeed, 86% of survey respondents were currently planning expansion or would expand if the obstacles noted above were overcome. The companies with no expansion plans tended to be older, stable firms, primarily scrap metal processors. Currently two out of three collectors and processors and three out of four end-users are planning to expand their business. In contrast, only 29% of the scrap dealers are planning to expand



	ALL	C	P	E	S
Currently Planning Expansion	57%	69%	67%	75%	31%
Not Planning Expansion	43%	31%	33%	25%	69%
Number of respondents	115	16	27	16	26

	ALL	C	P	E	S
Would Expand if Obstacles Overcome	63%	100%	75%	67%	63%
Still Would Not Expand	37%	0%	25%	33%	38%
Number of respondents	42	5	8	4	16



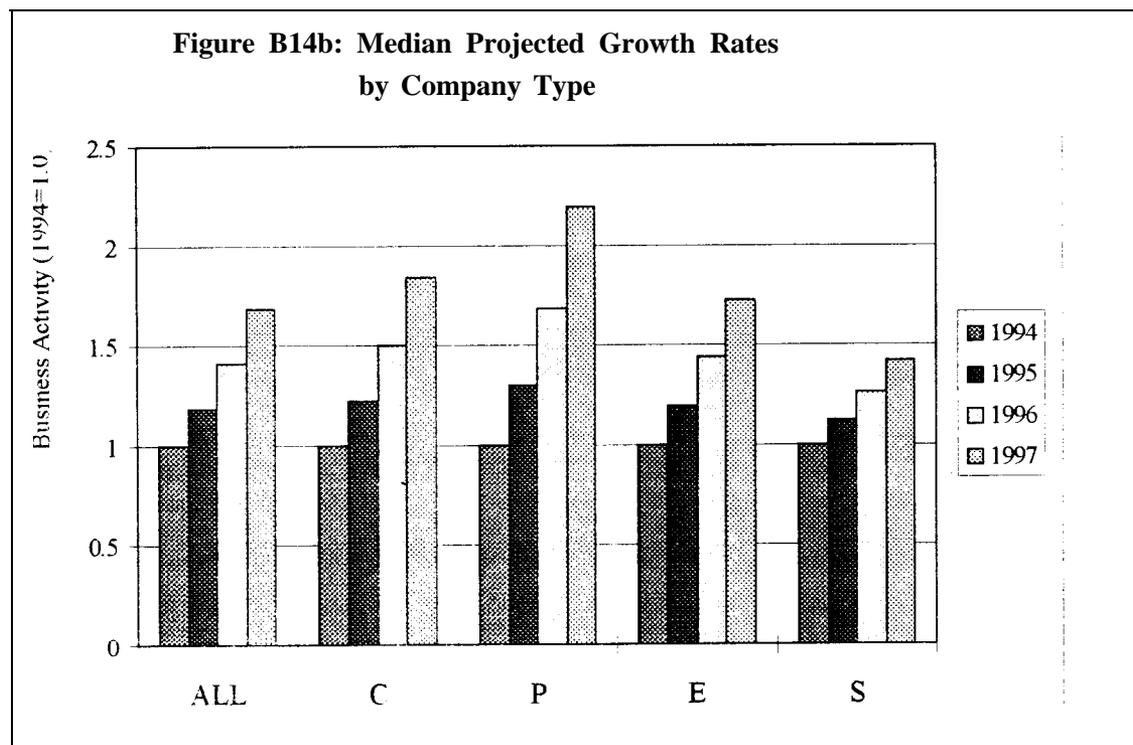
Expected Annual Growth Rate (B14)

An optimistic outlook is also reflected in the expectation for growth by the companies. Companies planning to expand expect to experience an average annual growth rate of 49%. The median reported annual growth rate is 20%. This substantial difference between mean and median rate results from the expectation by several companies to double in size or more on an annual basis.

The mean response for collectors was 47%, and the sector’s median was 23%. For processors, the results were 42% and 30%, and for end-users, 39% and 20%. Only for the most mature sector, scrap dealers, were the mean and median measurements similar at 14% and 13%.

For this question concerning expected growth rates, the respondents were asked to indicate what “annual percentage rate is your company planning for its recycling business to grow over the next three years.” Given this question, the reported growth rates seem quite optimistic, Even if the reported percentage rate reflects the expected growth rate for the next three years as a whole, the results still reflect a strong upbeat projection by company owners and managers.

	ALL	C	P	E	S
Mean	49%	47%	42%	39%	14%
Median	20%	23%	30%	20%	13%
Standard Deviation	0.730	0.567	0.358	0.444	0.119
Responses	78	16	22	13	13
Answer Rate	92%	100%	96%	93%	81%



Chapter III: Financial Profiles and Capital Demands

Annual Gross Revenues (B4)

The average reported annual gross revenues for all companies is about \$1 million. There was little variation from this average among the major company types except that the older, more established scrap metal processing sector reported revenues at about 50% over the industry-wide average.

Interestingly, end-use manufacturers included both large companies and relatively smaller enterprises that utilize secondary materials feedstock such that their revenue average was not significantly above the industry average.

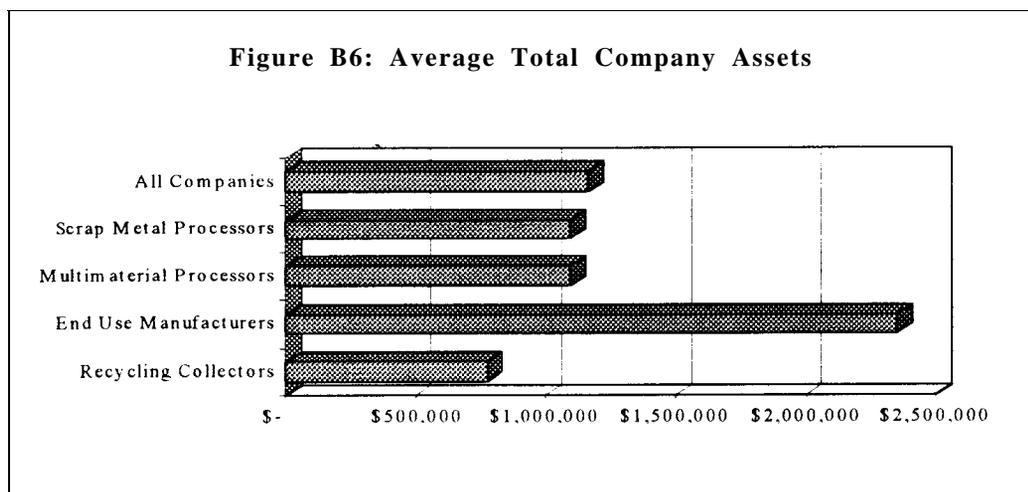
Company Type	Average Annual Gross Revenues
Recycling Collectors	\$1,002,679
End-Use manufacturers	\$1,194,643
Multimaterial Processors	\$1,128,804
Scrap Metal Processors	\$1,535,795
All Companies	\$1,116,454

Total Company Assets (B6)

Total company assets showed greater variability, with end-use manufacturers reporting total average assets of over \$2 million per company, i.e., twice the industry average. Recycling collection firms were on the low end of reported company assets, with more of their financial resources going into

employment rather than fixed assets. Finally, the mid-range in reported assets of about \$1 million reported by both scrap metal and multimaterial processors reflects their investments in processing equipment and facilities.

Company Type	Average Total Assets
Recycling Collectors	\$ 775,000
End-Use Manufacturers	\$ 2,351,786
Multimaterial Processors	\$ 1,095,652
Scrap Metal Processors	\$ 1,094,048
All Companies	\$ 1,166,576



Capital and Labor Intensity of Recycling Company Sectors

From the written survey responses, 77 companies were selected for further analysis on the capital and labor intensity of their activities. These companies were chosen because they provided the most complete information on their recycling jobs and financial data. A few outlying and improbable

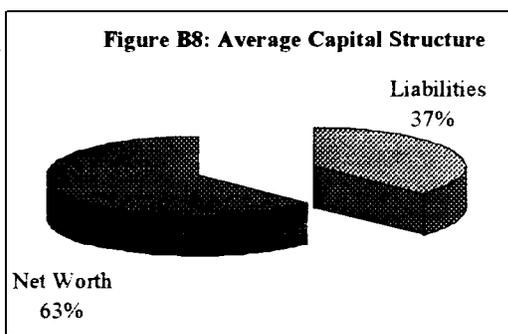
responses were eliminated. For these selected responses, the figures for average gross revenues, total assets, and recycling jobs closely match the averages for the entire database sample. The ratio of average annual gross revenues divided by average total assets was calculated to determine the extent of capital-intensive company operations. *Not surprisingly, collectors were the least capital-intensive at a ratio of 2.5, while end-use manufacturers were the most capital-intensive with a ratio of 0.9.* Processors were in the mid-range and near the industry average.

The ratio of recycling revenues per recycling jobs was also calculated. *Scrap metal processors stand out as a sector in this comparison: they generate almost twice the sales revenue per employee than the industry as a whole.* Other sectors approximated the industry average. Interestingly, the sample of end-use manufacturers was the least productive on a per-employee basis. Responding end-users had been in the recycling business the least time of any company type, and many may still be in start-up or growth phases without mature sales revenues or economies of scale. The overall ratios for all companies in the sample may serve as a guide to compare the financial statements of recycling companies of a similar size.

Company Type	Sample Size	Average Annual Gross Revenues	Average Total Assets	Average Jobs	Rev/Assets	Rev/Jobs
Recycling Collectors	9	\$ 708,333	\$ 280,556	11.6	2.5	\$ 61,000
End-Use Manufacturers	9	\$1,840,278	\$ 2,047,222	36.2	0.9	\$ 50,900
Multimaterial Processors	16	\$1,396,324	\$ 1,052,941	19.3	1.3	\$ 72,500
Scrap Metal Processors	19	\$1,643,421	\$1,175,000	11.7	1.4	\$ 140,700
All Companies	77	\$1,294,271	\$ 995,833	15.6	1.3	\$ 83,000

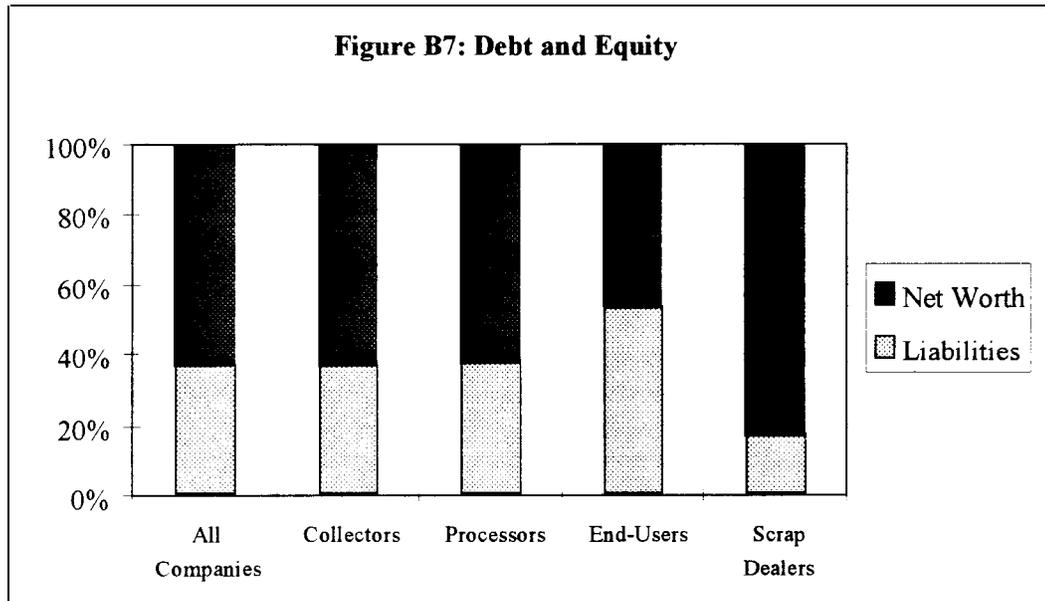
Capital Structure (B7 and B8)

Only 36 companies, or 39% of those returning the mail survey, were willing to reveal their capital structure. *Thus, the average net worth share of 63% of total assets may be significantly higher than the actual share for all recycling companies.*



Nevertheless, the results are encouraging: they indicate an industry with significant financial resources and fixed assets. Again, with net worth or equity at 83%, the scrap processors are the most financially secure. Collectors and multimaterial processors closely reflect the industry-wide average. End-users are the only sector with a majority of debt or liabilities which, at 54% of total assets, reflects their debt financing of fixed assets for a more capital-intensive business activity.

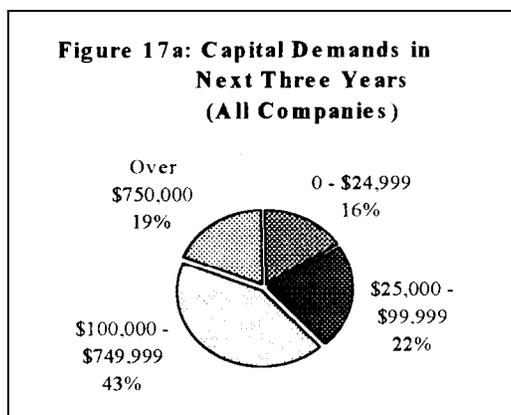
Table B7: Total Liabilities and Net Worth as Percentage of Total Assets					
Responses:	ALL	C	P	E	S
Liabilities (Debt)	37%	37%	40%	54%	17%
Net Worth (Equity)	63%	63%	60%	46%	83%
Responses	46	6	11	5	11
Answer Rate	39%	38%	41%	25%	42%



Upcoming Capital Demands (B17)

Responding recycling companies estimated a need for new financing of about \$356,000 on average over the next three years. This amount is roughly one-third of the current average total assets of the companies.

The most common financing need is in hundreds of thousands of dollars, with more than 40% anticipating a demand for between \$100,000 and \$750,000



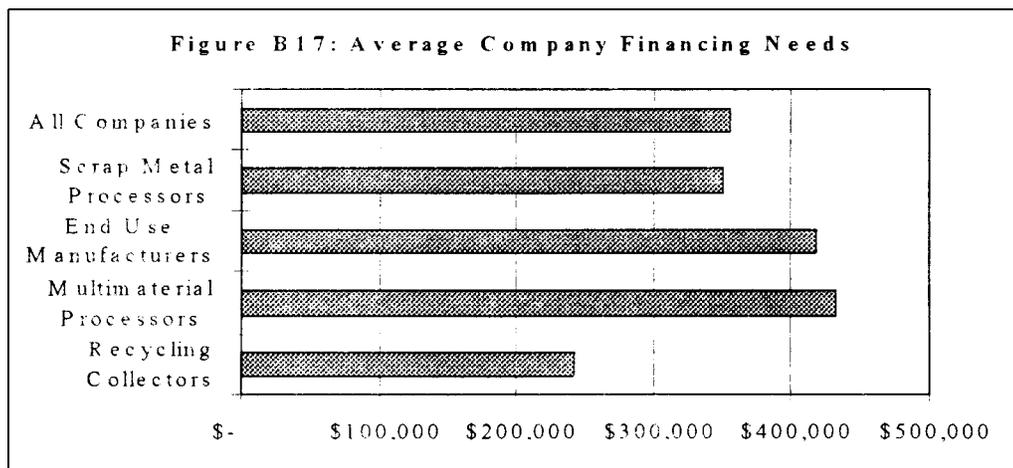
Some notable variations to this industry-wide characterization among the four main sectors bear examination. On the whole, the financing needs of scrap dealers most closely resemble the overall industry. On the other hand, no collectors indicate needs for more than \$750,000 for expansion.

Recycling Collectors	\$242,500
Multimaterial Processors	\$431,700
End-Use Manufacturers	\$417,900
Scrap Metal Processors	\$351,000
All Companies	\$356,100

Slightly over 50% of the collectors anticipate their needs to be between \$100,000 and \$749,999, and 27% estimate their needs to be less than \$25,000. Multimaterial processors and end-users estimate their need for capital to be higher than the industry average. (Capital demand averages were calculated by the midpoint for all responses with ranges; for example, \$425,000 was used for the “\$100,000 to \$750,000” response. The amount of \$1,000,000 was used in the averages to represent the “Over \$750,000” response.)

Aggregate capital demands over the next three years for the 474 existing NC recycling firms surveyed is estimated at about \$170 million. This amount assumes that the capital demands of the responding firms are representative of the industry as a whole. Thus, an average capital demand of \$356,000 per firm multiplied by the 474 companies yields the aggregate estimate of \$170 million. It should be noted that this estimate does not include the capital needs of new recycling companies starting up in the state or of out-of-state companies opening facilities in NC.

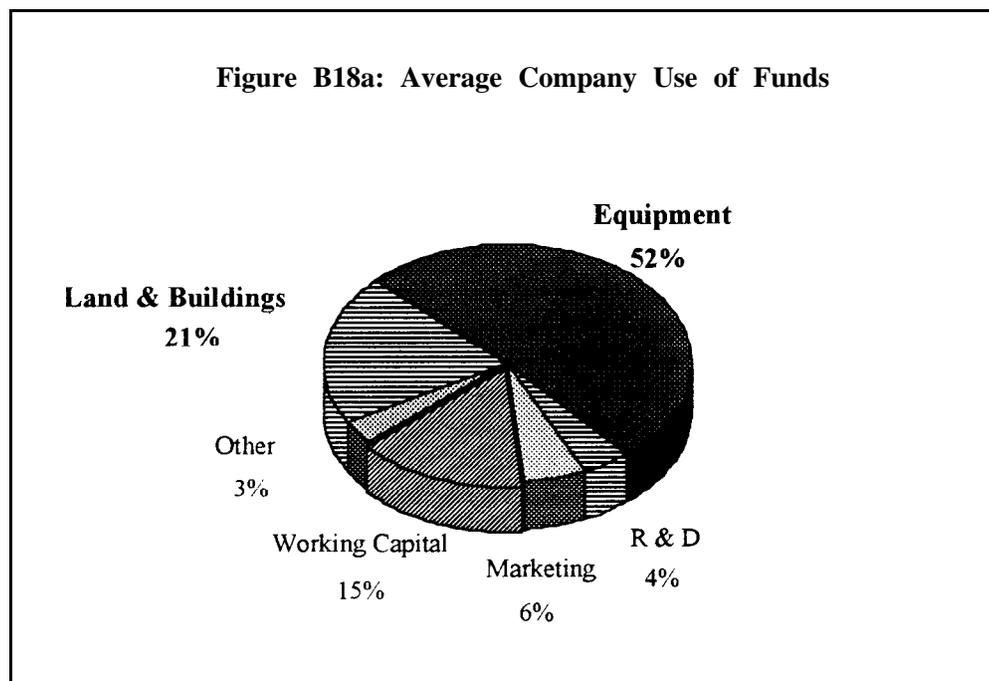
Responses:	ALL	C	P	E	S
0 - \$24,999	16%	27%	5%	0%	21%
\$25,000 - \$99,999	22%	20%	14%	33%	21%
\$100,000 - \$749,999	43%	53%	57%	33%	36%
Over \$750,000	19%	0%	24%	33%	21%
Responses	79	15	21	12	14
Answer Rate	93%	94%	91%	86%	88%



Projected Uses of Funds (B18)

Most survey respondents anticipate using additional financing to purchase fixed assets. *Nearly three-quarters of the funds are to be used to finance the acquisition of equipment, land, or buildings.* Less secured uses of funds, i.e., working capital, marketing, and research and development, are anticipated to claim only one-quarter of funds.

This use-of-funds profile is quite positive from a lender’s or financier’s perspective since fixed assets should have some collateral value in the event that a company defaults on a loan or financial obligation. One drawback to financing recycling equipment or facilities is that they may be perceived to be specialized and difficult to resell if liquidation is required



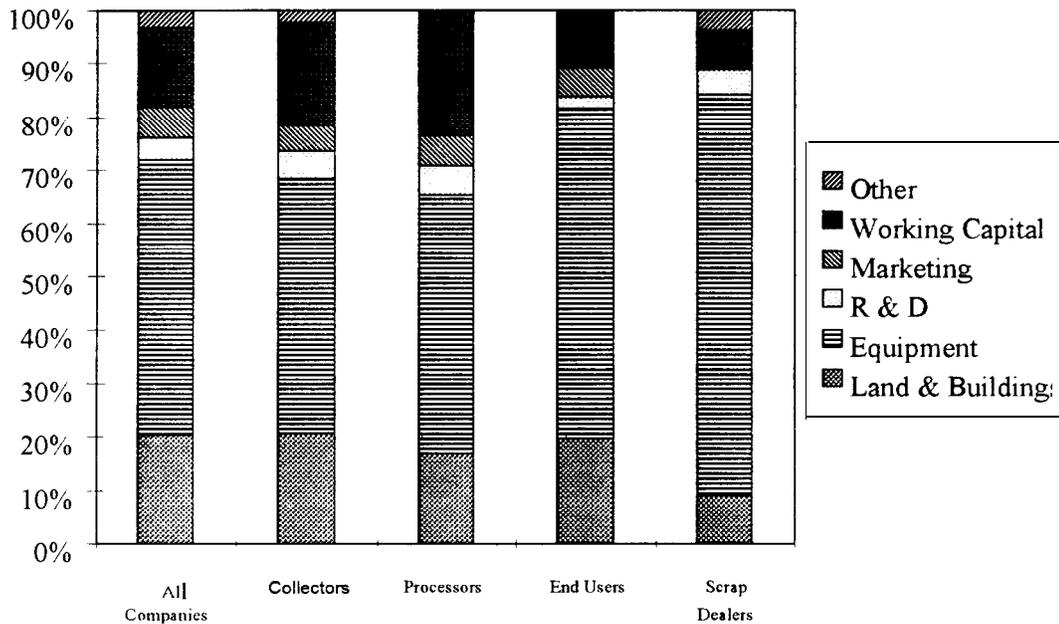
Respondents were asked to record both the category of use for the funds and the percentage of funds allocated to each use. The average company fund allocation for each use was calculated by multiplying the percentage response for each use by the percentage entered by the respondent for that use. The average company allocations sum to 100%. Table B18 presents the results for the industry and the average allocations for the four main sectors.

End-use manufacturers and scrap processors plan to allocate more than 80% of funds to fixed assets. Collectors and processors also

	A L L	C	P	E	S
Land & Buildings	21%	21%	17%	20%	9%
Equipment	52%	48%	48%	62%	75%
R & D	4%	5%	5%	3%	5%
Marketing	6%	5%	6%	5%	0%
Working Capital	15%	19%	24%	11%	7%
Other	3%	2%	0%	0%	4%
Total	100%	100%	100%	100%	100%

plan to use the majority of their cash for facilities and equipment, but they have a greater need for working capital and hope to use about one-fifth of funds to provide these cash reserves. The stronger financial position of scrap processors in terms of net worth and assets may explain the reason so few of the firms noted a need for working capital.

Figure B18b: Use of Funds by Company Type



Sources of Financing (B19-1)

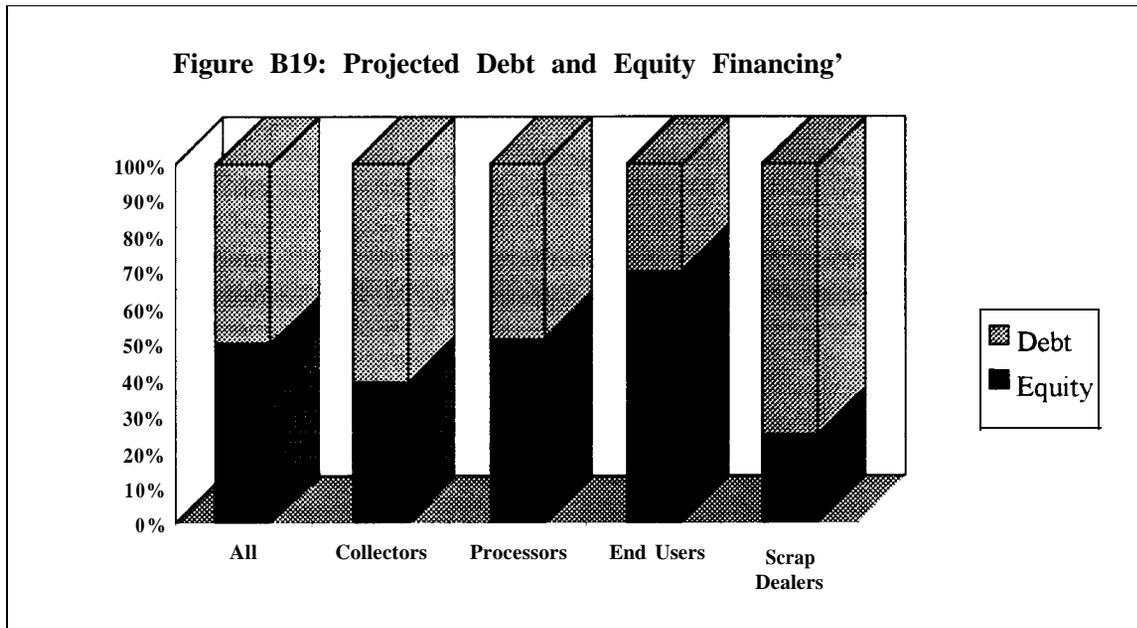
On average, recycling companies are planning to use about 50% equity and 50% debt in financing the uses of funds detailed above. Again, the result points to a healthy business sector overall, with reporting companies planning to finance about one-half their long-term capital needs through internal or investor funds. The survey form explicitly defined equity financing to include “down payments, shareholder or owner investment, capital grants and contributions” and debt financing to include “repayable loans, mortgages, or bonds.”

	No. responses	% Response	Average Allocation	Median Allocation	Average Company Response
Equity	63	97%	51%	51%	50%
Debt	57	88%	57%	50%	50%

Of the four major company sectors, processors best matched the 50/50 average, while collectors at 60% anticipated using slightly more debt. End-user companies at 70% anticipated equity financing as their primary source of funds. Scrap dealers were the mirror images of end-users in their financing plans by projecting to use 75% debt.

In comparison to their current capital structure, as detailed in Table B7, companies, on average, as well as the collector and processor categories, were seeking to arrange the debt share of their future financing to be 20% higher than the current debt share of their total assets. Scrap dealers again were off the average in wanting to increase the debt share by about 60%. End-users indicated the opposite plans; they want to shift towards 15% more equity financing.

	A	c	P	E	S
Equity	50%	39%	51%	70%	25%
Debt	50%	61%	49%	30%	75%
	100%	100%	100%	100%	100%



Loan Repayment (B19-2)

On average, responding companies reported that they could afford loan payments of about \$5,200 per month to service the debt projected above.. Processors and end-users on average could afford about twice the average, collectors about the average, and scrap dealers about one-half the average. The average and median results are reported on Table B19c.

	ALL	C	P	E	S
Average monthly payment	\$ 5,257	\$ 4,735	\$ 10,500	\$ 11,500	\$ 2,000
Median monthly payment	\$2,000	\$ 2,000	\$ 1,500	\$ 2,500	\$ 2,000
Responses	65	11	17	11	11
Answer Rate	76%	69%	74%	79%	69%

To assess reasonable loan repayments of respondents in terms of servicing anticipated debt amounts, additional calculations were made in Table B19d. The table includes only data from the 26 companies that completed written survey questions B17 and B19 thoroughly and were seeking debt financing. To calculate the average new debt, the average capital demand for each respondent was multiplied by the percentage of debt financing anticipated. Then, the reported average affordable monthly payments were divided into the average debt to determine the number of payments needed to retire the debt principal only, not including interest. The average for all companies was 51 monthly payments, or more than four years. Scrap processors were again outliers; they require 115 months to pay off debt principal only.

	No. Complete Responses (B17 & B19)	Average Capital Demand (B17)	% Debt Financing (B19)	Average Debt	Average Affordable Monthly Payments (B19)	No. Monthly Payments Needed To Retire Debt, Principal Only
Recycling Collectors	5	\$352,500	58%	\$ 204,450	\$4,735	43
Multimaterial Processors	4	\$587,500	66%	\$ 389,219	\$8,075	48
Scrap Metal Processors	7	\$250,000	86%	\$ 214,286	\$1,857	115
All Companies	26	\$372,115	68%	\$ 254,040	\$4,999	51

(Includes data only from 26 companies that completed written survey questions B17 and B19 thoroughly and were seeking debt financing.)

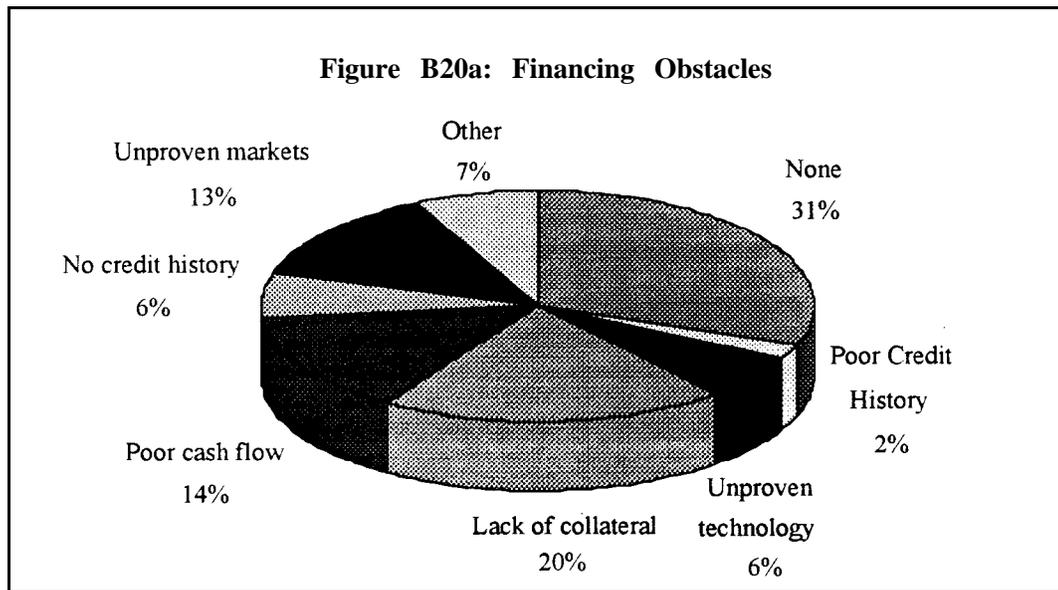
In order to repay the average anticipated debt of \$254,000 over five years at a 10-percent interest rate, a company would need to make monthly payments of about \$5,400. Thus, the reported affordable monthly payment of \$5,000 is nearly the right amount required to service the debt over five years. Some companies may have anticipated a loan term longer than five years, especially for land, buildings, and heavy equipment. Only the scrap processors were unrealistic in projecting very low monthly payments for high amounts of debt. With this sector removed from the responses, the remaining responses from the companies are even more reasonable.

‘Equipment’ was by far the most frequent response to the question “What assets may be used to secure the loan.” As with the projected uses of funds, land and buildings were also frequently mentioned. These fixed assets could provide good collateral for loans, especially if a significant share of equity is paid towards the assets. If the loan amount is only a fraction of the assets purchased, the lender can be better assured that in a foreclosure, its outstanding debt could be recaptured through a sale of the loan collateral. Of course, sale of secured assets would be a worst-case scenario. Lenders will first consider the company’s operating track record, business plan, market prospects, and management for reassurance on loan repayment through continued viable company operations.

	No. Responses
Equipment	30
Land	8
Buildings	6
Inventory	6
All company assets	4
None/not sure	4
Accounts receivable	3
Personal guarantees	2

Financing Obstacles (B20)

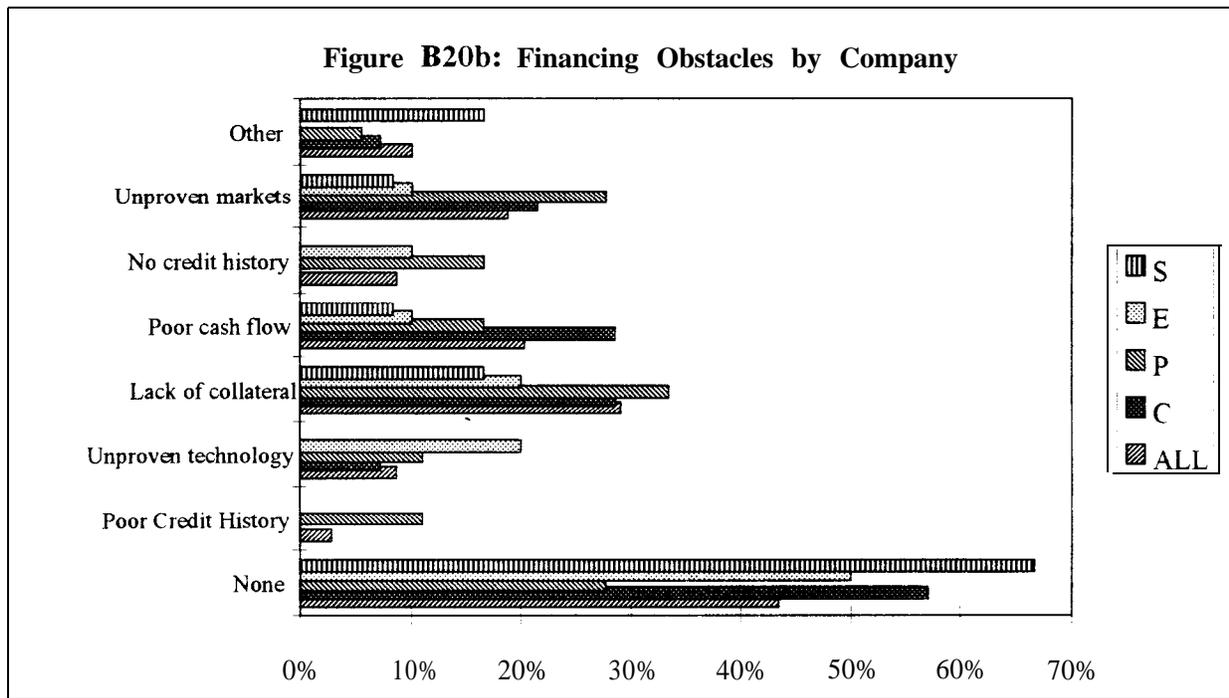
The most frequently chosen response to the question of chief obstacles to financing company expansion was “None - The Company will easily be able to get a loan.” Of those noting obstacles, lack of collateral, poor cash flow, and unproven markets were mentioned most frequently.



Given that purchase of fixed assets was the expected use of a majority of funds and that fixed assets are the collateral to secure loans, it is curious that lack of collateral was a primary response. This response may reflect the unwillingness of bankers and financiers to accept recycling equipment and facilities as sufficient collateral because they are perceived to be specialized items and difficult to resell. The response could simply also reflect a lack of borrowing experience on the part of responding companies.

Of the company types, the newer, multimaterial processors indicated the most obstacles to financing while the older scrap processors indicated the least.

Table B20: Obstacles to Financing Company Expansion					
	ALL	C	P	E	S
None	43%	57%	28%	50%	67%
Poor Credit History	3%	0%	11%	0%	0%
Unproven technology	9%	7%	11%	20%	0%
Lack of collateral	29%	29%	33%	20%	17%
Poor cash flow	20%	29%	17%	10%	8%
No credit history	9%	0%	17%	10%	0%
Unproven markets	19%	21%	28%	10%	8%
Other	10%	7%	6%	0%	17%
Responses	69	14	18	10	12
Answer Rate	59%	88%	67%	50%	46%



Loan and Equity Denials (B21 and B22)

In the last three years, 13% of responding companies report having been denied loan requests by lenders, and 13% report having been unsuccessful in raising equity from potential investors. Of the company types, multimaterial processors have had the most financing difficulties. Only end-users have had more difficulty procuring loans rather than equity.

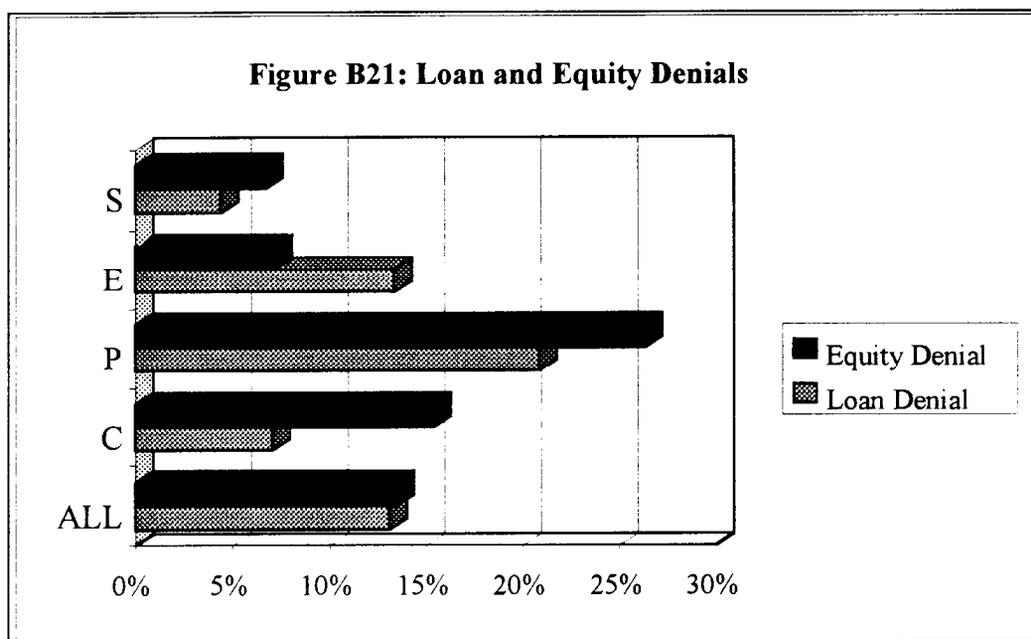


Table B21b: Reasons for Loan Denial Per Written Survey Comments	
◇	Bank rejection because of no company track record
◇	Banks: not enough equity
◇	Banks turned down company because of age of company (3 years old) and lack of collateral
◇	Commercial bank would not issue bond because amount was too small
◇	Commercial banks rejected because of poor credit history
◇	Bank did not like building company was buying
◇	Leasing company would not do lease since company in business only 6 months
◇	Poor cash flow; inability to receive environmental permit for retaining supply inventory

Table B21a: Has the Company Been Denied Loans?					
	ALL	C	P	E	S
Yes	13%	7%	21%	13%	4%
No	87%	93%	79%	87%	96%
Responses	99	16	24	15	23
Answer Rate	85%	100%	89%	75%	88%

Table B22a: Has the Company Been Unsuccessful in Raising Equity Investment?					
	ALL	C	P	E	S
Yes	13%	15%	26%	7%	7%
No	87%	77%	58%	79%	87%
Responses	82	13	19	14	15
Answer Rate	70%	81%	70%	70%	58%

Table B22b: Reasons for Equity Denial Per Written Survey Comments	
◇	Groups indicate funds available and approve project, then stop and wait
◇	Have raised some from private investors, maybe could have raised more.
◇	Individuals would not because of debt load, lack of cash flow, and question concerning growth vs. expenses
◇	Lack of private investors' expertise in market
◇	Too much red tape
◇	Venture capital firm said short-run growth too limited, proposal too risky, unfamiliar with market, rate of return unattractive. In other words, did not meet long-term objectives of venture capital firm

In addition to the comments on questions 21 and 22, the largest single topic for the general comments at the end of the survey on question 26, was also financing. These comments are listed below

Table B26a: General Written Survey Comments on Financing Issues	
1)	Additional financing needs are dependent on new contracts.
2)	Already invested \$300 K to add polyesters, has no additional need.
3)	Company is finalizing equipment loan and beginning to feel impact of new venture.
4)	Finance need is for working capital.
5)	Financial incentives to encourage recycling investment and after market end-use.
6)	Financiers do not understand emerging environmental technologies; need more knowledgeable and flexible financiers; potential clients need financial incentives to use new technology.
7)	Financing. "Needs short-term capital." working capital
8)	Financing. Is considering opening third location.
9)	Financing Wants to be reimbursed for the waste stream diversion service they are providing
10)	Get funds from internal sources (a Fortune 300 company).
11)	High liabilities due to recent acquisition.
12)	Is becoming more difficult to get loans.
13)	Privately held company may seek venture capital
14)	Recycling- related investment tax credit.
15)	Tight capital markets have slowed down our expansion somewhat.
16)	Unable to get secured bond or letter of credit without getting the needed permits.
17)	Wants to speak to someone regarding available grants to fund expansion.
18)	Will this report open avenues of obtainable moneys and grants?
19)	Without permits. equipment is sitting idle and banks won't lend anymore.

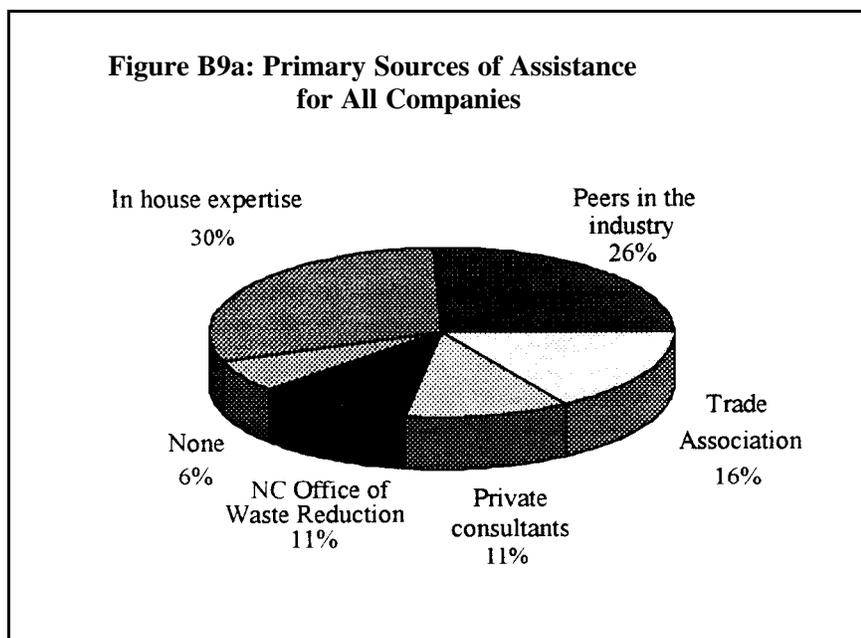
Chapter IV: Technical and Business Assistance

Current sources of technical and business assistance and future needs for such assistance reported by responding companies are profiled below.

Primary Sources of Technical and Business Assistance (B9)

For the industry as a whole, in-house expertise, peers in the industry, and trade associations were named by recycling companies as the sources most frequently relied upon for business and technical assistance. These sources were mentioned by 50%, 43% and 26% of all respondents, respectively. Two other sources were mentioned more than ten percent of the time. Private consultants were mentioned by 19% of the respondents, and the North Carolina Office of Waste Reduction (OWR) was mentioned by 18% of the respondents. Ten percent of the respondents mentioned that they did not rely on any source for business or technical assistance

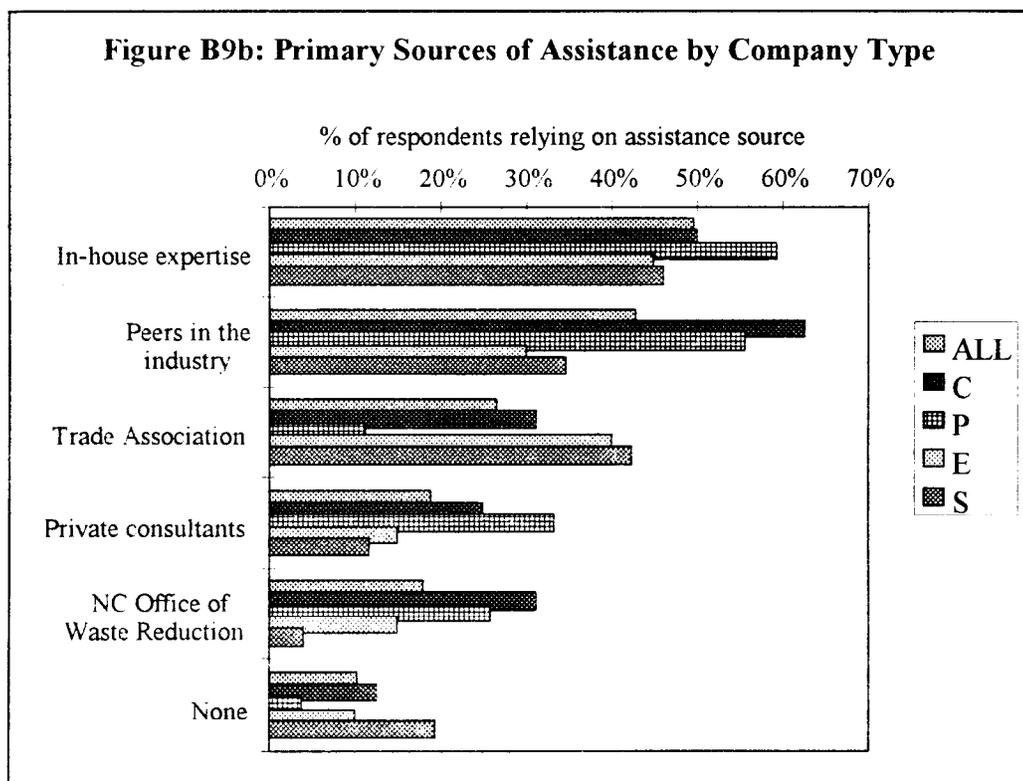
As with the industry as a whole, collectors, end-users, and scrap dealers rely mainly on in-house expertise, peers in the industry, and trade associations for business and technical assistance. Only the responses of processors varied from this pattern. Although one out of two processors indicated reliance



on in-house expertise and industry peers, only 11% indicated that they relied on assistance from their trade association. Instead, one-third of the processors stated their reliance on private consultants, and one-quarter indicated that they relied on the OWR. The newer, technical challenges of multimaterial processing are revealed when only 4% of the multimaterial processors indicated no use for assistance while nearly 20% of the scrap metal processors indicated no such use.

Other than the Office of Waste Reduction, governmental agencies or institutions such as the Small Business Technology and Development Center, the NC Department of Commerce, community colleges, or universities are rarely relied upon by recycling companies for assistance. The only variations from this trend were that 19% of collectors mentioned receiving assistance from local universities and 13% from community colleges. Also, 10% of end-use manufacturers mentioned receiving assistance from the NCSU Industrial Extension Service. The data are summarized below in Table B9. (Figure B9a normalizes all company responses to a 100-percent basis to reflect the relative importance of different sources to the respondents.)

	ALL	C	P	E	S
In-house expertise	50%	50%	59%	45%	46%
Peers in the industry	43%	63%	56%	30%	35%
Trade Association	26%	31%	11%	40%	42%
Private consultants	19%	25%	33%	15%	12%
NC Office of Waste Reduction	18%	31%	26%	15%	4%
None	10%	13%	4%	10%	19%
Other	8%	31%	0%	0%	0%
Community college	6%	13%	7%	5%	8%
Local university	5%	19%	4%	5%	0%
Local chamber of commerce	4%	0%	7%	0%	4%
NCSU Industrial Extension Service	3%	6%	4%	10%	0%
Nonprofit assistance	3%	6%	4%	0%	0%
Small Business Center	3%	6%	4%	0%	4%
NC Department of Commerce	2%	6%	4%	0%	0%
Small Business Technology and Development Center	2%	6%	0%	0%	0%
Responses	117	16	27	20	26
Answer Rate	100%	100%	100%	100%	100%



Business or Technical Assistance Needed for Expansion (B15)

Nearly two out of three businesses indicate that they do not need business or technical assistance to expand their business. For collectors, end-users, and scrap dealers this percentage is higher. Only processors counter this trend, with 52% of the them indicating a need for business or technical assistance in order to expand their business.

	ALL	C	P	E	S
Yes	37%	36%	52%	29%	24%
No	63%	64%	48%	71%	76%
No. Responses	82	14	21	14	17
Answer Rate	69%	88%	78%	70%	65%

The low number of affirmative responses to question B15 may also result from its placement directly after questions B12 and B13. In B12, 57% of companies had indicated current plans to expand. Of those that answered No to B12, another two-thirds plan to expand if primarily financial, marketing, and environmental compliance obstacles were overcome. Indeed, “technical limitations” received the lowest response as an obstacle of any choice in question B11. Thus, it is not surprising that only 37% of companies indicated on the following question that they would need technical or business assistance to expand.

The types of assistance needed that were mentioned in the comments included technical or engineering and business assistance; marketing; education; and environmental compliance. Written comments are included in Table B 15b.

<u>Technical Assistance (TA)</u>	<u>Marketing</u>
<ul style="list-style-type: none"> ◇ TA for entering plastics collection and processing field ◇ TA from persons with substantial experience in this type of business ◇ TA on material specifications for manufacturing asphalt, cement, and concrete ◇ New technology for oil and wastewater recycling ◇ Technical engineering ◇ Information on setting up recycling yards ◇ Information access: patent searches, Internet, technical papers in plastics technology and manufacturing (including training) ◇ Lab analysts and chemical expertise 	<ul style="list-style-type: none"> ▽ Marketing assistance (3 responses) ◇ Marketing help on CRT glass ◇ New markets so we can purchase new equipment and keep our costs low ◇ Help in determining more uses for C&D recycled materials ◇ Markets for wood mulch
	<u>Education</u>
	<ul style="list-style-type: none"> ◇ Public awareness of need ◇ Be included in what county is doing

<p><u>Business Assistance</u></p> <ul style="list-style-type: none"> ◇ Bookkeeping ◇ Financial counseling and business planning ◇ Computers ◇ Employee incentives ◇ Employee training ◇ Sourcing capital ◇ Tax and small business-type programs 	<p><u>Financing and Tax Credits</u></p> <ul style="list-style-type: none"> ◇ Low interest loans with relaxed loan covenants ◇ Lower payroll/no payroll taxes ◇ Tax breaks ◇ Tax credits for developing methods for utilizing more recycled wood material ◇ Funding - grants, low-interest loans, matching funds, etc. ◇ Assistance in getting funding with no collateral and cash flow growth
<p><u>Environmental Compliance</u></p> <ul style="list-style-type: none"> ◇ Permitting/getting jobs approved ◇ Technical: waste water regulations ◇ Environmental compliance 	

Many of the general comments at the end of the survey on question 26 noted issues for which targeted assistance could be helpful, e.g., stimulating materials supply, strengthening markets, assisting with regulations, developing company infrastructure, and other assistance needs. These comments are summarized by topic below. All comments for question 26 are listed below except those on financing issues which were included in a table at the end of the financing section above.

Table B26(b): Written Survey Comments: Materials Supplies

- 1) Always seeking new sources of plastics to use as feedstock for its plant in GA.
- 2) Biggest obstacle to growth is material from NC. We need in-state material to be successful.
- 3) Collects waste paper from commercial and industrial sites.
- 4) Company is dead in the water with no supply coming in.
- 5) Contract recycling services for municipal and industrial organic waste streams.
- 6) Deals in scrap yarn and odd lots, irregulars, etc.
- 7) Receive majority of materials from out of state; 85% of state's supply is dominated by waste haulers who only take PET and HDPE dairy.
- 8) These items are being disposed in roadside ditches and unpopulated wooded areas.

Table B26(c): Written Survey Comments: Materials Markets

- 1) Beneficial re-use through land application of waste water treatment and other bio-solids.
- 2) Buys virgin resin, but internally reuses scrap.
- 3) Composts commercial, agricultural, and municipal organic waste streams (bio-sludges).
- 4) Exports 75% of its product.
- 5) Foresees limited grow in specific recycling market.
- 6) Has ability to use 25% post-consumer resin.
- 7) Has no place in North Carolina to sell scrap appliances.
- 8) Need to develop local end markets for recycled materials.
- 9) Recycled products must have markets; otherwise, recycling is financially non-productive and a waste of time.
- 10) Recycling industry is the first to feel economic downturns and the last to feel upswings.
- 11) Uses waste cotton thread for commercial roofing mops & brokers textile waste.

Table B26(d): Written Survey Comments on Company Infrastructure Issues

Table B26(d): Written Survey Comments on Company Infrastructure Issues

- 1) Building codes too severe, need grant to expand.
- 2) Owner recently purchased company and though he has small budget, expects to succeed as "we are very dedicated to recycling."
- 3) Owner will close business and retire within one year.
- 4) Picks up and grinds kiln dried construction lumber trim ends and makes poultry bedding.
- 5) Presently 3 to 5 percent of business is recycling related, expects it to double or triple in next five years.
- 6) Re: No. 23: Company is owned 50-50 by husband and wife.
- 7) We create lots of jobs! Thanks.

Table B26(e): Written Survey Comments on Assistance Needs

- 1) Company desires to build on good relationship with OWR.
- 2) Needs TA for adding polyester to product line.
- 3) OWR grants, markets advice, and contacts have been extremely helpful.
- 4) OWR has been invaluable in helping with marketing.
- 5) OWR Markets Directory has been most helpful.
- 6) Requesting information on support material available.
- 7) Requests information on how to avoid property tax on equipment used 100% for recycling.
- 8) Technical Assistance (TA): believes industry would be well served by having seminars/workshops to educate handlers about buyers' separating and sorting specifications.
- 9) TA: regularly seeking independent labs to do chemical testing.
- 10) TA: seeking ways to market the equipment line she distributes.
- 11) TA: technical staff constantly in training programs.
- 12) TA needed when called on to integrate their equipment into MRF.
- 13) TA not needed, pioneers in field; business assistance needed from time to time.

Table B26(f): Written Survey Comments on Regulations & Governmental Role

- 1) Business was hurt by local competitor receiving grant for hiring handicapped employees.
- 2) Do not mandate recycling until appropriate markets are identified and guaranteed.
- 3) Government mandates for use of recycled products.
- 4) Governments mandates for recycling reduces prices.
- 5) Is having problems with Superfund due to their handling lead batteries in the past.
- 6) It is our hope that the demands and pressures to encourage recycling will continue to grow.
- 7) Liability against company due to batteries sold decades ago and not disposed of properly threatens company's survival.
- 8) Liability issues for small recyclers concerning automobile batteries and Freon-containing refrigerators must be addressed.
- 9) Local governments do not have resources to grow recycling services as desired by local population.
- 10) Need incentive-based legislation at the local level
- 11) Need incentives for current and potential end-users of post-consumer recyclables to buy more at better prices.
- 12) State moneys should fund recycling companies, not add to bureaucracy.
- 13) Suffering from liability exposure due to handling batteries.
- 14) We're glad to see NC surveying recycling firms!
- 15) Where was OWR when company was starting out!
- 16) Without scrap metal industry, state would be hard-pressed to reduce solid waste disposal.
- 17) Would like to see more cooperation from government as a whole.

Chapter V: Employment

Over 8,800 jobs in North Carolina are based on recycling. Of all jobs created by recycling 89% are supported by the private sector and 11% are supported by government. Even when the impacts of recycling such as job creation and job loss in the virgin materials and waste disposal industries are considered across the entire North Carolina economy, recycling has a positive impact on employment for North Carolina. As recycling rates increase, this sector will continue to contribute to job growth in the future.’

Job Creation in Recycling (A2)

On average, recycling companies in the state employ about 16 workers. Reflecting their status as primarily small businesses, collectors, multimaterial processors, and scrap dealers all are close to this industry average. As to be expected for manufacturers, end-users with 31 jobs per firm are well above average. Reuse, pallet and wood, and textile recycling companies also reported above-average recycling jobs per company. The data for all company types are reported in Table A2a. (Note: The average of recycling jobs for reuse companies is high partly because a major demolition company reports that a large percentage of its employees are involved in salvage and resale of building and other materials.)

For 9 of the 12 company types surveyed, recycling jobs were a majority of the total jobs at the Company. Only three types varied from this pattern. Recycling employment was only 21% of the total for end-use manufacturers, which still primarily use virgin materials in their production. Since many recycling collectors also collect refuse, these companies report only 30% of their jobs are related to recycling. Finally, equipment dealers considered recycling to represent only about 13% of their business and employment.

Company Type		Total Jobs/ Company	Recycling Jobs/ Company	% Recycling Jobs
E	End-Use Manufacturers	149	31	21%
U	Reuse Companies	48	29	61%
A	Pallet and Wood Companies	39	24	63%
L	Textile Recyclers	18	16	90%
P	Multimaterial Processors	24	16	65%
C	Recycling Collectors	44	13	30%
S	Scrap Metal Processors	16	12	76%
PS	Paper Stock Processors	12	12	100%
T	Tire Recyclers	12	11	93%
H	Oil and Chemical Recyclers	6	6	100%
Q	Equipment Dealers	33	4	13%
B	Materials Brokers	3	3	100%
ALL		41.6	15.9	38%

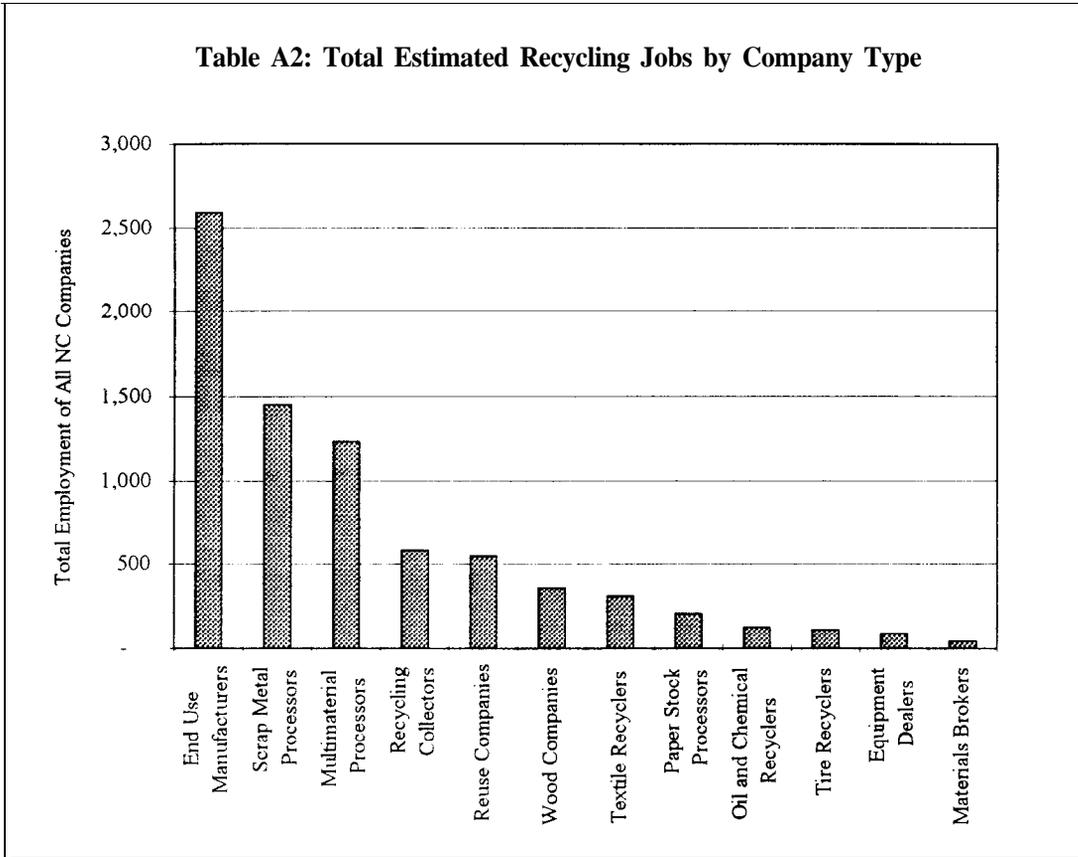
Shore, Michael, "The Impact of Recycling on Jobs in North Carolina" January 1995, NC Office of Waste Reduction.

Conclusions and Recommendations

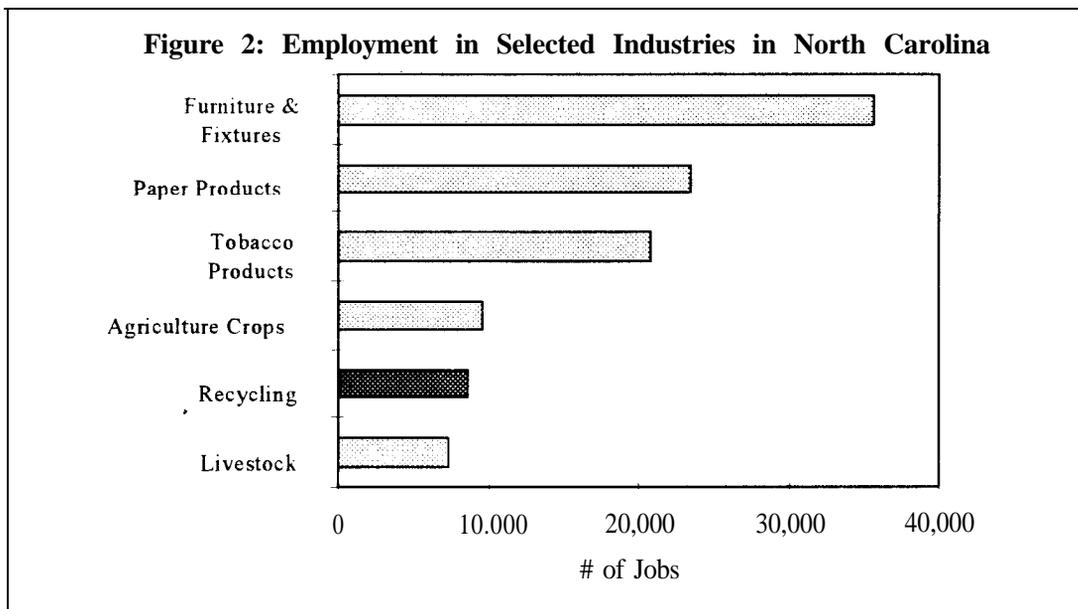
This North Carolina Recycling Business Study, through the written and telephone surveys as well as Employment Security Commission data, documented at least 6,154 recycling employees in the private sector in North Carolina. As the surveys represent only about 80% of sample, *the total private sector employment in 1994 for the 474 identified recycling companies is projected to be approximately 7,700 employees.* Considering the probable omission of several companies, the survey likely underestimates the number of recycling-related employees in the state.

Table A2b displays estimated total recycling employment by sector. These figures were derived by multiplying the average recycling jobs per company by the number of companies in a given sector. *End-users, the largest employers by far as a sector, employ more than one-third of all recycling staff in the state. Both scrap metal and multimaterial processors, the next largest employers, together employ another one-third of all staff.* The remaining employees work in a variety of other sectors, as noted below.

Table A2b: Estimated Total Recycling Employment by Sector			
Company Type	Average Recycling Jobs/Company	No. Companies	Total Jobs/Sector
End Use Manufacturers	30.8	84	2,590
Scrap Metal Processors	12.1	120	1,458
Multimaterial Processors	15.6	79	1,231
Recycling Collectors	13.3	44	586
Reuse Companies	29.1	19	553
Pallet and Wood Companies	24.1	15	362
Textile Recyclers	16.5	19	313
Paper Stock Processors	12.0	18	216
Oil and Chemical Recyclers	6.0	21	126
Tire Recyclers	11.4	10	114
Equipment Dealers	4.3	22	95
Materials Brokers	2.7	17	46
AU Companies	15.9	474	7,690

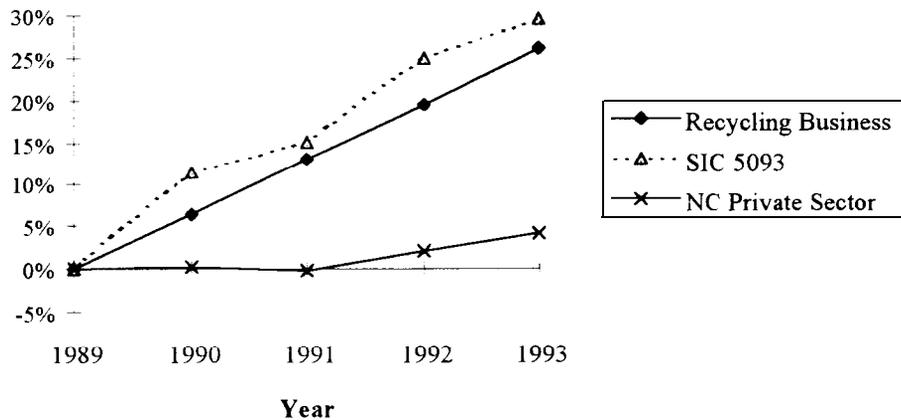


Recycling is a significant industry in terms of the number of jobs it supports for North Carolina. The recycling industry ranks behind such major industries as tobacco, furniture, and paper in employment but is in the same range as agriculture crops and livestock. In addition to recycling, the data in Figure 2 represent employment in two-digit Standard Industrial Codes (SICs.)



Another indicator of employment in recycling is its growth rate. According to the surveys, 26% of private-sector recycling jobs have been added since 1989. Similarly, companies in the SIC classification 5093, Scrap and Waste Materials which primarily includes recycling processing companies, may also be used to indicate growth in recycling jobs. Employment growth in SIC 5093 firms over the same time period was 30%. Meanwhile, growth in employment in non-recycling fields was much more moderate. In the private sector as a whole, job growth was 4% over the five-year period. These employment growth trends are depicted below. (In Figure 3, "Recycling Business" data are derived from this study, "SIC 5093" and "NC Private Sector" data are derived from the NC Employment Security Commission.)

Figure 3: Percent Employment Increases in North Carolina



Expected Job Creation (B16)

For the recycling industry as a whole, 55% of the surveyed firms expect to create six or more jobs in the next three years. No collector or scrap dealer plans to create more than 20 jobs. That fully 80% of the scrap dealers expect to create five or fewer jobs reflects again the mature stage of most of the companies in this sector. Processors and end-users expect higher employment growth. About 37% of the multimaterial processors and 29% of the end-users expect to create more than 20 jobs in the next 3 years, as shown in Table B16a. In total, NC recycling companies expect to create approximately another 6,700 jobs over the next three years. This projection of employment growth may be overstated, as it far exceeds the growth over the last few years.

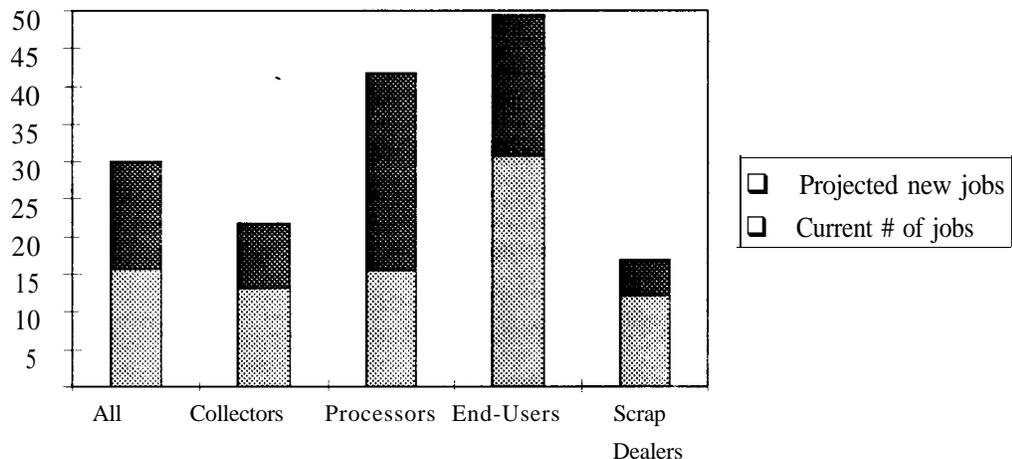
Number of jobs:	ALL	C	P	E	S
Less than 5	45%	44%	27%	36%	80%
6 to 20	39%	56%	36%	36%	20%
21 to 50	11%	0%	23%	21%	0%
51 to 100	4%	0%	9%	7%	0%
Over 100	1%	0%	5%	0%	0%
Responses	84	16	22	14	15
Answer Rate	71%	100%	81%	70%	58%

However, it reflects the business optimism of companies responding to the survey. Again, as noted in Table B16b, by sector, end-users and processors expect to create the majority of new jobs for the industry. The table and accompanying Figure B16 show expected new jobs per company from question B16 for each company sector. They also add new jobs to current employment to demonstrate expected employment growth.

It should be noted that this study reports only employment growth and other data for existing companies; it does not consider new, start-up firms or out-of-state recycling companies opening new facilities in NC. Given that more than one-third of surveyed firms started operations in the state in the last five years, it is reasonable to expect that future entrepreneurial activity will increase business activity and employment beyond the level of activity expected in existing companies alone.

Table B16b: Projected New Recycling Jobs in Existing Companies in Next Three Years					
	ALL	C	P	E	S
Total number of companies	474	44	79	84	120
Expected new jobs per company	14	8	26	19	5
Total new jobs	6,743	370	2,056	1,557	552
Share of total job growth	100%	5%	30%	23%	8%

Figure B16: Projected Job Creation per Company in Next Three Years



Compensation (A2e)

The average wage for recycling employees reported by all companies was \$9.00 per hour. Wages by sector varied considerably. Companies such as brokers, oil and chemical recyclers, paper stock processors, and equipment dealers with more specialized or technical functions reported higher wages. Companies such as pallet refurbishers and wood grinding companies, demolition and reuse companies, and collectors with more routine, manual tasks reported lower wages. No sector reported average wages below \$7.34 per hour, a rate well above the minimum wage of \$4.25 per hour.

Private sector recycling wages are, on average, higher than local government recycling employee wages and are comparable to forestry and landfill worker wages. At \$9.00 per hour, however, recycling wages are about \$2.50 lower per hour than the average wages for all NC workers. This difference is not surprising given the operational types of jobs predominant in collecting sorting processing, and refurbishing. However, recycling jobs also offer better-than-average compensation for entry-level employment. NC recycling companies offer significant opportunities in training and for advancement for citizens with operations skills but without college or high school diplomas.

Table A2e: Recycling Compensation	
Company Type	Average Recycling Hourly Wage
Materials Brokers	\$13.43
Oil and Chemical Recyclers	\$11.64
Paper Stock Processors	\$10.50
Equipment Dealers	\$9.44
Scrap Metal Processors	\$9.12
End-Use Manufacturers	\$9.10
Textile Recyclers	\$8.62
Multimaterial Processors	\$8.30
Tire Recyclers	\$7.94
Recycling Collectors	\$7.91
Reuse Companies	\$7.70
Pallet and Wood Companies	\$7.34
All Companies	\$9.00

Conclusion and Recommendations

Recycling reuse, composting, and remanufacturing companies have been growing rapidly in North Carolina in the last five years. They have added thousands of jobs for citizens across the state and plan to continue this expansion. The companies are involved in a diverse array of activities -- collecting, upgrading, refurbishing, brokering compacting manufacturing, reusing composting, and selling secondary materials. They are dealing with commonly recycled materials such as newspaper and aluminum and newly recycled or reused materials such as tires, pallets and demolition materials.

Much of the growth in the recycling industry has been driven by the state solid waste reduction laws and the accompanying efforts by local governments to implement recycling programs. However, considerable recycling business activity has its roots many decades earlier in commercial scrap metal, waste paper, and textile reprocessing and recycling enterprises. Most recycling companies have grown without substantial assistance from the state's universities or business assistance programs. They are typically small, locally owned businesses that have provided valuable entry-level employment in their communities.

Just as the state has worked to nurture its biotechnology, microelectronics, and textile industries, so too should it nurture the growth of the recycling industry. Recycling companies help local governments and industries solve their waste materials problems while initiating important capital formation, employment growth, and business activity in rural and urban areas across the state.

Several actions by the public and private sectors could help to ensure the continued growth of North Carolina's recycling industry. Some of the actions suggested by this study follow.

1) Capital Access

Recycling companies are primarily small businesses with capital needs tied to new equipment and facilities required to meet growing customer demands. Small business financing programs should be marketed to these companies, especially SBA and other small business lending programs. Lenders and investors should become better educated about recycling business opportunities so as to fairly assess loan and equity applications.

Grant programs should complement private financing by funding market research and technical development for new companies and new processes. End-use manufacturing and multimaterial processing companies particularly should be provided sufficient financing for viable business ventures and expansions.

2) Technical and Business Assistance

Recycling companies could be better served by the state's university, community college and small business assistance programs. These institutions should reach out to these companies through existing trade associations and peer networks to serve more effectively the research and business development needs of this growing industry. The NC Office of Waste Reduction should build on its strong relationship with the state's recycling businesses to coordinate technical, business, and financing assistance.

3) Materials Supply

Many NC recycling businesses need continued growth of in-state recovery programs to sustain their existing and new investments in collections, processing and manufacturing. The state, local governments, and industries should seek ways to increase recovery of high-quality secondary materials to feed this growing recycling demand while reducing waste disposal.

4) Product Demand

Continued, growing demand for recycled-content products will generate material revenues for collection programs and foster further investment in end-use manufacturing. "Buy recycled" programs in governmental and private procurement will help build this demand. Preferences for virgin materials in procurement policies should be eliminated.

5) Environmental Regulation

Scrap metal processors have experienced significant growth by handling a range of recyclable commodities in the last few years. However, they see future growth threatened by regulations that may classify materials they handle as hazardous waste or that may generate Super-fund liability for them. Federal and state regulatory agencies should work with the scrap industry to help develop a stable regulatory framework that allows growth in recovery while safeguarding the environment.

6) Minority and Women Ownership

As in many industries, minorities and women own few recycling companies in North Carolina. However, many recycling employees across the state are minorities. Special efforts should be made to foster minority and women entrepreneurship in the growing field and to open participation in government contracts and procurement to these entrepreneurs.

Summary of Recommendations

Recycling businesses are part of a broader environmental or sustainable industry in North Carolina. These companies benefit the state by adding employment, taxable property, economic value, and environmental benefits through their daily operations. However, many of these companies are competing in a business and governmental climate still heavily invested in waste disposal and virgin materials extraction. The state should make a focused effort to help assure that financial and technical resources are made available to these companies and that market opportunities are opened for them to further their contribution to the state's welfare.

Appendix A - Initial Contact Letter

State of North Carolina
Department of Environment,
Health and Natural Resources
Office of Waste Reduction



James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
Gary E. Hunt, Director

June 17, 1994

We are writing to ask you to help foster the recycling industry in North Carolina. You will soon be receiving a survey that will help with two efforts:

- * A study of the number of recycling related jobs in the state being conducted for the N C Office of Waste Reduction (NC OWR) by Michael Shore. The survey information will help the state assess the economic impact which recycling is having on the labor market in North Carolina, and will be used for future planning purposes.
- * An assessment of the financial, technical and business assistance needs of recycling firms being conducted for the NC OWR and the Self-Help Credit Union, North Carolina's community development bank. This assessment is being conducted by David Kirkpatrick of KirkWorks and Allan Rosen of Self-Help.

Why should you complete the survey, when it arrives? Because...

- * You will help document the significant job impacts recycling is having across the state.
- * You will provide guidance for the soon to be formed Recycling and Reuse Business Assistance Center at the NC OWR and for the Self-Help Credit Union in assisting businesses like yours.
- * You will receive, at your request, the final report of these studies and the NC OWR Directory of Markets for Recyclable Materials.

All information will remain confidential, and results will only be released in combination with data from other companies. **The survey should be completed by the manager or owner of your company or facility. If there is someone else at your company who should complete the survey, please call us with their name and address.** Contact Allan at (919) 683-3016 ext. 216, or David at (919) 220-8065 to make any name and address corrections or if you have any questions. Thank you in advance for your assistance.

Sincerely,

Michael Shore

Allan Rosen

David Kirkpatrick

North Carolina Recycling Business Survey

The recycling industry is a growing sector of North Carolina's economy. The following survey will help to document both the effects recycling has on employment and the business needs of recycling firms. Therefore, the North Carolina Office of Waste Reduction and the Self-Help Credit Union very much appreciate your completion of this survey. Your responses should be for your facility only, including all company operations at this location. If you do not know exact answers to questions, please give your best estimates. **All information will remain confidential, and results will only be released in combination with data from other companies.** Please call Allan Rosen at (919) 683-3016 if you have any questions.

Part A: The Impact of Recycling on Employment

1. Facility and Company Information

a) your name: _____ phone #: _____
company: _____ company SIC code (if known) _ _ _ _

b) Does your company have other facilities in North Carolina? Yes No

2. Job Creation due to Recycling

a) How many full-time equivalent* employees currently work at your facility? _____

**Full-time equivalent employees include all full-time employees and those employees who work part-time. For example, if an employee works 20 hours a week, he/she would count as 1/2 of a full-time equivalent employee for this survey.*

b) Is your facility's existence dependent solely on recycling? Yes No

c) How many full-time equivalent employees at your facility are dedicated to recycling jobs? _____

Please include employees with administrative, collection, brokering, hauling, processing, and manufacturing responsibilities as well as other jobs that exist because of recycling.

If you do not know the number of recycling jobs, please estimate the percentage of all employees devoted to recycling:

- | | | | |
|---------------------------------------|------------------------------------|-------------------------------------|------------------------------------|
| <input type="checkbox"/> less than 5% | <input type="checkbox"/> 5% - 19 % | <input type="checkbox"/> 20% - 39 % | <input type="checkbox"/> 40% - 59% |
| <input type="checkbox"/> 60% - 79% | <input type="checkbox"/> 80% - 99% | <input type="checkbox"/> 100% | |

d) How many of these full-time equivalent recycling jobs have been added since 1989? _____

If you do not know the number of full-time equivalent recycling jobs that have been added since 1989, please indicate what proportion of the recycling jobs have been added since 1989?

- none some half most all

e) What is the average hourly wage of recycling employees at your facility?

- \$4.35 - \$5.00 \$5.01 - \$8.00 \$8.01 - \$11.00 \$11.01 - \$14.00 above \$14.00

3. Recycling Collection

a) Does your facility directly collect recyclable material from companies, households, or governments? Yes No

If you answered No to this question, go to question 4.

b) How many tons per year of recyclable material do you collect? _____

c) How many full-time equivalent employees are dedicated to collecting recyclables? _____

d) Please (a) check the type of collection your facility performs, (b) list how many people are dedicated to each type of collection, and (c) list approximate percentages of total collected tonnage for each collection type:

(a)	(b)	(c)
	# of employees dedicated to this type of recycling collection	% of total collected tonnage
<input type="checkbox"/> residential curbside		%
<input type="checkbox"/> residential drop-off		%
<input type="checkbox"/> residential/commercial/institutional		%

4. Recycling Processing

a) Does your facility sort, bale, densify, shred, or otherwise process recyclable materials to meet specifications required by end-users or manufacturers? Yes No

If you answered No to this question, then go to question 5.

b) How many tons of recyclable materials does your facility process per year? _____

c) How many full-time equivalent employees are dedicated to processing recyclables? _____

5. Recycling Brokering

- a) Does your facility broker recyclable materials? Yes No

If you answered No to this question, then go to question 6.

b) How many tons of recyclable materials does your facility broker per year? _____

c) How many full-time equivalent employees are dedicated to brokering recyclables? _____

6. End-using of Recyclables to Make a New Product

- a) Does your facility use recycled materials in its manufacturing or other processes?
 Yes No

If you answered No to this question, then go to question 7.

b) What recycled material(s) do you use in your process? _____

c) How many tons of each recyclable material do you use in a year? _____

d) What product(s) do you produce using recyclable materials? _____

e) How many full-time equivalent employees are dedicated to utilizing recycled material in your manufacturing or other processes? _____

7. Administration

- a) How many full-time equivalent employees are dedicated to the administration of all of your facility's recycling related business? _____

8. Please check each of the materials that your facility collects, processes, brokers, or utilizes in manufacturing:

- | | | |
|--|---|--|
| <input type="checkbox"/> aluminum cans | <input type="checkbox"/> newspaper | <input type="checkbox"/> construction & demolition |
| <input type="checkbox"/> steel food cans | <input type="checkbox"/> corrugated cardboard | <input type="checkbox"/> yard debris |
| <input type="checkbox"/> other metal scrap | <input type="checkbox"/> white office paper | <input type="checkbox"/> other organic material |
| <input type="checkbox"/> glass bottles | <input type="checkbox"/> other paper | <input type="checkbox"/> reusable consumer goods |
| <input type="checkbox"/> plastic bottles (#1,#2) | <input type="checkbox"/> oil | <input type="checkbox"/> salvage |
| <input type="checkbox"/> other plastic scrap | <input type="checkbox"/> tire & rubber | <input type="checkbox"/> other |
| <input type="checkbox"/> textile scrap | <input type="checkbox"/> wood material | (please specify) _____ |

Part B: The Business Needs of Recycling Firms in North Carolina

Answer the questions in part B only for the company's business operations at this location.

1. What is the legal structure of the company?

- Sole proprietorship Partnership For-profit corporation
 Non-profit corporation Other (please specify) _____

2. Is the company a branch, division, or subsidiary of another firm?

- Yes No

3. How many years has the company been in the recycling business? _____

4. What was the gross revenue of the company's recycling business last year?

- 0 - \$24,999 \$25,000 - \$99,999 \$100,000 - \$499,999
 \$500,000 - \$1,999,999 \$2,000,000 - \$4,999,999 over \$5,000,000

5. Over the last three years, how would you characterize the company's recycling business?

- Starting Up Growing Stable Declining

6. What are the total assets of the company?

- 0 - \$49,999 \$50,000 - \$249,999 \$250,000 - \$999,999
 \$1,000,000 - \$1,999,999 \$2,000,000 - \$3,000,000 over \$3,000,000

7. What are the company's total liabilities as a percent of total assets? _____ %

(Total liabilities include all trade credit, supplier credit, bank loans, and other loans made to the company.)

8. What is the company's net worth as a percent of total assets? _____ %

(Net worth includes owners' equity, retained earnings, non-profit fund balances and parent company investment.)

Note: % Total Liabilities + % Net Worth = 100% Total Assets

9. What sources of business or technical assistance does the company most rely on?

*(Check all that apply and please **note the specific organization or regional office where indicated.**)*

- | | |
|--|--|
| <input type="checkbox"/> None | <input type="checkbox"/> Trade Association _____ |
| <input type="checkbox"/> In house expertise | <input type="checkbox"/> Small Business Technology
and Development Center _____ |
| <input type="checkbox"/> Private consultants | <input type="checkbox"/> Nonprofit assistance _____ |
| <input type="checkbox"/> Local chamber of commerce | <input type="checkbox"/> Community college _____ |
| <input type="checkbox"/> Peers in the industry | <input type="checkbox"/> Local university _____ |
| <input type="checkbox"/> NCSU Industrial Extension Service | <input type="checkbox"/> Small Business Center _____ |
| <input type="checkbox"/> NC Office of Waste Reduction | <input type="checkbox"/> Other (please specify) _____ |
| <input type="checkbox"/> NC Department of Commerce | |

10. What are the main opportunities for the growth of the company's recycling business?

11. What are the main obstacles to the growth of the company's recycling business?

(Please check all that apply).

- | | | |
|---|--|--|
| <input type="checkbox"/> Limited access to capital | <input type="checkbox"/> Cash flow problems | <input type="checkbox"/> Environmental regulations |
| <input type="checkbox"/> Technical limitations | <input type="checkbox"/> Lack of markets | <input type="checkbox"/> Lack of trained workers |
| <input type="checkbox"/> Land use and zoning restrictions | <input type="checkbox"/> Other
(Please specify) _____ | |

12. Is the company currently planning to expand its recycling business?

- Yes *If you answered Yes to this question, then go to question 14.*
 No *If you answered No to this question, then go to question 13.*

13. Would the company consider expanding if the obstacles you mentioned above could be overcome?

- Yes *If you answered Yes to this question, then go to question 14.*
 No *If you answered No to this question, then go to question 21.*

If no, why not? _____

14. By what annual percentage rate is your company planning for its recycling business to grow over the next three years? _____ %

15. Does the company need business or technical assistance in order to expand its recycling business?

- Yes No

If yes, what types of business or technical assistance do you believe can most help the company expand its recycling business? _____

16. How many new jobs do you expect will be created in the next three years as the company expands its recycling business?

- less than 5 6 to 20 21 to 50 51 to 100 more than 100

17. Over the next three years, how much money will the company need to expand its recycling business?

- 0 - \$24,999 \$25,000 - \$99,999 \$100,000 - \$749,999 over \$750,000

18. Please indicate to what uses these funds will be put and what percentage of the total funds will be used in each category listed below. (Please check all that apply.)

- | <u>Use</u> | <u>%</u> |
|---|----------|
| <input type="checkbox"/> Land & Buildings | ____% |
| <input type="checkbox"/> Equipment | ____% |
| <input type="checkbox"/> R & D | ____% |
| <input type="checkbox"/> Marketing | ____% |
| <input type="checkbox"/> Working Capital | ____% |
| <input type="checkbox"/> Other (please specify) | |
| _____ | ____% |

19. What percentage of these funds will be equity financed and what percentage will be debt financed?

Equity financing _____% Debt financing _____%

(Equity financing includes downpayments, shareholder or owner investment, capital grants and contributions; Debt financing includes repayable loans, mortgages, or bonds.)

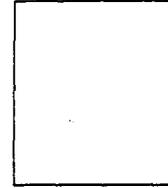
If debt financing is indicated please answer the following questions.

What monthly payment amount can the company currently afford? _____

What assets may be used to secure the loan? _____

Appendix C -- Follow-Up Postcard

NC Office of Waste Reduction
Attn: Michael Shore
PO Box 27687
Raleigh, NC 27611-7687



North Carolina Recycling Business Survey

July 12, 1994

Earlier this month the North Carolina Office of Waste Reduction and the Self-Help Credit Union sent you a survey concerning your company's business needs and recycling related employment. If you have yet to complete and return the survey, please do so today. Your input is vital to developing a better understanding of the recycling industry. If you have already returned the survey, please accept our thanks. If you did not receive the survey, please call Allan Rosen at (919)-683-3016.

Note: Part A, question 3d, contains a printing error. The last box in column (a) should read "industrial/commercial/institutional", not "residential/commercial/institutional"

Thank you very much for your time and effort.

Sincerely,

Michael Shore

David Kirkpatrick

Allan Rosen

Appendix D - Recycling Company Database

18-Jan-95

COMPANY	ADDRESS	CITY	STATE	ZIP	TELEPHONE	TY
ABC Recycling Service, Inc.	PO Box 18753	Asheville	NC	28805-	7042512591	C
ABTCO, Inc.	P.O. Box 98	Roaring River	NC	28669-	9196962751	E
Acker-Baugh, Inc.	PO Box 307	Cramerton	NC	28032	7048249258	B
Add Paper Cores	800 Lackey St.	Hamlet	NC	28345	919-582-3200	P
Advanced Environmental Technology Cor	2176 Will Suitt Road	Creedmoor	NC	27522	8003228350	C
Allen Recycling Center	P.O. Box 2106	Henderson	NC	27536	9194927836	S
Alpha Cellulose Corporation	P.O. Box 1305	Lumberton	NC	28358	919-738-4201	E
Alpha International Trading Co.	212 S. Tryon Street	Charlotte	NC	28281	704-334-1010	B
Alternative Recycling Technologies, Inc.	PO Box 742B	Deep Gap	NC	28618	7042629882	U
Alternative Technologies	2421 Timber Drive	Raleigh	NC	27604-	9198368118	U
ALTON WRIGHT SR ET AL T/A	P O BOX 1258	HAMLET	NC	28345		S
Aluminum Can Recyclers	P.O. Box 1259	Goldsboro	NC	275331259	9197315600	S
Aluminum Recycling of Burlington	1349 E. Webb Avenue	Burlington	NC	27215	9192297471	P
Aluminum Recycling of Greensboro	2412 S. Elm/Eugene Str	Greensboro	NC	27406	9192884153	P
AMERICAN CRANE CORPORATION	202 Raleigh Street	Wilmington	NC	28412-63	9193958500	Q
American Design Components	PO Box 847	West End	NC	27376-	9197764686	Q
American Fluid Technology	PO Box 12040	Winston-Salem	NC	27117-	9197848111	H
AMERICAN PULVERIZER CO.	4044 Yancey Rd.	Charlotte	NC	28210	7045258191	Q
American Refuse Systems, Inc.	P.O. Box 5349	Pinehurst	NC	28374	9192956181	C
Amex Packaging, Ltd.	P.O. Box 1069	Mooreville	NC	28115	7046636510	E
AMOCO Foam Products Company	520 Radar Road	Greensboro	NC	27410	919-292-2796	E
AMSCO, Inc.	PO Box 1770	Clemons	NC	27012	919-766-0328	P
Andrews Wood Products, Inc.	PO Box 2789	Lenoir	NC	28645	7047582071	A
Anheuser-Busch Recycling Corp.	1335 Alleghany Street	Charlotte	NC	28208	1-800-346-2197	E
ANSLEY INC	BOX 2150	SHELLEY	NC	28150		S
AP Plastics, Inc.	PO Box 956	Reidsville	NC	27323	9193424756	P
Arbor Recycling Equipment Co.	PO Box 279	Youngsville	NC	27596	919-556-1010	Q
ARH International	1218 Wind Chime Cour	Raleigh	NC	27615	9198468846	B
Amer and Brown	PO Box 1263	Wilson	NC	27893	9192433586	B
ARS - Waste Management	600 Pinehurst South	Pinehurst	NC	28374	919-295-6181	C
ASHEBORO RECYCLING	P O BOX 327	ASHEBORO	NC	27204		S
Asheville Steel & Salvage	PO Box 691	Asheville	NC	28802	7042521061	S
Asheville Waste Paper Co., Inc.	PO Box 3335	Asheville	NC	28802	7042526963	PS
Bair-InCon Glass Packaging Corp.	PO Box 887	Henderson	NC	27536	8039842541	E
BANKS TEXTILES		HIGH POINT	NC	27261		L
BARTEX RECYCLING CORP.	P O BOX 7545	CHARLOTTE	NC	28241		P
Battery Warehouse & Recycling Ctr., Inc.	1310 W. Lee Street	Greensboro	NC	27403	9192731145	S
Belmont Wiping Cloth Company, Inc.	PO Box 35471	Charlotte	NC	28235	7043767082	L
BES PAC INC.	PO Box 1214	Conover	NC	28613	7044651841	Q
BESSEMER WASTE CO INC	P O BOX 355	BESSEMER CITY	NC	28016		C
BFI-Burlington	1801 Frank Holt Drive	Burlington	NC	27215	9192738281	C
BFI-Charlotte	5516 Rozzells Ferry Ro	Charlotte	NC	28214	7043941353	C
BFI-Kinston	Rt. 1 Box 146C	Kinston	NC	28501	9195222484	C
BFI-Raleigh	PO Box 27943	Raleigh	NC	27611	9192318201	C
BFI-Winston-Salem	2876 Lowery Street	Winston-Salem	NC	27101	9197240842	C

COMPANY	ADDRESS	CITY	STATE	ZIP	TELEPHONE	TYPE
Biltmore Iron & Metal Co., Inc.	PO Box 5616	Asheville	NC	28813	7042539317	S
Bio Gro Systems	Rt 2 Box 240-C3	Troutman	NC	28166	704-542-0937	E
Bish Enterprises, Inc.	PO Box 451	Siler City	NC	27344045	9196633336	S
BLACK JUNK & METAL CO INC	1801 LINCOLN DR	HIGH POINT	NC	27260		S
Bladen Recycling & KAB	PO Box 2357	Elizabethtown	NC	28337	919-862-6726/479	D
Bollag International Corp.	PO Box 99	Newell	NC	28126	7045962932	L
BOWERS FIBERS INC	P O BOX 31234	CHARLOTTE	NC	28231		I
Bradsher Industries, Inc.	PO Box 366	Butner	NC	27509-	9195754455	A
Brenner Iron & Metal Company	PO Box 76	Winston Salem	NC	27102	9197258333	S
Brock Business Forms & Systems	5515 W. Market St., Ap	Greensboro	NC	27409-25	9192746703	U
Bromley Plastics Corporation	PO Box 5129	Asheville	NC	28813	7042745254	P
BROOKS SCRAP IRON & ALLOYS	P O BOX 12787	GASTONIA	NC	28052		S
Bruce's Iron & Metal, Inc.	4604 S. York Road	Gastonia	NC	28052	7048643671	S
Building Supply Recycling Center	1609D Lakewood Ave.	Durham	NC	27701	9194900414	U
C&C METALS INC	1140 HIGHWAY 205	MARSHVILLE	NC	28103		S
C&C Scrap Iron & Metal, Inc.	PO Box 549	Kings Mountain	NC	28086	7047398053	S
C&D Salvage, Inc.	101 John Street	China Grove	NC	28023	7048578711	S
C&H Metals & Salvage, Inc.	PO Box 5037	Burlington	NC	27216	9192288995	S
C&J CRUSHING INC	P O BOX 107	LANDIS	NC	28088		S
C&J Tire Service, Inc.	116 West First Avenue	Chadbourn	NC	28431	9196544108	T
C&L Scrap Metal, Inc.	1581 U.S. 70	Connelly Spgs.	NC	28612	7043977493	S
CAMBRO PRODUCTS INC	P O BOX 982	MORGANTON	NC	28655		E
Cansorb Industries Corporation	555 Kesler Road	Cleveland	NC	27103-	7042789603	E
Canusa Corporation Fiber Group	PO Box 578	Rockingham	NC	28379-	9198957731	B
Cape Fear Recyclers, Inc.	728 Surry Street	Wilmington	NC	28401	9197637805	P
CAPITAL TEXTILE INC	7601 WOODSTREAM	CHARLOTTE	NC	28210		I
Cardinal Container Services	PO Box 1866	Lexington	NC	27292	7042496816	C
CARL'S SCRAP METAL	RT 2 BOX 91	NORWOOD	NC	28128		S
Carlisle Plastics, Inc.	State Road 1419	Battleboro/Thom	NC	27809-	9199779038	E
Carolina Bakery Feeds	1011 S. Hoover Rd.	Durham	NC	27703	919-598-14032761	E
Carolina Bakery Feeds, Inc.	Highway 90 East	Taylorsville	NC	28681	7046322834	E
Carolina Crating, Inc.	PO Box 1499	Laurinburg	NC	28353-	9192767170	A
Carolina Fibre Corporation	PO Box 16727	Greensboro	NC	27406	9192754047	PS
Carolina Lazer Cartridge	1127 Cedarhurst Drive	Raleigh	NC	27609		U
CAROLINA METAL COMPANY	1526 Richlands Highwa	JACKSONVILLE	NC	28540	9193472323	s
Carolina Pallet Recycling	PO Box 5334	Asheville	NC	28813-	7042537766	U
Carolina Paper Board Corp.	PO Box 668305	Charlotte	NC	28266	7043767474	E
Carolina Plastics	PO Box 5065	Eden	NC	27289	9196232999	P
Carolina/Virginia Dairy Products Assn.	PO Box 3159	Durham	NC		919-382-0333	E
Cascades Industries, Inc.	PO Box 578	Rockingham	NC	28379	9198954033	E
Cascades Molded Pulp	PO Box 578	Rockingham	NC	28379	9198954033	P
Castle & Overton Inc.		Charlotte	NC	28287	704-554-7410	B
Cathy's Yarn, Inc.	7511 Sifford Road	Stanley	NC	28164	7048270711	P
CBP Resources, Inc.	PO Drawer 20687	Greensboro	NC	27420	9193333006	E
Celotex Corp	P.O. Box 2986	Goldsboro	NC	27533	919-736-7520	E
Champion International Corporation	P.O. Box 309	Roanoke Rapids	NC	27870	919-537-0531	E
Charles Bluestone Company	6407 Idlewild Road	Charlotte	NC	28212	7045766868	S
Charles Blythe Equip. Co., Inc.	Highway 41 East	Trenton	NC	28585	919-448-9181	Q
Charlotte Steel Drum Corporation	2900 West Trade Street	Charlotte	NC	28208	7043925386	U

COMPANY	ADDRESS	CITY	STATE	ZIP	TELEPHONE	TYPE
Chemical Process Solutions, Inc.	6845 Fairview Road	Charlotte	NC	28210-	7043621644	H
Chemical Waste Mgmt.	14015 Harlequin Drive	Charlotte	NC	28273		H
Cherokee Recycling Center	PO Box 547	Cherokee	NC	28719	704-497-6876	P
Cherokee Sanford Environmental	1600 Colon Road	Sanford	NC	27330-	9197745385	E
CHESAPEAKE PAPER STOCK CO INC	2426 CHAMBERLAIN	CHARLOTTE	NC	28208		PS
CLEVELAND SCRAP METAL	RT 2 BOX 118 A	CHERRYVILLE	NC	28021		S
Cleveland Vocational Industries Inc.	404 East Double Shoals	Lawndale	NC	28090	704-538-8039	P
CLIFFORD & ANDREW OIL & TIRE CO	1227 MCLEOD STREE	ROCKINGHAM	NC	28379		T
Coastal Environmental Associates	PO Box 640	Aurora	NC	27806	9193227155	C
COASTAL WASTE DISPOSAL & RECY	RT 2 BOX 414	WASHINGTON	NC	27889		C
Cohen & Green Salvage Co., Inc.	PO Box 510	Fayetteville	NC	28302	9194831371	S
Collins Metal Co.	PO Box 63	Forest City	NC	28043	7042452366	S
Commercial-Levin	PO Box 30	Burlington	NC	27215	9195840333	S
Consolidated Alloys, Inc. 2 Records	2214 N. Graham St.	Charlotte/Monro	NC	28206	7043769004	S
Container Recycling Alliance, L.P.	1815 Capital Blvd.	Raleigh	NC	27604	9198291311	P
CONTEX	P O BOX 240416	CHARLOTTE	NC	28273		S
Conwed Fibers	PO Box 652	Catawba	NC	28613	7043274165	E
COTTONALL INC	P O BOX 10924	WINSTON SALI	NC	27101		I
Cranford Iron & Metal Co., Inc.	PO Box 219	Sophia	NC	27350	9194983850	S
Creative Forming/Wellman Inc.	1135 Kildaire Farm Rd.	Cary	NC	27511	919-460-5750	E
Crellin, Inc.	PO Box 749 Pine Street	Forest City	NC	28043	704-245-0118	E
Cumberland Sheltered Workshop	815 Washington Drive	Fayetteville	NC	28301	9194854131	P
Cunningham Brick Company, Inc.	Route 2, Cunningham B	Thomasville	NC	27360	8006726181	E
Curb Waste Recycling	502-C S. Whitted Street	Hendersonville	NC	28734	7046928487	C
CURBSIDE MANAGEMENT INC	P O BOX 18722	ASHEVILLE	NC	28814		C
Custom Pallet & Crating	5400-F Hovis Road	Charlotte	NC	28208	7043933801	A
D & E SALES INC	1023 E GILBREATH S	GRAHAM	NC	27253		A
D. H. Griffin Wrecking Co., Inc.	PO Box 7657	Greensboro	NC	27407	9198557030	U
Data Shredding Services	1301 Atando Avenue	Charlotte	NC	28206	704-372-1231	C
Detrex Corporation	PO Box 5278	Charlotte	NC	28225	7043729280	P
Dewey Brothers, Inc.	PO Box 918	Goldsboro	NC	27530	9197343411	S
DIVERSIFIED RECYCLING CORP	RT 2 BOX 59-B	CAMERON	NC	28326		S
Douglas Battery Manufacturing Company	PO Box 12159	Winston-Salem	NC	27107	9196507000	E
DUNN SCRAP IRON & METAL INC	P O BOX 1256	DUNN	NC	28335		S
E-Wear	4107-G Rose Lake Driv	Charlotte	NC	28217	704-357-3525	E
Eagle Distributing Company	PO Box 1286	Lumberton	NC	28358	9197388165	Q
Earth Care Products, Inc.	PO Box 5937	Statesville	NC	28677	7048782582	E
EarthWares	Carr Mill Mall	Carrboro	NC	-27510		R
EARTHWAY TECHNOLOGIES INC	P O BOX 3393	CHAPEL HILL	NC	27515		E
EASCO Aluminum	Route 1, Box 131 Mitch	Ahoskie	NC	27910	9193326135	P
East Industries, Inc.	PO Box 7724	Rocky Mount	NC	27804	9194429662	U
Eastern Carolina Vocational Center	PO Box 1686	Greenville	NC	27834	9197584188	P
Eastern Waste Paper Company	2343 Wendell Road	Wendell	NC	27591	9193659380	P
EATON Recycling Company	1501 Lomond Street	Winston-Salem	NC	27127	9197730885	S
EcoProducts	P. O. Box 21153	Charlotte	NC	28277	704-542-6009	E
ECS Refining	2711-C Pinedale Road	Greensboro	NC	27408	9105450640	H
Ed's Pallet World	220 Hollis Road	Ellenboro	NC	23040	7044538986	A
Edgecombe Recycling Corporation	PO Box 603	Tarboro	NC	27886	9198237446	P
Eisenbrown Recycling	PO Box 1476	Tryon	NC	28782	7048943347	P

COMPANY	ADDRESS	CITY	STATE	ZIP	TELEPHONE	TYPE
Electronic Recycling	PO Box 849	West End	NC	27376	9196739321	P
Enterprise Rendering Co.	28821 Bethlehem Ch. R	Oakboro	NC	28129	7044853018	P
ENVIRO-TIRE INC	405 EL BETHEL RD	KINGS MOUNT	NC	28086	7047398034	T
ENVIRON. VOL. RED. & REC. CORP	2100 SOMERSET DR	WILSON	NC	27893		P
Environmental Recovery Corporation	PO Box 12542	RTP	NC	27709	9194691334	P
Equipment Control, Inc.	PO Box 40	Catawaba	NC	28609	704-241-3188	Q
Exide Battery Corporation	624 Anderson Street	Charlotte	NC	28205	7043424800	H
FCR- Mecklenburg County Recycling, Inc.	300 Dalton Avenue	Charlotte	NC	28206	7043589875	P
Federal Waste Paper Company	1763 W. Webb Avenue	Burlington	NC	27215	9192280692	p
FOIL'S, Inc.	PO Box 296	Harrisburg	NC	28075	7044555134	S
Foundry Service Company	PO Box 748	Biscoe	NC	27209	9194282111	S
Four Seasons Industrial Services, Inc.	PO Box 16590	Greensboro	NC	27416	9192732718	H
Full Circle Paper Outlet	3437 Hillsborough Rd.	Durham	NC	27705		R
FUSSEL SALVAGE	134 FUSSEL RD	LA GRANGE	NC	28551		S
Garbage Disposal Service, Inc.	PO Box 61	Hendersonville, NC	NC	28793-00	704-327-3119	C
GARRISONS	P O BOX 108	WEST END	NC	27376		S
GDS	P.O. Box 3710	Boone	NC	28607	704-264-3689	c
GDS, Inc. Recycling Division	PO Box 9698	Hickory	NC	28603	7042562158	c
Georgia Pacific Hardboard Plant	PO Box 348	Conway	NC	27820	9195851323	E
Gilmore Associates, Inc./Visda, Inc.	521 Townsend Avenue	High Point	NC	27263	9194342178	P
Gladden Tire Disposal	2929 Rozzells Ferry Ro	Charlotte	NC	28208	7043927838	T
Glisson Enterprises, Inc.	Rt. 11 Box 343	Greenville	NC	27834	9197582548	S
Goldsboro Iron & Metal Company	PO Drawer 1259	Goldsboro	NC	27530	9197315600	S
Gordon Iron & Metal Company	PO Box 1192	Statesville	NC	28687	7048739004	S
Gran Alley Co. Inc.	P.O. Box 773	Goldsboro	NC	27533	919-735-7552	U
GRAY & DANIEL INC	P O BOX 31605	CHARLOTTE	NC	28231		s
GREER RECYCLING	107 N E MARKET STR	REIDSVILLE	NC	27320		s
GROSSMAN IRON & STEEL CO.	1001 S. King St.	Fayetteville	NC	28301	9194839787	s
H & L Material Handling Equipment, Inc.	PO Box 997	Garner	NC	27529	919-662-9778	Q
H&W Waste Company	PO Box 1653	Burlington	NC	27215	9195841842	C
H.K. Krider & Son, Inc.	245 Luther Bager Road	Granite Quarry	NC	28072	7042797437	S
Habitat for Humanity of Wake County	2004 Yonkers Road	Raleigh	NC	27604-22	919-833-1999	s
Hallman Foundry, Inc.	PO Box 2705	Sanford	NC	27330	9197753628	e
Hamco, Inc.	P.O. Box 819	Newton	NC	28658	704-464-6730	s
HARNETT METALS RECYCLING INC	4118 SAND CLAY RD	SPRING LAKE	NC	28390		s
Harry J. Price Textile Company, Inc.	PO Box 578	Lowell	NC	28098	7048242538	P
Hayes Iron & Metal, Inc.	PO Box 340	Providence	NC	27315	9193885986	S
HENRY FIBERS INC	P O BOX 1675	GASTONIA	NC	28054	704-864-4323	B
Heritage Environmental Services, Inc.	4132 Pumpano Road	Charlotte	NC	28216	7043926276	H
Hickory Scrap Iron & Metal Co., Inc.	PO Box 667	Hickory	NC	28603	7043274311	S
Histrand Chemicals, Inc.	PO Box 368	Lenoir	NC	28645	7047544992	H
Hoechst Celanese	PO Box 4	Salisbury	NC		704-636-6000x441	E
Hollifield Brothers, Inc.	Route 3, Box 520	Spruce Pine	NC	28777	9197655265	S
Hollmet Recycling Corporation	PO Box 532	Knightdale	NC	27545	9192663694	S
Holmes Iron & Metal, Inc.	PO Box 460	East Spruce	NC	28079	7046336119	s
Holston Energy, Inc.	PO Box 720	Waynesville	NC	28786	7044522838	E
Holt Manufacturing Co., Inc.	PO Box 2017	Burlington	NC	27216	919-227-5561	E
Horton Iron & Metal Company, Inc.	PO Box 1285	Wilmington	NC	28402	9197638268	s
HT's Debris Removal	308 Bayoak Drive	Cary	NC	27513	9197904076	P

COMPANY	ADDRESS	CITY	STATE	ZIP	TELEPHONE	TYPE
Hunter Douglas Metals	PO Box 1811	Roxboro	NC	27573	9195978047	s
Hydra-Co Operations	201 Executive Parkway	New Bern	NC	28562	9196339525	E
IEM Plastics	Po Box 1975	Reidsville/Rockii	NC	27320	9193420356	E
Industrial & Agricultural Chemicals, Inc	Rt. 2, Box 521-C	Red Springs	NC	28377	9198432121	H
Industrial Paper Co.. Inc.	1135 Kildaire Farm Rd..	Cary	NC	27511	9193801549	P
International Paper Company	Route 2, Box 3A	Vass	NC		919-633-7100	E
INTERSTATE TIRE DISPOSAL	P O BOX 2517	ELIZABETH CI	NC	27906		T
J & E SALVAGE COMPANY	876 Blue Creek Rd.	JACKSONVILLI	NC	28540	910-347-5865	s
J & G RECYCLERS OF WILSON INC	P O BOX 1263	WILSON	NC	27893		s
J & R SALVAGE	LOT 17	BROADWAY	NC	27505		S
J E HERNDON COMPANY INCORPORA	P O BOX 1608	KINGS MOUNT	NC	28086		S
J&W Recycling Company, Inc.	PO Box 2716	N. Wilkesboro	NC	28659	9196674432	S
J. G. Thompson Enterprises	PO Box 333	Spindale	NC	28160033	7042863990	S
J.A. King & Co., Inc.	PO Box 21225	Greensboro	NC	27420	919-292-0511	Q
JACK HOLDER ENTERPRISES INC	P O BOX 5651	CHARLOTTE	NC	28206		S
Jackson Paper Manufacturing Co.	PO Box 667	Sylva	NC	28779	7045865536	E
James Waste Oil Service	PO Box 5651	Charlotte	NC	28225	7043328692	S
Jerry Russell Recycling	PO Box 447	Star	NC	27356	9194282706	B
Jerry Sternberg Co., Inc.	PO Box 8374	Asheville	NC	28814	7042582473	S
JOHN MACKEY WASTE CO	P O BOX 4082	HICKORY	NC	28603		S
Joman, Inc.	PO Box 23275	Charlotte	NC	28227	7045451900	P
JONES ONSLOW SALVAGE	P O BOX 484	MAYSVILLE	NC	28555		s
JONES SALVAGE	RT 3 BOX 181	MOCKSVILLE	NC	27028		s
K & K RECYCLING INC	PO BOX 1	WILSON	NC	27893		S
K&L Scrap Service, Inc.	PO Box 2067	Raleigh	NC	27602	9198285426	s
K.R. Parks	1545 Marlwood Circle	Charlotte	NC	28227	7043573517	P
KABCO, Inc	3949 Browning Place	Raleigh	NC	27609	919-782-0805	q
Kamlar Corporation	105 Kamlar Road	Rocky Mount	NC	27804	9194432576	p
KASKO ENTERPRISES INC	P O BOX 16577	CHARLOTTE	NC	28216		P
Kenetech Resource Recovery, Inc.	1801 Alston Avenue	Morrisville	NC	27560		P
Keys to Industrial Training & Svcs.,Inc.	PO Box 3375	Wilmington	NC	28406	9197633424	P
Kieffer Tech-Pak		Hudson	NC	28638	704-728-9300	E
Kings Kountry Klassics	Route 6, Box 360	Hendersonville	NC	28792	7046853246	A
KINGS WIPING CLOTH COMPANY	P O BOX 606	KINGS MOUNT	NC	28086		L
Kobe Copper Products	PO Box 160	Pine Hall	NC	27042	9194276611	E
L H CARTER COMPANY	P O BOX 11395	CHARLOTTE	NC	28220		S
L&C Enterprises, Inc.	PO Box 2357	Thomasville	NC	27360	9194769111	C
L. GORDON IRON & METAL CO	PO BOX 1192	STATESVILLE	NC	- 28677	704-873-9004	S
Laidlaw Environmental Services	208 Watlington Industri	Reidsville	NC	27320	910-342-6106	H
LAMBERT & SONS INC	8798 US HWY 64 E	RAMSEUR	NC	27316		S
Larry Davis Textile	PO Box 9	Haw River	NC	27258	9195783237	P
Laser Age	200 Hayes Building, Gi	Chapel Hill	NC	27514		U
Laser Renew	321 Parkmeadow Drive	Apex	NC	27502	9193625997	U
Laurel Hill Paper Company	PO Box 159	Cordova	NC	28330	9199974526	E
Layman Plastics	1127 Tar Heel Road	Charlotte	NC	28208	704-394-1357	e
LEAVE EM CLEAN SANITATION INC	RT 10 BOX 254	KINSTON	NC	28501		C
Lee Iron and Metal Co.	P. O. Box 778	Sanford	NC	27330		S
Leggett & Platt, Inc.	10419 Industrial Drive	Pineville	NC	28134	7048892321	P
LEONARD SALVAGE INC	108 DELTA ST	LEXINGTON	NC	27292		S

COMPANY	ADDRESS	CITY	STATE	ZIP	TELEPHONE	TYPE
Leprechan, Inc.	PO Box 11091	Charlotte	NC	28209	7045251820	B
LEVIN BROTHERS INC.	5601 Roanne Way #101	Greensboro	NC	27409	9192990900	s
Lin Pac Plastics	PO Box 3611	Wilson	NC		919-291-1383	E
LJA Enterprises, Inc.	PO Box 5301	Asheville	NC	28813	7042741718	P
Loblolly Industries	PO Box 51724	Durham	NC	27717	919-286-0411	E
LOWE FUR & HERB INC.	PO Box 1223	North Wilkesboro	NC	28659	9198383881	S
Lowe Hide & Metal Company	117 Maple Street	N. Wilkesboro	NC	28654	9198385117	S
Lumberton Recycling Company, Inc.	PO Box 1290	Lumberton	NC	28359	9197394378	C
M & W CLOTH CO INC	105 OAK TRAIL	BELMONT	NC	28012		L
M&M Steel Drum Company	PO Box 90	Canton	NC	28716	7046482768	U
Mark Beach, Inc.	PO Box 1333	Shelby	NC	28151	WN	P
McDonald Services, Inc	PO Box 561238	Charlotte	NC	28256	704-597-0590	Q
McGill Environmental Systems	Rt. 1 Box 212	Rose Hill	NC	28458	9195322539	P
MELTEX INDUSTRIES INC	P O BOX 218	MAIDEN	NC	28650		L
MER Recycling, Inc.	PO Box 61167	Durham	NC	27715-11	WN	p
MESHAW BROTHERS	RT 1 BOX 103	WATHA	NC	28471		S
MID-ATLANTIC SURPLUS & SALVAG	P O BOX 1194	SMITHFIELD	NC	27577		S
MID-SOUTH METALS INC.	PO Box 96	Greenville	NC	27835	9197525027	S
Milanco	PO Box 12323	Charlotte	NC	28220-23	8009510180	H
Miles Jennings, Inc.	PO Box 1888	Elizabeth City	NC	27906	9193350861	S
MILLER METALS	3525 CAROLINA BEA	WILMINGTON	NC	28403		S
MODERN DENSIFYING INC	PO BOX 470115	CHARLOTTE	NC	28247		P
Modern Polymers, Inc.	PO Box 398	Cherryville	NC	28021	7044355825	E
Moore's Scrap Metal Company	Route 3 Box 282	Ellenboro	NC	28040	7046575791	S
MOPPO Products, Inc.	PO Box 240913	Charlotte	NC	28224	7045547006	E
MORRIS JUNKYARD	2045 SHELBY RD	KINGS MOUNT	NC	28086		S
Morris Recovery Systems, Inc.	819-D Purser Drive	Raleigh	NC	27603	9197727924	Q
Morris Recovery Systems, Inc.	112 Fairwood Avenue	Charlotte	NC	28203	7043722288	Q
MORRIS SCRAP METAL	2045 Shelby Rd.	Kings Mountain	NC	28086	7047393869	S
Morrison's Recycling	PO Box 872	Elkin	NC	28621	9198356909	P
Mt. Airy Iron & Metal Company	PO Box 295	Mt. Airy	NC	27030	9197867659	S
Myers Brothers, Inc.	5101 Mackay Road	Greensboro	NC	27417	9195477054	S
N C SALVAGE CO INC	P O BOX 1915	GOLDSBORO	NC	27533	9197347411	S
NATIONAL TIRE RECYCLERS	2370 BRIGGS RD	SALISBURY	NC	28144		T
Nationwide Recyclers	P. O. Box 128	Polkton	NC	28135	704-272-8011	E
Newco Fibre Company	PO Box 5585	Charlotte	NC	28225	7043330751	L
Noble Oil Services, Inc.	5617 Clyde Rhyne Driv	Sanford	NC	27330	9197748180	C
NORTH BRIDGE SALVAGE INC	P O BOX 140	TERRELL	NC	28682		s
Nu-Woods, Inc.	PO Box 706	Lenoir	NC	28645	7047584463	A
Oak Grove Enterprises	Route 2, Box 197C	Edenton	NC	27932	9194823143	s
Omega Resources	1128 Polo Drive	Raleigh	NC	27603	9197792150	P
Omni Source Corporation	PO Box 5327	Asheville	NC	28813	7042749200	B
Orange Recycling Services, Inc.	1109 E. Peabody St.	Durham	NC	27701	9196885660	C
Otto Industries, Inc.	P O Box 410251	Charlotte	NC		704-588-9191	E
Owens-Brockway	106 Hilary Court	Lewisville	NC	27023	919-945-3409	E
P & W WASTE OIL SERVICES INC	P O BOX 656	LELAND	NC	28451		H
P&R Environmental Industries, Inc.	PO Box 549	Youngsville	NC	27596	9195540100	P
Packaging Corp of America	PO Box 667	Sylva	NC	28779	704-586-6755	E
Pallet Resource of NC, Inc.	Rt. 14, Box 1312, NC H	Lexington	NC	27292	7047318338	A

COMPANY	ADDRESS	CITY	STATE	ZIP	TELEPHONE	TYPE
PALMERS IRON & METAL CO	PO BOX 3507	KINSTON	NC	28502		S
Paper Stock Dealers, Inc.	666 Maywood Avenue	Raleigh	NC	27603	9198339783	PS
Paper Stock Dealers, Inc.	3901 Barringer Drive	Charlotte	NC	28217	7045258728	PS
Paper Stock Dealers, Inc.	PO Box 644	Shelby	NC	28156	7044876634	PS
Paper Stock Dealers, Inc.	3004 Holts Chapel Roa	Greensboro	NC	27401	9192740186	PS
Paper Stock Dealers, Inc.	PO Box 1510	Hickory	NC	28603	7043275701	PS
Paper Stock Dealers, Inc.	4175 North Glenn Aven	Winston-Salem	NC	27105-28	9197670000	PS
Paper Stock Dealers, Inc.	1003 East Lincoln Ave.	Gastonia	NC	28054	704-864-7161	PS
Paper Stock Dealers, Inc.	3226 Mid Pine Road	Fayetteville	NC	28306-93	9194833153	PS
Paper Stock Dealers, Inc.	300 E. Henderson Street	Salisbury	NC	28144	7046385891	PS
Paper Stock Dealers, Inc.	4619 Industry Lane	Durham	NC	27713	9195440377	PS
Paramount Paper Co. Ltd.	P. O. Box 415	Maxton	NC	28364	910-844-9026	E
Paramount Paper Ltd.	P. O. Box 415	Maxton	NC	28364	919-844-9026	E
PARKER CONE CO INC	P O BOX 735	MAIDEN	NC	28650		L
Paul Godwin Company, Inc.	PO Box 1116	Burlington	NC	27216	9192263103	U
Phillips Recycling, Inc.	1789 Stanley Highway	Mount Holly	NC	28120	7048271985	S
Phoenix Recycling Corporation	PO Box 3856	Wilson	NC	27895385	9192372800	P
PHOENIX RESOURCES	6021 TRIANGLE DR	RALEIGH	NC	27613	919-787-0833	C
Piedmont Paper Stock	3909 Riverdale Drive	Greensboro	NC	27406	9192759828	PS
Piedmont Recycling, Inc.	PO Box 16841	Greensboro	NC	27416	919-272-5985	s
PIEDMONT SALVAGE	4814 SILABERT AVE	CHARLOTTE	NC	28205		s
Pine State Chipping Co.	PO Box 32	Stoneville	NC	27573	9195732488	A
Plastic Recy-Colors, Inc.	PO Box 11288	Winston-Salem	NC	27106	9197440313	p
Plastics Connection, Inc.	4844 Carmel Club Driv	Charlotte	NC	28226	7045429899	b
Plastics Materials Group/PLASTIC TUBIN	O Box 2345	Fayetteville	NC	23381	8007525237	E
Plunkett-Webster, Inc.	810 Center St., PO Box	Apex	NC	27302	919-362-0813	A
Plyler Paper Stock Company, Inc.	800 Gesco Street	Charlotte	NC	28208	7043728787	PS
POLY PROCESSING INC	P O BOX 195	EDNEYVILLE	NC	28727		P
Poly-Recycling, Inc.	PO Box 203	Shelby/FLETCH	NC	28150	7044822428	p
Polymer Reclaim & Exchange	PO Box 801	Mebane	NC	27302	9195632499	P
Polymer Recovery Corporation	1127 Tar Heel Road	Charlotte	NC	28208	7043941357	P
Potters Industries, Inc.	PO Box 298	Apex	NC	27502	9193627574	E
Public Works Equipment and Supply, Inc.	PO Box 716	Monroe	NC		704-289-6488	Q
Pugh Auto Crushing Company	Route 12, Box 516	Lexington	NC	27292	7047312201	S
Quality Forward	P. O. Box 22	Asheville	NC	28802	704-254-1776	D
R & SON SALVAGE	PO BOX 361	FRANKLIN	NC	28734		S
R c TECHNOLOGIES INC	3408 CAMBRIA RD	CHARLOTTE	NC	28210		P
R S M'CO	P O BOX 31605	CHARLOTTE	NC	28210		S
Raeford Salvage Company, Inc.	PO Box 511	Raeford	NC	28376	9198753480	S
RAINBOW METAL INC	P O BOX 26245	CHARLOTTE	NC	28221	7043727714	S
Rainbow Recycling	PO Box 1130	West Jefferson	NC	28694	9192465982	C
Ralph Wilson Plastics	PO Box 249	Fletcher	NC	28732	704-684-2351	E
Raymond Goldman & Company, Inc.	PO Box 12185	New Bern	NC	28561	9196330892	S
RAYS USED BAGS INC	P O BOX 486	NAPLES	NC	28760		U
Reconversion Products, Inc.	1154 Old Brevard Road	Asheville	NC	28806	704-665-8517	e
Recycle America	PO Box 16148	Winston-Salem	NC	27105	9197235744	c
Recycle System of WNC	272 White Pine Road	Fletcher	NC	28732	7046843397	E
Recycle Today	PO Box 19026	Greensboro	NC	27419	919-274-4844	P
Recycled Paints, Inc.	PO Box 1845	Davidson	NC	28036184	7048967300	H

COMPANY	ADDRESS	CITY	STATE	ZIP	TELEPHONE	TYPE
Recycled Products Management, Inc.	2301 Brown Road	Sanford	NC	27330	9197746559	P
Recycling Concepts, Inc.	1070 Riverside Drive	Asheville	NC	28804	7042533929	C
Reed's Recycling	817 Gillespie St.	Fayetteville	NC	28306	9194332337	P
Refrigerant Recovery Corp. of America	4141 C Barringer Drive	Charlotte	NC	28217	7045274700	E
Renewal Resources	118 Oyster Bay	Swansboro	NC	28584	9193891403	P
REPUBLIC ALLOY	419 ATANDO AVENU	CHARLOTTE	NC	28206	7043755937	S
Retread Manufacturing	PO Box 280	Locust	NC	28277	7048885241	T
Reuse It Plastics, Inc.	PO Box 2158	Huntersville	NC	28031	7048968971	B
Reynolds Aluminum	606 Highway 70 East	Clayton	NC	27520-26	9198345479	E
RMS Co.	P.O. Box 31605	Charlotte	NC	28231	704-525-6581	PS
ROANOKE RECOVERY INC	RT 3 BOX 105-C	PLYMOUTH	NC	27962		C
Rocky Mount Recyclers, Inc.	PO Box 7186	Rocky Mount	NC	278047189	9194431521	s
ROLLINS CHEMPAK INC	1500 CONTINENTAL	CHARLOTTE	NC	28273		h
ROSES BULK RAGS INC	P O BOX 1649	ROCKY MOUN	NC	27802		l
RUFUS KISER & SONS INC	8170 FLOWE STORE	CONCORD	NC	28025		s
RUTHERFORD SALES & RECOVERY C	RR 4 1 MUSCADINE	RUTHERFORD	NC	28139		B
Rutherford Vocational Workshop, Inc.	200 Fairground Road	Spindale	NC	28160	704-286-4352	P
S & R TEXTILES	P O BOX 1756	HIGH POINT	NC	27260		l
S TEXTILES	P O BOX 742	COLUMBUS	NC	28722		l
S&S Recycling, Inc.	PO Box 1596	Jacksonville	NC	28540	9193465383	S
S. Swartz & Sons, Inc.	PO Box 448	Durham	NC	27702	9196820429	S
Safe Recovery Company	1315 Peace Haven Road	Clemmons	NC	27012	9197666095	H
SAFEWASTE CORPORATION	13801 REESE BLVD	HUNTERS VILL	NC	28078		h
SAFEWAY TANK DISPOSAL INC	P O BOX 358	COLFAX	NC	27235		h
Sampson Salvage Company, Inc.	PO Box 744	Clinton	NC	28328	9195926303	S
Sandhills Recycling Company	160 Bronwyn Street	Southern Pines	NC	28387	9199445601	c
Schaefer Systems International, Inc.	PO Box 7009	Charlotte	NC	28241	704-588-2150	E
Schulhofer's, Inc.	PO Box 314	Waynesville	NC	28786	7044569408	S
Schwitzer	PO Box 15075	Asheville	NC	28813	704-684-4000	S
Screening Systems, Inc. of Virginia	6030 Gunclub Road	Winston Salem	NC	27103	919-766-9916	Q
Sealed Air Corporation	P. O. Box 98	Patterson	NC	28661-00	919-883-9184	E
Secure Data Paper Shredding & Recycling	PO Box 24603	Winston-Salem	NC	27006	9199985121	C
SHEHAN MILL WASTE PRODUCTS IN	P O BOX 925	RUTHERFORD	NC	28139		l
Shulimson Brothers Company, Inc.	PO Box 15128	Asheville	NC	28813	7042532771	S
Simpson Wood Products, Inc.	529 Atando Avenue	Charlotte	NC	28211	7043741850	E
Snider Tire, Inc.	PO Box 20283	Greensboro	NC	27420	9196915480	T
Solid Waste Systems, Inc.	P. O. Box 351	Garner	NC	27529	1-800-336-5278	Q
Southeast Waste Exchange	Urban Institute - UNC	Charlotte	NC	28223	704-547-4289	D
Southeastern Container, Inc.	PO Box 909	Enka	NC	28728	7046670101	P
Southeastern Industries	PO Box 809	Reidsville	NC	27320	9193496243	E
Southern Case	PO Box 41209	Raleigh	NC	27629-12	9198217683	E
Southern Metals Company, Inc.	2200 Donald Ross Road	Charlotte	NC	28208	7043943161	S
Southern Metals Recycling, Inc.	PO Box 1769	Wilmington	NC	28401	9197629619	S
Southern Pallet	010 26th Street	Butner	NC	27565	9195756491	A
Southern Resources, Inc.	PO Box 5248	Charlotte	NC	28225	WN	S
SOUTHERN WIPERS INC	511 E 25TH ST P O BO	CHARLOTTE	NC	28205		L
Spectrum Recycling Corporation	P.O. Box 34383	Charlotte	NC	28234	704-434-0436	S
SSS - Recycling	Rt 2 Box 414	Washington	NC	27889	919-923-4090	C
Stamper's Recycling	308 E. Council St.	Salisbury	NC	28144	7046391956	P

COMPANY	ADDRESS	CITY	STATE	ZIP	TELEPHONE	TYPE
Statesville Pallet Co.	PO Box 36	Hiddenite	NC	28681	7046320268	A
Stone Container Corp.	PO Box 240887	Charlotte	NC	28224	704-889-7671	E
Stone Container Corp.	PO Box 1086	Lexington	NC	27293	704-249-9966	E
Stovall Foundry, Inc.	PO Box 983	Gastonia	NC	28053	7048645481	S
Strayhorn Waste Oil Service	PO Box 11737	Durham	NC	27703	9195962580	C
Structural Coatings, Inc.	PO Box 334	Clayton	NC	27520	9195533034	H
Suncoast Insulation Mfg.	PO Box 337	Ronda	NC	28670	8009922468	E
SunShares	1215 S. Briggs Avenue	Durham	NC	27703	9195961870	C
SUNSHINE SANITATION SERVICE	4525 BENSON HIGH	GARNER	NC	27529		C
SYNCOT FIBERS INC	PO Box 668127	CHARLOTTE	NC	28266		I
T T & E Iron & Metal, Inc.	PO Box 554	Garner	NC	27529	9197729190	S
T.D.M. Pallets & Wood Products, Inc.	P.O. Box 680	Stedman	NC	28391	9194835153	a
T.I.R.E.S., Inc.	617 Waughtown Street,	Winston-Salem	NC	27107	9197840390	T
Tart's Recycling, Inc.	Route 2, Box 639	Dunn	NC	28334	9198920417	s
Taylor Manufacturing, Inc.	PO Box 518	Elizabeth City	NC	28337	919-862-2576	e
Taylor Manufacturing, Inc.	P. O. Box 518	Elizabethtown	NC	28337	800-545-2293	E
TEAMS International	207 Kilmorack Dr.	Cary	NC	27511	8136479767	P
The Basic Group/Basic Machinery Co.	PO Box 688	Siler City	NC	27344	919-663-2244	q
The Brunson Corporation	PO Box 218	Matthews	NC	28106-02	7042558896	P
The C.L.E.A.N. Team	One Government Plaza,	Rocky Mount	NC		919-972-1327	d
The David J. Joseph Company	PO Box 221069	Charlotte	NC	28222	7043650430	b
THE FEED BARN	835 KNOX RD	MCLEANSVILLE	NC	27301		U
The Joinery Company	PO Box 518	Tarboro	NC	27886	919-823-3306	e
The News & Observer Publishing Co.	215 South McDowell St	Raleigh	NC	27602	9198294777	e
THE SCRAP EXCHANGE INC	1058 W CLUB BLVD	DURHAM	NC	27701		U
The Wood Company	PO Box 1152	Oxford	NC	27565	9196937374	a
Til-Mar, Inc.	PO Box 941	Shelby	NC	28150	7044843051	L
TIMBER TRADERS INTL INC	P O BOX 300	RODANTHE	NC	27968		b
Tire Disposal Service	9416 Mini Ranch Road	Waxhaw	NC	28173	7048434643	T
TMS Control Systems, Inc.	P. O. Box 4248	Cary	NC	27519	919-481-0805	Q
TODCO, Inc.	Rt. 1 Box 687, Roy Lo	Lexington	NC	27292	7042462001	P
Todd's Scrap & Metal	416 BATTLE DAIRY	Hamlet	NC	28345	9195825963	s
Toner Solutions, Inc.	600 E. Chatham St.	Cary	NC	27511	8003675088	E
Toner Technology	620 Selm Street, Suite 1	Greensboro	NC	27406	9108529794	p
TOOMEY DRUM CO	RT 1 BOX 195	MT HOLLY	NC	28120		U
Toter, Inc.	PO Box 5338	Statesville	NC	28687	704-872-8171	E
Transformer Salvage, Inc.	PO Box 888	Dudley	NC	28333	9197317732	P
Tri-County Industries, Inc.	PO Box 789	Rocky Mount	NC	28702	9199773800	P
TRI-STATE PROCESS EQUIPMENT INC	PO Box 12	INDIAN TRAIL	NC	28079	7048218974	q
Triad Paper Recycling	2070 Brentwood Street	High Point	NC	27263	9198898880	ps
Triangle Charge	PO Box 33458	Raleigh	NC	27636	9197820229	U
Trion, Inc.	P. O. Box 760	Sanford	NC	27330	919-775-2201	E
Tuscarora, Inc.	1741 East C Street	Butner	NC	27509	9195755100	E
U S SOFT WIPING CLOTH INC	P O BOX 709	MAIDEN	NC	28650		L
U.S. Tire Recycling, L.P.	6322 Poplar Tent Road	Concord	NC	28027	7047841210	T
Unipoint Industries, Inc.	120 Transit Avenue	Thomasville	NC	27360-89	9198326647	P
UNISON Transformer Services, Inc.	1338 Hundred Oaks Dri	Charlotte	NC	28217	8005440030	H
United Metal Recyclers	PO Box 159	Kernersville	NC	27285015	9199962241	P
United Scrap, Inc.	3600 Primrose Avenue	Charlotte	NC	28208	7043996318	S

COMPANY	ADDRESS	CITY	STATE	ZIP	TELEPHONE	TYPE
Universal Dispersions, Inc.	1039 Ardsley Road	Charlotte	NC	28207	7043754039	B
UNIVERSAL MOORECRAFT REEL & R	P O BOX 1528	TARBORO	NC	27886		E
VALE SALVAGE & RECYCLING	RT 4 BOX 315	VALE	NC	28168		P
Valley Proteins, Inc.	PO Box 718	Wadesboro	NC	28170	7046943701	E
Velocity Performance Inc.	PO Box 1856	Reidsville	NC		910-342-9099	Q
VERN SMITH ENTERPRISES INC	2412-B S ELM-EUGEN	GREENSBORO	NC	27406		S
Vickery Farms	Route 2, Box 307	Ellenboro	NC	28040	7042482940	E
Vitek Corporation	2330 Beverly Drive	Charlotte	NC	28207	704-333-2111	Q
VME/AKERMANN	One West Pack Square	Asheville	NC	28801	7042572537	P
Wagram Paper Stock, Inc.	PO Box 328	Wagram	NC	28396	9193692211	ps
Wallace Recycler Company	PO Box 524	Granite Quarry	NC	28072	7042794270	C
Warrenton Scrap Iron Company	PO Box 127	Warrenton	NC	27589	9192571182	S
Waste Energy, Inc.	Route 6, Box 464	Mooresville	NC	28115	7046644907	h
Waste Enterprises, Inc.	PO Box 20366	Raleigh	NC	27619	919-782-0095	C
Waste Industries, Inc. Recycling/Garner	3745 Conquest Dr.	Garner	NC	27529	9197820095	C
Waste Industries, Inc. Recycling/Newport	52 Roberts Road	Newport	NC	28570	9197820095	C
Waste Industries, Inc. Recycling/Wilson	310 Lodge Street	Wilson	NC	27893	9197820095	C
Waste Management of Raleigh-Durham	PO Box 11898	Durham	NC	27704	9195962642	C
Waste Management of Wilmington	PO Box 4730	Wilmington	NC	28406	9197995256	C
Waste Solutions		Raleigh	NC		919-676-0031	E
WASTEK	PO Box 27312	Pittsboro	NC	27312	9195425411	P
Watauga Redi-Mix	525 Georger Wilson Ro	Boone	NC	28607	704-264-8694	E
WATSON WASTE OIL	RR 2 BOX 21	WINTERVILLE	NC	28590		h
Webb Metals, LTD.	PO Box 551	Dallas	NC	28034	7049225211	S
Webster Enterprises	PO Box 220	Webster	NC	28788	7045868981	C
Weyerhaeuser Company	PO Box 36	New Bern	NC	28563	919-514-6612	E
Weyerhaeuser Paper Company, Recyl. Div.	5800 Old Mount Holly	Charlotte	NC	28208-11	7043921341	E
Weyerhaeuser	P.O. Box 787	Plymouth	NC	27962	919-793-8061	E
Weyerhaeuser - Recycling Division	5800 Old Mt. Holly Ro	Charlotte	NC		704-399-6875	P
Willard Industries, Inc.	101 New Bern Street	Charlotte	NC	28203	7045231230	P
Wilmington Sand & Gravel	PO Box 209	Wilmington	NC	28402	919-763-4560	E
WTS, Incorporated	PO Box 5532	High Point	NC	27262	9108890989	P
WUW, Inc./Soil Reclaiming, Inc.	PO Box 1248	Sanford	NC	27331	9197743077	P
XXI CENTURY RECYCLERS & LEE GR		BROWN SUMMNC		27214		P
Yang Enterprises	875 WALNUT ST SUI	CARY	NC	27511		B
YANG ENTERPRISES COMPANY	875 WALNUT ST SUI	CARY	NC	27511		P
ZARN, Inc.	P. O. Box 1350	Reidsville	NC	27323	919-349-3324	E