BEFORE THE COUNCIL
OF THE METROPOLITAN SERVICE DISTRICT

FOR THE PURPOSE OF ENTERING INTO A MULTI-YEAR CONTRACT WITH THE MOST QUALIFIED PROPOSER BY AUTHORIZING ISSUANCE OF A REQUEST FOR PROPOSALS FOR A COMPREHENSIVE WASTE STREAM CHARACTERIZATION STUDY	)))))))	RESOLUTION NO. 92-1686 Introduced by Rena Cusma, Executive Officer

WHEREAS, Information on the type and amount of waste materials being disposed is required for effective solid waste management; and

WHEREAS, The Waste Characterization Study approved in the FY 1992-93 budget needs to be conducted during a full year and needs to follow a consistent methodology that can best be ensured by contracting with a single consultant; and

WHEREAS, The study will not begin until January 1993 and pursuant to Metro Code Section 2.04.033(a)(1) Council approval is required because the agreement will commit the District to expenditures for continuation of the Project in the next fiscal year; and

WHEREAS, The resolution was submitted to the Executive Officer for consideration and was forwarded to the Council for approval; now, therefore,

BE IT RESOLVED, That the council of the Metropolitan Service District approves issuance of the Request for Proposals for a Comprehensive Waste Stream Characterization Study (RFP # 92R-33-SW), for the purpose of entering into a multi-year contract with the most qualified proposer.

ADOPTED by the Council of the Metropolitan Service District this 12th day of November, 1992.

James Gardner, Presiding Officer

WM:gbc
rfp/92-1686.res

STAFF REPORT

IN CONSIDERATION OF RESOLUTION NO. 92-1686 FOR THE PURPOSE OF ENTERING INTO A MULTI-YEAR CONTRACT WITH THE MOST QUALIFIED PROPOSER BY AUTHORIZING ISSUANCE OF A REQUEST FOR PROPOSALS FOR A WASTE CHARACTERIZATION STUDY

Date: September 24, 1992

Presented by: Terry Petersen
Bill Metzler

PROPOSED ACTION

Pursuant to Metro Code Section 2.04.033(a)(1), Council adoption of this resolution is required because the anticipated contract will commit Metro to expenditures for the next fiscal year (FY 1993-94) in order to complete the waste characterization project with a single contractor.

BACKGROUND

The adopted FY 1992-93 budget includes a project to comprehensively characterize municipal solid waste within the Metro area. Metro conducted similar studies during 1986 and 1989. The information has been extremely useful in a wide variety of activities including waste reduction, planning, facility design, and forecasting the demand for disposal service. Waste characterization studies require waste sorting to occur over a number of seasons. The study can best be conducted with a single contractor. Because the study will not begin until January 1993, multi-year contract will need to be approved.

Methodologies and objectives of previous waste sorts have been reviewed to more fully accommodate the needs of the entire Solid Waste Department. With the addition of an expanded waste stream sort list and inclusion of generator-specific sorts, Metro will have more comprehensive data than previously available. The data will be more useful to a variety of solid waste management programs and activities, including compliance with SB 66 requirements.

The study is being coordinated and integrated with other Metro programs, local governments, and haulers. The DEQ is currently conducting a statewide waste characterization study as directed by SB 66. Metro is responsible for the characterization of waste in the tri-county region.

BUDGET IMPACT

The study is identified in the FY 1992-93 budget as "Labor to conduct field work on waste characterization study" with a contract amount of $190,000. Approximately $125,000 will be spent in the current fiscal year. FY 1993-94 will require approximately $125,000. The $60,000 addition is to accommodate the interests of local governments that were not identified earlier.

EXECUTIVE OFFICER RECOMMENDATION

The Executive Officer recommends approval of Resolution No. 92-1686 and release of RFP # 92R-33-SW.

WM:gbc
staff0924.rpt

METRO

2000 S.W. First Avenue
Portland, OR 97201-5398
503/221-1646

Memorandum

DATE: October 30, 1992

TO: Council Solid Waste Committee

FROM: Bill Metzler, Associate Solid Waste Planner

THROUGH: Bob Martin, Solid Waste Director

RE: COMMITTEE QUESTIONS CONCERNING RESOLUTION NO. 92-1686

The following are answers to questions concerning Resolution No. 92-1686 that were raised at the last Council Solid Waste Committee meeting.

What is being requested?

Authority to release a Request for Proposals to conduct a "waste characterization" study. The contract would be multi-year with costs not to exceed $125,000 in FY 92-93 and $125,000 in FY 93-94.

What is a waste characterization study?

Waste characterization studies determine the quantity of different kinds of materials in the waste stream at various points in the disposal process.

How are such studies conducted?

Data are gathered by either visually inspecting waste containers and estimating the percentages of different materials or by actually hand sorting and weighing materials. Visual inspections are much less expensive but results have been shown to be considerably less accurate than hand-sorting. Both methods are included in this RFP. Hand sorting will be done for those parts of the project where greater accuracy are needed. The three specific elements of the proposed Metro study are:

Sample and classify waste as it is delivered to disposal facilities:

The classification of municipal solid waste as it is delivered to the transfer stations provides Metro with a general cross section of all waste being disposed in the region. This method has been the standard for waste characterization studies in the past and Metro has relied on it to make general comparisons and projections about the waste stream components. In order to be consistent with previous waste characterization studies we propose to continue using a scaled back version of this waste characterization

method. However, problems associated with relying entirely on this method include not being able to reliably trace the waste to its source of generation and not being able to measure the effectiveness of specific diversion programs.

Sample and classify waste from specific generators:

To address the limitations of the disposal site waste sort, the RFP requests that a representative sample of wastes from businesses and residences be characterized. This would allow a more effective implementation of waste reduction, better tonnage forecasting, and assist in policy development.

Conduct user surveys as disposal and processing facilities to visually characterize waste:

Given budget constraints, it is impossible to sort waste at all disposal and recovery facilities. It is possible, however, to visually inspect a large number of waste loads at all major facilities. This survey and inspection will be adequate for major waste components (e.g. contaminated soils) but will not give information on more detailed components.

Why does Metro conduct waste characterization studies?

Many policy and management decisions are based on estimates of the type and quantity of material in the waste stream. More specific examples are given in some of the answers to the following questions.

What is the history of Metro's involvement in waste characterization studies?

Metro conducted small-scale waste characterization studies periodically during the early 1980's. The first comprehensive study was conducted in 1987. The 1989 Unilateral Order issued by the Environmental Quality Commission directed Metro to implement a system measurement program that included "regularly monitoring of the waste quantity and composition generated in the Metro area by conducting a composition and quantification study every three years, or more frequently as deemed appropriated by Metro." Metro conducted a second comprehensive study in 1989/90 as part of the Department's system measurement program. The 1991 Oregon Recycling Act (SB66) directed the DEQ to conduct a waste characterization study for the all areas of the state *except the tri-county region which would continue to be the responsibility of Metro.*

Is waste characterization data of value to others outside of Metro?

Metro receives many requests for information on the amount of different materials in the waste stream. For example, private companies that are considering investing in recycling operations in the region need to know the amount of waste that is potentially available for recovery. The report from the 1989/90 waste characterization study is one of the two most frequently requested Metro documents (the other one is the Recycling Level Report which uses waste characterization data to estimate current recycling levels for each waste material). The Recycling Information Center and

the Solid Waste Department have distributed over 300 copies of the 1989/90 waste characterization report during the past 12 months.

Will the study be of any value in making tonnage forecasts more accurate?

Definitely. Forecasts of the tonnage base for collection of Metro revenues must be adjusted up or down based on expected changes in the solid waste system. Because these changes are often specific to certain materials, waste characterization data are essential to making accurate forecasts. For example, we often have advance knowledge of new private recycling facilities or new collection programs that will divert specific waste materials away from facilities that pay Metro fees. This knowledge can only be used to improve revenue forecasts if we know how much of the material is now being delivered to existing facilities that pay Metro fees.

What are some examples of how the study will help Metro accomplish waste reduction goals?

Monitoring the effectiveness of existing programs depends on knowing how the waste stream is changing *by material.* This study is the only way to really evaluate the success of existing programs in reducing waste. Without waste characterization data, we would not know whether the recycling percentage of newspapers, plastics, yard debris, glass bottles, packaging, and other materials is increasing or decreasing.

The justification for many recycling program decisions are based on avoided cost arguments. For example, it is much easier to get support for adding new materials to curbside recycling programs if it can be demonstrated that the avoided disposal costs significantly offset the additional collection costs. However, it is impossible to calculate disposal costs for materials that are potential curbside candidates unless we know what percentage of household waste is made up of such materials. Recent experience in the Metro region has demonstrated that collection companies, public officials, and the rate payers expect detailed cost analyses that can only be done if waste characterization data are available.

Why is it necessary to characterize waste by different types of generators?

This can best be answered with a specific example. The 1989/90 waste characterization study found that 12% of *all* waste was yard debris. However, it would be a mistake to assume that household garbage contains 12% yard debris and to develop policies, collection programs, and other management practices based on that assumption because *residential* waste actually contains almost 25% yard debris. At a minimum, we need waste characterization data for residential and non-residential generators.

Many potential applications require data for more detailed classes of generators than just residential and non-residential. For example, the 1989/90 study indicated that as much as 18% of non-residential waste was corrugated containers. However, this percentage is unlikely to be constant for all types and sizes of businesses. Programs to recover this corrugated could be much more effective if they targeted the specific types of businesses that still dispose of significant

quantities of corrugated. Generator-specific studies will help target and focus waste reduction and other management activities.

Why is the study so expensive?

Two items are expected to account for most of the costs. The major cost will be the wages for crews to sort and weigh the garbage. A second major cost item is payment to haulers for using their trucks and crews to collect and deliver waste from specific types of generators.

The study is more expensive than in past years. One of the primary reasons is that we have expanded the number of materials that will be identified and sorted. In previous waste characterization studies, the material sort list grouped materials into broad categories. This broad categorization does not recognize the inherent differences within these categories or provide for resource recovery, processor grades and specifications, and market development needs.

The 1993 waste characterization study will use an updated material sort list (see Attachment A - Waste Stream Component Definitions and Attachment B - Field Sort Form of the RFP). The updated material sort list is consistent with the list currently being used by the Oregon Department of Environmental Quality for their statewide waste characterization study now being conducted. In addition, the list is also consistent with the materials list used by the EPA in its national waste characterization studies.

How have Metro staff tried to most effectively utilize the available budget?

Because major waste characterization studies are expected to be conducted every three years, Metro staff have developed in-house expertise in sample design, data processing, statistical analysis, and reporting needed for this project. By conducting these parts of the study in-house, more funds will be allocated to the actual field work in order to increase the sample size to get more reliable results.

BM:ay

cc: Terry Petersen, Planning and Technical Services Manager
John Houser, Council Analyst

METRO

2000 S.W. First Ave.
Portland, OR 97201-5398
(503) 221-1646

Memorandum

DATE: November 2, 1992

TO: Councilor Judy Wyers

FROM: Bill Metzler, Associate Solid Waste Planner

THROUGH: Bob Martin, Solid Waste Director

RE: Cost Comparison of Waste Characterization Studies Concerning Resolution No. 92-1686

As you requested, the following table compares costs of the 1989 and proposed 1993 Waste Characterization Studies.

	1989	1993 Proposed RFP
Facility Sorts	$135,000	$ 95,000
Generator Sorts		
Residential*	0	$ 45,000
Non-Residential	0	$ 45,000
Construction/Demolition*	0	$ 15,000
Visual Characterization/User Survey	0	$ 50,000
	$135,000	$250,000

*These study elements are critical components of the 1993 Comprehensive Waste Characterization Study. They primarily account for the additional $60,000 required to complete the comprehensive study. These elements have been designed as integral components and will serve Metro's needs as well as the needs of local governments, haulers, and processors. Deleting them from the RFP would diminish Metro's ability to perform the following functions:

1. Adjust revenue forecasts to take into account new recycling programs that are expected to remove additional materials from the waste stream.

2. Evaluate the effectiveness of residential and construction/demolition recycling programs that have already been implemented.

3. Assist local governments in the implementation of waste reduction programs. This includes performing the cost/benefit analyses needed to justify and implement new recycling programs. A good example is the City of Portland's proposal to add mixed waste paper to the curbside collection program. Haulers, public officials, and rate payers expect to see how the avoided disposal costs compare to additional collection costs. Residential waste characterization data are needed to do this.

BM:ay

cc: Terry Petersen, Solid Waste Planning and Technical Services Manager
Council Solid Waste Committee
John Houser, Council Analyst

METRO

2000 S.W. First Avenue
Portland, OR 97201-5398
503/221-1646

Memorandum

To: Solid Waste Committee Members

From: John Houser, Council Analyst

Date: October 13, 1992

Re: Resolution No. 92-1686, For the Purpose of Entering Into a Multi-Year Contract with the Most Qualified Proposer by Authorizing Issuance of a Request for Proposals for a Comprehensive Waste Stream Characterization Study

Background

Since 1986, Metro has conducted a comprehensive waste characterization study every three years. This resolution would authorize issuance of an RFP for the next study. The study will extend throughout calendar year 1993. Because it extends through two fiscal years, council approval is required. The total estimated cost is $250,000, with a total of $125,000 this fiscal year and $125,000 during the next fiscal year.

Issues and Questions

The committee may wish to consider the following issues and questions during its consideration of this resolution:

1) A total of $190,000 is budgetted for this contract during the current fiscal year. It is now anticipated that only $125,000 will be spent this year. Will the remaining $65,000 in budgetary authority be used for any other purpose?

2) The staff report indicates that $60,000 was added to the total cost of the study "to accommodate interests of local governments" not previously identified. What are these interests and how will they be addressed in the study? Was any consideration given to having the affected local governments pay for a portion or all of these additional costs?

3) Will the information obtained from the study be available for use in the FY 94-95 budgetting and rate-setting processes?

4) The staff report indicates that there will be an expanded waste stream sort list. What types of new material will be included and why are they being included?

5) The staff report indicates that generator-specific sorts will be done? What is the purpose and potential use of this information?

6) The staff report indicates that the material collected during this study has a wide range of uses with the department? What are some of these uses? Specifically, what uses will be applicable to the new tonnage forecasting model?

7) As currently worded, the resolution would provide for entering into the contract without further Council review. In light of the size of the contract, does the committee wish to review the actual contract documents prior to signing?

SOLID WASTE COMMITTEE REPORT

CONSIDERATION OF RESOLUTION NO. 92-1686, FOR THE PURPOSE OF ENTERING INTO A MULTI-YEAR CONTRACT WITH THE MOST QUALIFIED PROPOSER BY AUHTORIZING ISSUANCE OF A REQUEST FOR PROPOSALS FOR A COMPREHENSIVE WASTE STREAM CHARACTERIZATION STUDY

Date: November 5, 1992 Presented by: Councilor Wyers

Committee Recommendation: At the November 3 meeting the Committee voted 4-0 to recommend Council adoption of Resolution No. 92-1686. Voting in favor: Councilors Buchanan, Hansen, Van Bergen and Wyers. Councilor McFarland was excused.

Committee Issues/Discussion: The initial hearing on the proposed resolution was held on October 20. Terry Peterson and Bill Metzler, Solid Waste Staff, reviewed the purpose of the waste characterization study proposed in the resolution. Metzler noted that the study is done every three years. The purpose is to gather information on waste disposal habits and waste substreams. The study is required under Metro's stipulated order with the DEQ.

Metzler explained that the proposed budgetting for the study had been modified. As originally proposed, the study would have been concluded by the end of the current fiscal year at a budgetted cost of $190,000. As revised, the study will not be completed until about January 1994 at a total cost of $250,000. Of this total, $125,000 would come from this year's budgetted amount and $125,000 would be budgetted next year. Metzler indicated that the principal reasons for the changes were: 1) spreading the study over an entire calendar year to permit an examination of seasonal changes in the wastestream, and 2) the DEQ, Metro and local governments all expressed interest in increasing the number and types of material that would be sorted.

Metzler reviewed the three main elements of the study, including: 1) sampling material as it arrives at the transfer station, 2) generator-based sorts and 3) user surveys. In response to questions from Councilor Van Bergen, Metzler explained that the study would be conducted on a geographic basis at disposal sites and would include haulers bringing a variety of types of waste.

Metzler and Peterson noted that the information provided by the study aids Metro in a variety of waste management planning processes including providing data for the new Metro-Sim software model. The information is particularly helpful in identifying changes in the wastestream.

Councilors McFarland and Wyers expressed concern about the cost of the study. Peterson and Metzler noted that more detailed sorting would provide more detailed information that would have positive uses by DEQ, Metro and the region's local governments. For

example, Peterson noted that it would help in the assessment of issues related to new potential designated facilities. Councilor Van Bergen expressed concern that the amount of money being spent would only provide for a minimal amount of sorting and analysis.

The committee generally agreed that additional information about the study was needed prior to final committee consideration.

At the November 3 hearing, staff provided additional information (see attached memos from Bill Metzler, dated October 30 and November 2). Councilor Hansen asked if Metro was pursuing its weight-based rate study and whether that study and the characterization study are complimentary and compatible. Debbie Gorham, Waste Reduction Manager, indicated that Metro was proceeding slowly with the weight-based rate study to allow local governments to "warm up" to the idea. She indicated that the department would probably ask for funding related to the weight-based rate study next year and that one or more local governments will be interested in participating in the study.

Councilor Van Bergen indicated that he appreciated the need to gather this information but wanted to know how the estimated cost of the study was determined. Peterson and Metzler noted that, in part, it was based on the cost of other similar studies (eg. an ongoing DEQ statewide characterization study) and estimated per truck/per load sort cost estimates.

Councilor Wyers asked how our study compared to the DEQ study. Metzler indicated that our study would be more detailed. He noted that the DEQ is spending about $250,000 for a 10-county study.

EXHIBIT A

REQUEST FOR PROPOSALS
for

Comprehensive Waste Stream Characterization Study

Metropolitan Service District
Portland Metropolitan Region

Metro RFP # 92R-33-SW

October 1992

Metropolitan Service District
2000 S.W. First Avenue
Portland, OR 97201-5398
(503) 221-1646

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X. LIST OF ATTACHMENTS

I. INTRODUCTION

The Solid Waste Department of the Metropolitan Service District (Metro) is requesting proposals from qualified contractors for a comprehensive characterization of municipal solid waste presently being generated in the Portland metropolitan area. The objective is to collect data that will be useful to a variety of solid waste management programs and activities.

Respondents are asked to submit a work proposal and a cost for services, as described in this Request for Proposals (RFP). Proposals are due on December 14, 1992, at 5:00 p.m., PST, in Metro's Solid Waste Department at 2000 S.W. First Avenue, Portland, Oregon 97201-5398, and should be directed to the attention of Bill Metzler, Project Manager. Details concerning the project are contained in this document.

Metro staff intends to take an active role in all aspects of the study. However, the sorting of the waste stream will be performed exclusively by the consultant.

II. BACKGROUND

The Metropolitan Service District (Metro) is the government agency responsible for coordinating regional solid waste management in the Portland metropolitan region. The Metro region consists of a three county area (Clackamas, Multnomah and Washington counties), including 24 cities, with a combined 1991 population of 1.2 million people.

Metro conducts periodic studies to determine changes in waste composition. Previous studies occurred in 1986 - 1987 and in 1989 - 1990. A copy of the 1989-90 study is attached (see attachment H). The current request is for proposals to conduct sampling during the winter, spring, summer and fall seasons of 1993.

III. SCOPE OF SERVICES

A. Overview of work

The waste composition and quantification for this RFP will entail the following Study Elements:

Study Element I.	Sample and classify waste as it is delivered to transfer stations and landfills
Study Element II.	Sample and classify waste directly from points of generation.
Study Element III.	Conduct survey of users and visual characterizations at disposal facilities to collect data on vehicle type and content.

Waste sorted as part of Study Elements I and II will include construction and demolition waste, but will not include special wastes such as regulated hazardous waste, sewage sludges, and asbestos.

For Study Element I, vehicles delivering waste to disposal sites will be selected for sampling. The driver of the vehicle will be interviewed to determine what classes of generators generated the waste. A sample will then be chosen from the waste delivered, sorted into different components, and each component weighed.

Study Element II will involve sampling waste directly from the point of generation. Targeted waste will include single and multi-family residential generators and commercial generators. Waste from generators will be collected separately and brought directly to the disposal site (or other sorting location) for characterization.

Study Element III is to collect key data on users of six disposal facilities (Hillsboro Landfill, Forest Grove Transfer Station, Lakeside Landfill, East County Recycling, Metro South and Metro Central). The survey will include visual inspection and general classification of waste loads as they are unloaded. General information collected will include:

- Type of vehicle
- Type of generator
- Net weight of vehicle
- Place of origin
- General content of load
- Additional information as desired

B. Work Plan Summary

Sort Schedule and Sampling Information:

- Sampling Season: (1) winter 1993, (2) spring 1993, (3) summer 1993, and (4) fall 1993. See Project Timeline and Schedule. Exact dates to be determined in the final contract.
- Proposals should be based on an average sort consisting of 200-250 pounds of waste (for both Studies I and II).

Study Sites:

- **Study Element I - Waste Sorting at Disposal Facilities:** Metro Central, Metro South, and Hillsboro Landfill.

- **Study Element II - Generator Sorts:**
  Single-family residential generator sorts: Pre-selected routes of residential waste will be sorted. Metro, consultant and haulers will coordinate to design special routes.

  Multi-family residential and non-residential generator sorts: Waste from multi-family residential units and individual non-residential generators (commercial, industrial) will be collected and brought to a central area for sorting.

- **Study Element III - User Surveys at Disposal Facilities:**
  The consultant will survey users of disposal facilities during one week at each of the following facilities for all four sort seasons: Hillsboro Landfill, Forest Grove Transfer Station, Lakeside Reclamation Landfill, East County Recycling, Metro South and Metro Central.

Waste Stream Components (Study Elements I and II):
Proposals should be based on sorting 10 major categories of the waste stream, with several associated sub-categories (see Attachments A and B).

General Method of Sorting (Study Elements I and II):

a. Interview drivers of sample vehicles at scalehouse of disposal facilities.

b. Direct sample vehicles to the designated sort area.

c. Extract approximately 200-250 pounds of waste from load with a front end loader and place same onto sorting surface. The waste sample must be protected from rain. Extraction of samples must be done in a manner that ensures that they are representative of the load.

d. Sort waste sample by category into containers. Weigh the container and record weight on a form similar to the Field Sort Form (see Attachments A and B).

e. The sorting of material shall be done by hand for all samples, down to items that are one inch in size. If, after this level of sorting has been achieved, some small items remain, the residuals should be weighed and by visual estimation allocate the residual material to the appropriate categories.

f. A data form should be completed for each sample. This form should include information on the source of the sample, the type of truck delivering the sample, the type of generators that produced the load from which the sample was taken, the weight of each component of the sample, and other details. Metro will produce the forms (see attachment B).

Data Processing:
Contractor will provide original data sheets to Metro. Contractor will be responsible for ensuring that all forms are complete and entries legible. The consultant shall provide the above data to Metro.

Data Analysis:
Contractor will not be responsible for data analysis.

Each consultant responding to the RFP is expected to write a draft work plan that details how each task will be conducted, specifies completion dates for each task, and includes itemized costs. Respondents are requested to use the following work plan information as a guide to proposing

costs, in addition, the Sort Estimate Tables (Attachment G) must be completed. The final work plan and budget will be negotiated following selection of the consultant and may vary from the tasks in the RFP. Respondents may also propose alternatives to the tasks in the RFP, or alternative methods of accomplishing the tasks, that would meet the objectives of the study as described in this document. However, each proposal must include cost estimates for tasks and individual study elements as described in this RFP.

Please respond to each of the objectives and tasks listed below. Points will be granted in the evaluation process for completeness of response. Metro reserves the right to select or reject any or all proposals in whole or in part or negotiate a revised proposal in the best interest of Metro.

C. Tasks

TASK 1: FINALIZE SAMPLING PLAN.

Consultant will appoint one lead person to participate with Metro staff in design of final sample study plan and coordination with haulers and facilities.

NOTE:

Metro wants to be confident that the average amounts of each component reported in this study are reliable estimates of the actual amounts present in the waste stream. Respondents should propose the number of samples required for reliable estimates.

TASK 2: HAULER COORDINATION.

Metro staff has begun discussions with haulers concerning any re-routing that might be required as part of this study. Consultant will ensure that all sorting schedules and any deliveries of waste will be coordinated with and acceptable to all haulers and preapproved by Metro.

TASK 3: SELECTION AND TRAINING OF CREW

3.1. Consultant is responsible for selection, hiring, and training of sorting crew. Sorters must receive training before actually gathering data in the field. This training is vital for maintaining consistency in data collection and for ensuring worker safety. All staff involved in sorting waste must complete at least 4 hours of training on distinguishing the various categories of waste being sorted using actual waste samples (see Attachments A and B).

3.2. All staff involved in interviewing drivers must receive at least 2 hours of training to familiarize themselves with the categories of waste generators and truck types used in the survey. In addition, all staff must be trained and familiar with the contractor's health and safety plan.

STUDY ELEMENT I - *Sample and classify waste as delivered to transfer stations and landfills.*

TASK 4a. Commercial Load Sampling at Disposal Sites.

4a.1. Based on the sampling plan, select commercial vehicles at the scalehouse of the three disposal facilities. Sampling shall occur for rear, side and front-load packer trucks, commercial drop boxes and self-haul vehicles. The type of vehicles will be sampled in proportion to the total tonnage of waste delivered by the truck type to the site (see Attachment F). Waste samples are to be collected and sorted at each disposal site for the four sort seasons, as outlined under the "Project Timeline and Schedule". Respondents to the RFP should indicate how they will select samples at each site. This should include both how the contractor will select sample vehicles delivering wastes, and how the contractor will select the sample waste from within the vehicle's load. The average size (weight) of the samples taken will be 200 - 250 pounds.

4a.2. Consultant shall request information from the driver of each commercial truck sampled and record the Metro number, company name, type of vehicle, generalized route area and type of generators. Any special factors that affect waste generation will be identified and recorded (e.g., occurrence of a holiday or unusual weather). Whenever possible, sampling close to the occurrence of such out-of-the-ordinary events will be avoided. Consultants shall also record weight, percentages and types of all material as requested on the Field Sort Form (Attachment B).

4a.3.A 35 mm slide will be taken of each sample before sorting begins. A sample identification number should be included in the picture, or some other method should be developed to allow the slide to be matched to the sample data collected.

4a.4. Each sample will be sorted into material categories as specified in the final materials list and then weighed. In addition, a count will be made of each type of beverage container encountered in a sample, as indicated on the Field Sort Form.

4a.5. Consultant will separate containers of hazardous waste found during the sort and record these items on the Field Sort Form. Consultant will remove all medical/infectious waste (syringes, tubing, gauze etc.). Consultant will ensure that the disposal facility manager is in receipt of this material to ensure proper disposal.

4a.6. Data forms that have been properly reviewed and completed should be submitted to Metro each week.

Task 4b: Self-Haul Load Sampling at Disposal Facilities.

4b.1. Based on the sampling plan, consultant shall select self-haul vehicles at the scalehouses of the three disposal facilities. Sampling shall occur for car, pickup, trailer, and other vehicles. The consultant shall utilize a method of selection that identifies self-haul loads as representative of self-haul vehicle types.

4b.2. Sorting should proceed similar to the process outlined for sorting of commercial loads in tasks 4a.

STUDY ELEMENT II - *Sample and classify waste from points of generation.*

TASK 5a: Sort Single-Family Residential Waste.
5a.1. The sampling plan (Task I) will identify single-family households to be sampled. Metro will choose areas to be sampled. Metro will assist in coordination with haulers. Proposals should identify budget amounts for payment to haulers to cover costs of cooperation with this project.

5a.2. Waste sampling and sorting. Samples are to be collected at the same time normal garbage service is scheduled for the waste generator.

5a.3. Sorting samples. The samples collected directly from generators will be taken to the designated disposal site or other sorting location for sorting and weighing. The sorting method should be the same used in Task 4a.

Task 5b: Sort Multi-Family Residential Waste.
5b.1. The sampling plan (Task I) will identify multi-family units to be sampled. Metro will choose sampling areas. Metro will assist in coordination with haulers. Proposals should identify budget amounts for payment to haulers to cover costs of cooperation with this project.

5b.2. Waste sampling and sorting. Samples are to be collected at the same time normal garbage service is scheduled for the waste generator.

5b.3. Sorting samples. The samples collected directly from generators should be taken to the designated disposal site or other sorting location for sorting and weighing. The sorting methodology should be the same used in Task 4a.

Task 5c: Non-Residential Waste Sort.
5c.1. The sampling plan (Task I) will identify non-residential waste generators to be sampled. Metro will choose sampling areas. Metro will assist in coordination with haulers. Proposals should identify budget amounts for payment to haulers to cover costs of cooperation with this project.

5c.2. Waste sampling and sorting. Samples are to be collected at the same time normal garbage service is scheduled for the waste generator.

5c.3. Sorting samples. The samples collected directly from generators should be taken to the designated disposal site or other sorting location for sorting and weighing. The sorting method should be the same as in Task 4a.

STUDY ELEMENT III - *Survey users at disposal facilities and conduct visual characterization of waste to collect data on vehicle type and content.*

Task 6: User Survey/Observation at Disposal Facilities.
Consultant will survey and collect key data on users of six disposal facilities (Hillsboro Landfill, Forest Grove Transfer Station, Lakeside Landfill, East County Recycling, Metro South and Metro Central). Survey will include visual inspection and general classification/verification of waste loads in all vehicles as they are disposed. General information collected will include:

- Type of vehicle
- Type of generator
- Net weight of vehicle
- Place of origin
- General content of load
- Additional information as desired

In coordination with Metro staff, consultant will create standard survey forms. Survey data must be tied to cashier transaction records to obtain the net weight per vehicle type after the survey has been completed. Consultants will be responsible for implementing quality control procedures to ensure that correct data are input. Quality control procedures must be approved by Metro staff.

Task 7: Data Processing and Delivery (for Study Elements I, II and III).
Contractor will provide original data sheets to Metro. Contractor will be responsible for ensuring that all forms are accurate and legible. Completed survey forms should be submitted to Metro at the end of each week. Consultants will provide a memorandum with the data documenting any problems or assumptions related to the data collected.

IV. PROJECT TIMELINE AND SCHEDULE

The contract is expected to begin in January of 1993 and shall expire on December 31, 1993 unless terminated at an earlier date or amended in accordance with contract provisions.

The proposed schedule for completing the project is as follows:

Nov. 16, 1992	RFP issued.
Dec. 14, 1992	Deadline for proposal submittals.
Dec. 18, 1992	Contractor selected (unless interviews are required).
Jan. 4, 1993	Contract signed work begins (training, logistics).
Jan. 11 - Mar. 31, 1993	Winter season 1993 waste characterization sort and data collection
April 1 -June 30, 1993	Spring season 1993 waste characterization sort and data collection.
July 1 - Sept. 30, 1993	Summer season 1993 waste characterization sort and data collection.
Oct. 1 - Dec. 31, 1993	Fall season 1993 waste characterization sort and data collection

V. PROJECT ADMINISTRATION

Metro's project manager and contact for this project is Bill Metzler, Associate Solid Waste Planner in the Planning and Technical Services Division of Metro's Solid Waste Department.

Metro intends to award this contract to a single firm (consultant) to provide the services required. The consultant must assure responsibility for any subcontractor work and shall be responsible for the day-to-day direction and internal management of the consultant effort. Proposals shall identify a single person as project manager to work with Metro.

VI. PROPOSAL INSTRUCTIONS

A. Submission of Proposals

Respondents shall provide four (4) copies of their proposal and any supporting materials. The proposal should be prepared succinctly, providing a straightforward, concise description of the proposer's ability to meet the requirements of the RFP. Any proposal or part thereof received after the deadline will not be considered. Proposals should be printed double-sided and on recycled paper.

Proposals should be placed in a sealed envelope clearly marked: "Proposal for Waste Stream Characterization Study". The proposal shall be furnished to Metro addressed to:

Bill Metzler, Project Manager
Metropolitan Service District
Solid Waste Department
2000 SW First Avenue
Portland , OR 97201-5398

B. Deadline

Proposals are due at Metro no later than 5:00 p.m. PST on Monday, December 14, 1992.

C. RFP as Basis For Proposals

This RFP represents the most definitive statement Metro will make concerning information upon which proposals are to be based. Any verbal information which is not contained in this RFP, or in addenda to this RFP, will not be considered by Metro in evaluating proposals.

If any proposer has a question about this RFP or needs any clarification with regard to any portion of the RFP, inquiries must be made in writing to Bill Metzler, no later than November 27, 1992. If Metro determines that a question asked is important and merits a response, the question and Metro's answer will be sent to all parties on the list of proposers (those parties who have received a copy of the RFP) on or before December 4, 1992. Any proposer who has submitted a

proposal and who subsequently receives an addendum, may supplement their proposal as they consider appropriate, provided that the supplementary material is provided on or before the due date for proposals.

In addition to the above, Metro may issue addenda to clarify or add to the RFP. In such an event, additional time to respond to the RFP or to provide supplementary material will be provided as appropriate.

VII. PROPOSAL CONTENTS

The proposal should describe the ability of the consultant to perform the work requested. To facilitate the evaluation of proposals, all proposals must be submitted in the format outlined below. The contents of each section of the proposal shall include the following:

A. Transmittal Letter

Indicate who will be the project manager, that the proposal will be valid for thirty (30) days after the submittal date; and state the name, title, address, and telephone number of an individual or individuals with authority to contractually bind the company during the period in which Metro is considering proposals.

B. Project Organization

This part of the proposal should contain a concise description of how the respondent intends to organize its approach to the project and respond to project demands.

C. Project Work Plan

The respondent is requested to outline their methodology for the performance of the tasks and objectives identified in this RFP. Respondents may propose on one or more of the study elements.

The work plan should provide a narrative description of the plan for implementing the work tasks as well as any substantive or procedural innovations used by the respondent on similar projects that are applicable to the project described in this RFP.

A work flow chart for all tasks, which takes into consideration the work timeline and schedule should be included. Describe how the project will be completed within the given time frame.

D. Qualifications of Proposed Staff

Identify the project manager and submit his/her qualifications. In addition, identify the specific personnel assigned to major project tasks and submit their qualifications. Designate which tasks will be done by subconsultants and submit their qualifications.

The respondents are requested to include a table indicating the total staff-hours of effort by element broken down to indicate involvement of each firm. Also to be included is the level of commitment to the project by each assigned individual.

E. Firm/Team's Experience

A complete, concise and accurate description of experience relevant to this project should be cited. The prospective contractor shall have demonstrable experience in solid waste and in planning for the recovery of resources from that waste. The prospective contractor shall demonstrate strong capability to perform waste sampling in the field, and reporting of field observations.

For each project, include the name of a client contact person, his/her title, their role in the project and telephone number. Metro expects to contact these references.

F. Capital Equipment and Disposition

Provide a list of capital equipment such as scales and containers that will be purchased or rented specifically for completion of the proposal. This list should include the cost of the equipment, and if the equipment is to be purchased or rented. If the respondent already has major capital equipment for carrying out this proposal, this equipment should also be listed with a notation that respondent already owns the equipment.

G. In-Kind Services and Equipment Expectations

Provide a list of in-kind services or equipment that is expected to be supplied by disposal site operators, Metro, or others. Such in-kind assistance may include space at disposal site for setting up a small sampling and sorting operation, and use of a loader to help select the sample from the load.

H. A Completed Disadvantaged Business Compliance form.

Metro has made a strong commitment to provide maximum opportunities to Disadvantaged and Women-Owned Businesses when contracting for goods or services by adopting Metro Code Sections 2.04.100 et seq.

Recent court decisions have set new standards for the constitutionality of such programs. Please refer to Attachment D for a letter from The Metro Deputy Executive Officer which indicates the present status of this program.

I. Budget/Cost Proposal

Respondents are to clearly show the total budget estimate by task and study element for the prime consultant and each sub-consultant and significant breakdown of those total budgets for labor and materials. In addition, respondents are required to complete Attachment G - Sort Estimate Tables. Respondents are advised to provide any /all budget information required for a complete evaluation of their proposal and not anticipate or expect later opportunities for proposal

clarification. Metro has allocated $225,000 to $250,000 to carry out the waste characterization study (studies I, II, and III). We expect that Study I will require approximately 35 percent of the total budget *Note: Metro is reserving $15,000 of the total RFP budget to augment a construction and demolition waste audit study. This study will be conducted independently of this RFP.*

J. Health and Safety Protection

Provide a health and safety plan, or a description of the equipment, procedures, training, and other measures that will be taken to ensure the health and safety of all personnel working on the project

K. Exceptions and Comments

Metro intends to enter into a Personal Services Agreement with the selected firm for this project. A copy of the standard form contract which the successful proposer will be required to execute is included as Attachment C. Firms wishing to take exception to, or comment on the Personal Services Agreement language or any other aspect of this RFP are encouraged to document their concerns in this part of their proposal. Exceptions or comments should be succinct, thorough, and organized.

VIII. EVALUATION OF PROPOSALS

A. Evaluation Procedure

Proposals will be evaluated by a selection committee based upon information and criteria provided in this RFP. Oral interviews with the highest-ranked firm(s) may be requested by the committee prior to selecting a firm with whom to enter contract negotiations. After considering the report of the selection committee which will summarize the results of the negotiation process, the Solid Waste Director will recommend a firm to the Executive Officer of Metro for award of a contract.

B. Evaluation Criteria

This section provides a description of the criteria which will be used to evaluate and select proposals submitted to accomplish the work described in this RFP.

EVALUATION CRITERIA

General----------(15 POINTS)

a. Compliance with RFP
b. Completeness of response.
c. Clarity and understandability.

Project Organization----------(15 POINTS)

a. Project management, assignment of personnel and use of sub-consultants.
b. Availability of project staff.

Project Work Plan and Methodology----------(20 POINTS)

a. Demonstration of understanding of the project objectives and responsiveness of proposal to those objectives.
b. Project Work Plan. Amount of detail provided and demonstration of ability to adhere to the indicated work schedule.
c. Appropriateness of sorting methodology to be employed.
d. Sampling design adequate for reliable estimates of waste amounts.

Project Staffing Experience----------(20 POINTS)

a. Commitment of the firm to the project and expertise of assigned personnel.
b. Qualifications and favorable references for project manager, project team and sub-consultants.
c. Demonstrated knowledge of waste management issues and / or waste characterization.
d. Evidence of related, successful work record of the firm and sub-consultants.

Budget / Cost Proposal----------(30 POINTS)

a. Compliance with RFP.
b. Completion of all required forms.
c. Appropriateness of budget and cost proposal to scope of work.

IX. GENERAL PROPOSAL/CONTRACT CONDITIONS

A. Limitations of Award

This RFP does not commit Metro to the award of a contract, nor to pay any costs incurred in the preparation and submission of proposals in anticipation of a contract. Metro reserves the right to accept or reject any or all proposals received as the result of this request, to negotiate with all qualified sources, or to cancel all or part of this RFP.

B. Billing Procedures

Proposers are informed that the billing procedures of the selected firm are subject to the review and prior approval of Metro before reimbursement for services can occur. A monthly billing, accompanied by a progress report, shall be submitted for review and approval prior to payment. Invoices shall be the monthly progress reports and will list time, staff and materials for each task and sub-task completed.

X. LIST OF ATTACHMENTS

A. WASTE STREAM COMPONENT DEFINITIONS
B. FIELD SORT FORM
C PERSONAL SERVICES AGREEMENT
D. METRO CODE FOR DISADVANTAGED BUSINESS PROGRAM and LETTER FROM DEPUTY EXECUTIVE OFFICER
E. METRO DISADVANTAGED BUSINESS PROGRAM FORMS
F. 1991 VEHICLE TONNAGES DELIVERED TO DISPOSAL FACILITIES
G. SORT ESTIMATE TABLES
H. METRO 1989/90 WASTE CHARACTERIZATION STUDY - FINAL REPORT

ATTACHMENT A.
WASTE STREAM COMPONENT DEFINITIONS

ATTACHMENT A.
WASTE STREAM COMPONENT DEFINITIONS

The following are definitions of the categories and subcategories of the waste stream.

1. PAPER

Writing Papers (printing and other communication paper)

A. Newspaper - Printed ground-wood newsprint (minimally bleached fiber). This category also includes some glossy paper typically used in newspaper insert advertisements, unless found separately.

B. Printing/Writing/Office Paper (uncoated high-grades) - Printing, writing and computer papers, including mainly thermo-chemical pulps. This category is composed of high-grade paper, which includes white ledger, colored ledger, computer printouts, computer tab cards, bond, and copier paper. Excludes glossy coated paper such as magazines, direct mailings, catalogs and glue-bound publications.

C. Magazines - This category includes:
- Less than 1/2 inch - Publications done on glossy paper with a thickness of less than 1/2".
- More than 1/2 inch - Publications done on glossy paper with a thickness more than 1/2".

D. Hard-cover Books - Books consisting of white or cream ledger with hard covers.

E. Low-Grade Scrap Paper - Recyclable printing paper, phone books, direct mailings (including stray sheets of ledger-grade paper commonly included in direct mail), used envelopes, other paper with sticky labels, construction paper, fax paper, bright -dyed paper (fiesta or neon colors), paperback books, and uncoated (non-glossy) groundwood catalogs (glue bindings).

F. Nonrecyclable Scrap Paper - Paper not included above that is not easily recyclable. Includes carbon paper, tissue, photographs, blueprint, and paper normally soiled through use (paper plates).

Packaging Paper

G. Corrugated Cardboard, Kraft Paper - Kraft liner board, container board cartons and shipping boxes with corrugated paper medium (unwaxed). This category also includes Kraft (brown) paper bags. Excludes waxed and plastic-coated cardboard, solid boxboard, multi-walled bags that are not pure unbleached Kraft.

H. Bleached Boxboard - Milk cartons, juice cartons and white freezer boxes. Poly-coated bleached paperboard used for milk, ice-cream, juice (including aseptic packaging), frozen dinners, and many other frozen food boxes. Includes printed or unprinted white fiber boxes, but currently have limited markets due to polyethylene coating. Does not include uncoated paperboard (either bleached or unbleached), as uncoated boxboard is included in "Low-Grade packaging" below. Does not include cups or non-food poly-coated packages.

I. Low-Grade Packaging - Other low-grade recyclable papers used in packaging, includes chipboard and other solid boxboard (not poly-coated), bags (without poly liners and not pure unbleached Kraft), clothing forms, egg cartons (molded pulp).

J. Nonrecyclable Packaging Paper - Paper for which no significant recycling opportunities currently exist in Oregon. Includes waxed cardboard, poly-lined chipboard, foil lined papers, Christmas wrapping paper.

K. Mixed Paper/Materials - Includes juice cans, oil cans, paper with thick foil laminates.

2. PLASTICS

Plastic Packaging

A. Rigid plastic containers - Plastic packages of finite shape with a capacity of from eight ounces to five gallons. Includes lids from dish or wide-mouth containers, but not from lids from bottles. Includes polystyrene cups used commercially to package food, but not polystyrene cups sold as a product for home or office use (usually marked - included in "rigid plastic products").

1) **#1-PET**: Polyethylene Terephthalate.
2) **#2-HDPE**: High Density Polyethylene.
3) **#3-PVC**: Vinyl.
4) **#4-LDPE** rigid: Low Density Polyethylene.
5) **#5-PP**: Polypropylene.
6) **#6a-PS**: Polystyrene (solid).
7) **#6b-PS**: Expanded Polystyrene.
8) **#7-Other.**
9) **Unidentified.**

B. Small Rigid Containers - Containers such as small yogurt cups that are under 8 ounces in size but otherwise would be classified as rigid plastic containers.

C. Other Rigid Packaging - Containers larger than 5 gallons, plastic bottle lids and lids from glass, metal or paper containers.

D. Film Packaging - Polyethylene film packaging and other film packaging. Includes grocery store produce bags, bread bags, food wrap, vacuum-formed packaging, bubble packs.

Plastic Products

E. Film Products - Shower curtains, plastic sheeting, trash bags, and other film products.

F. Rigid Plastic Products - Dishware and utensils, including expanded polystyrene cups and plates, household items, vinyl products, all-plastic furniture, and toys.

G. Thermoset Plastics - Formica, fiberglass, and other related products.

H. Mixed Plastics/Materials - Items whose predominant material is plastic, but is combined with other material, such as kitchen ware, toys and car parts with metal and wood components.

3. GLASS

A. Deposit beverage glass (beer, soft drink, mineral water).

B. Other Clear Bottles - All clear non-deposit beverage glass, including broken glass identified as non-deposit beverage glass. Included are wine bottles, wine cooler bottles, liquor bottles, juice bottles, and other non-deposit glass beverage containers.

C. Other Colored Bottles - Colored non-deposit beverage glass. Same as B, except bottle glass which is green, brown, and other colored glass.

D. Clear Container Glass - Clear glass food jars and other recyclable glass containers. Includes glass food jars, ketchup/mustard bottles, baby food jars, pickle jars, mayonnaise jars and other clear container glass that is not a beverage bottle.

E. Colored Container Glass - Colored glass food jars. Same as D, but for green, brown, and other colored glass.

F. Flat Window Glass - (not including mirrors).

G. Nonrecyclable Glass - Includes products such as light bulbs, auto and cooking ware glass. Fiberglass insulation is included in other inorganics rather than here.

4. METALS AND APPLIANCES

A. Aluminum Beverage Cans - Used aluminum beverage cans (separate count of refundable vs no-deposit).

B. Other Aluminum Containers and Foil - Aluminum pet food cans, foil-formed trays/containers, and foil.

C. Other Aluminum - All other aluminum materials including furniture, house siding, cookware and scrap.

D. Non-ferrous Metals - Non-iron derived metals, including copper, brass, lead, pewter, zinc, and other metals to which a magnet will not adhere. Metals that are significantly contaminated are not included (separate estimate for percent recoverable post-collection).

E. Tinned Food Cans - Predominantly steel cans (some with tin or enamel coatings) used to hold food. Includes soup cans, vegetable cans etc.

F. Other Tinned Cans - Same as above, except originally made to hold non-food items such as paint thinner.

G. Other Ferrous Metals - Ferrous and alloyed ferrous scrap materials derived from iron, including household, industrial and commercial products not containing significant contaminants. This category includes scrap iron and steel to which a magnet adheres. Includes all-steel furniture such as bed frames. Does not include appliances, food cans, or other ferrous metal items listed elsewhere (separate estimate for percent recoverable post-collection).

H. White Goods - This category is composed of discarded stoves, washer, dryers, refrigerators and other large household appliances.

I. Small Appliances - This category includes household appliances such as television, toasters, broilers, can openers, blender, etc.

J. Aerosol Cans -

K. Mixed Metals/Materials - Other composite metal products and metals combined with other materials such as small gas engines, electrical motors, umbrellas, insulated wires.

5. ORGANIC WASTES

A. Food. Discarded food and similar kitchen wastes. Does not include the container holding discarded food wastes.

B. Leaves and Grass. Naturally occurring vegetative material and other fine organic waste from park, lawn and garden maintenance. Typically leaves, grass clippings, and herbaceous weeds. Excludes woody material greater than 1/4 inch diameter. Material can be home-composted without chipping.

C. Small Prunings (under 2") - Prunings less than 2" diameter. Naturally occurring woody material from trees, plants, and shrubs. Could be chipped with a small chipper for home composting.

D. Large Prunings (over 2") - Bulky woody yard waste excluding stumps. This category is composed of trees, large branches greater than 2" diameter, and other similar materials which can not be home-composted due to their size, weight and composition.

E. Stumps - Stumps too large to be ground by most commercial composters due to size, without use of a special stump-splitting device (greater than 1 foot diameter or 100 pounds).

F. Untreated Lumber - Unfinished or unpainted dimensional lumber or wood, including plywood and particleboard, used for construction or resulting from building demolition.

G. Wood Pallets and Crates - Includes similar packaging lumber and dimension lumber material used in pallets and crates.

H. All-Wood Furniture - Includes desks, chairs, bureaus and other furniture items made from wood.

I. Other Wood Products - Includes pencils, coat hangers, and other objects made of wood that are not used for packaging or construction or as furniture.

J. Mixed Wood/Materials - Mostly woody items combined with plastic, metal or other materials. Excludes items that are better included in another category.

K. Dead Animals - Excludes animal parts generally used for or derived from food.

L. Other Organics - Carbon containing wastes not otherwise categorized, including organic fines and other non-sortable combustibles.

6. Other Materials

A. Tires.

B. Rubber Products - Includes toys and inner tubes.

C. Disposable Diapers - Disposable diapers, including fecal materials contained within. Cloth diapers are to be sorted under textiles.

D. Carpets and Rugs.

E. Other Textiles - Fabric materials including natural and man-made textile materials such as cottons, wool, silks, woven nylon, rayon, polyesters and other materials. This category includes clothing, rags, curtains and other fabric materials.

F. Rocks/Concrete/Bricks.

G. Soil and Nondistinct Fines.

H. Gypsum Wallboard.

I. Fiberglass Insulation.

J. Roofing/Tarpaper - Asphalt shingles and tar roofing paper.

K. Other Inorganics - Includes plaster and linoleum.

L. Furniture and Furnishings - This includes reusable and non-reusable household items that are large such as chairs, tables, and mattresses. Excludes furniture made from single materials (all metal, all plastic, all wood).

7. **Hazardous Materials**

A. Latex Paint.

B. Oil-based Paints and Thinners.

C. Pesticides/Herbicides.

D. Fertilizer

E. Motor Oil.

F. Oil Filters

G. Antifreeze

H. Other Auto Products

I. Fuels (Diesel, Gasoline, Kerosene).

J. Adhesives/Cleaning Solvents.

K. Caustic Cleaners.

L. Lead Acid Batteries.
M. Dry-Cell Batteries.

N. Asbestos.

O. Aerosol Cans.

P. Other Chemicals

Q. Medical Wastes - Includes syringes, tubing, gauze, etc.

R. Other - This category should be used only if the items included here are individually described on the data sheet.

ATTACHMENT B.
FIELD SORT FORM

Attachment B

DRAFT FIELD SORT FORM

DATE: LOAD TYPE: LOAD #: LOCATION:

WRITING PAPERS

Newspaper			
Printing/Writing/Office			
Magazines - less than 1/2"			
Magazines - more than 1/2"			
Low-grade Scrap Paper			
Nonrecyclable Scrap Paper			
Hardcover Books			

PAPER PACKAGING

Cardboard/Brown Bags			
Low-Grade Packaging			
Nonrecyclable Packaging			
Bleached Boxboard			
Mixed Paper/Materials			

ORGANICS

Food			
Leaves & Grass			
Small Prunings (under 2")			
Large Prunings (over 2")			
Stumps			
Untreated Lumber			
Treated Lumber			
Wood Pallets & Crates			
Wood Furniture			
Other Wood Products			
Mixed Wood/Materials			
Dead Animals			
Other Organics			

OTHER MATERIALS

Tires			
Rubber Products			
Disposable Diapers			
Carpet			
Other Textiles			
Rock, Concrete, Brick			
Soil & Non-distinct Fines			
Gypsum Wallboard			
Fiberglass Insulation			
Roofing/Tar Paper			
Other Inorganics			
Furniture			

PLASTIC PACKAGING

#1 PET Containers			
#2 HDPE Containers			
#3 PVC Containers			
#4 LDPE Containers			
#5 PP Containers			
#6 Solid PS Containers			
#6 Foam PS Containers			
#7 Other Containers			
Unidentified Containers			
Small Containers			
Other Rigid Packaging			
Film Packaging			

PLASTIC PRODUCTS

Film Products			
Rigid Plastic Products			
Thermoset Plastics			
Mixed Plastics/Materials			

GLASS

Deposit Beverage Glass			
Other Clear Bottles			
Other Colored Bottles			
Clear Container Glass			
Colored Container Glass			
Flat Window Glass			
Nonrecyclable Glass			

METALS

Aluminum Beverage Cans			
Aluminum Foil/Food Trays			
Other Aluminum			
Nonferrous Metals			
Tinned Food Cans			
Other Tinned Cans			
Other Ferrous Metal			
White Goods			
Small Appliances			
Aerosol Cans			
Mixed Metals/Materials			

HAZARDOUS MATERIALS

Latex Paint			
Oil-based Paints/Thinners			
Pesticides/Herbicides			
Fertilizer			
Fuels (gas/kerosene/diesel)			
Caustic Cleaners			
Lead-acid Batteries			
Dry-cell Batteries			
Asbestos			
Medical Wastes			
Other Chemicals			
Motor Oil			
Oil Filters			
Antifreeze			
Other Auto Products			
	No. of Aerosol Cans		

BEVERAGE CONTAINER COUNTS

	Aluminum	Steel	Glass	Plastic
Deposit Beer				
No-desposit Beer				
Unidentified Beer				
Deposit Pop/Mineral				
No-deposit Pop/Mineral				
Unidentified Pop/Mineral				
Wine				
Wine Cooler				
Liquor				
Juice				
Milk				
Water				
Other				

SUPERMIX:

LOCATION

Metro South ☐
Metro Central ☐
Hillsboro Landfill ☐
Other ☐

LOAD TYPE

SF Res ☐
MF Res ☐
Comm. Mixed ☐
Gen ☐

GEN CLASS

Retail ☐
Wholesale ☐
Office ☐
Food/Lodging ☐
Education ☐
CDL ☐
Other ☐

LOAD #

_____
_____
_____
_____

Date Collected _____ **Date Sorted** _____

VEHICLE TYPE

RL ☐
FL ☐
SL ☐
RO/D ☐
RO/C ☐
Auto/Van ☐
Auto w/Trailer ☐
Pickup ☐
Pickup w/Trailer ☐
Other Truck ☐

RECOVERABILITY

DUE TO

		% Recoverable	Quantity	Size	Distribution	Comments
YES?	OCC					
	Wood					
NO?	Metals					
	Other					

ATTACHMENT C.
PERSONAL SERVICES AGREEMENT

Metro Contract No.

PERSONAL SERVICES AGREEMENT

THIS AGREEMENT is between the METROPOLITAN SERVICE DISTRICT, a municipal corporation organized under ORS Chapter 268, referred to herein as "Metro," located at 2000 S.W. First Avenue, Portland, OR 97201-5398, and _____, referred to herein as "Contractor," located at _____.

In exchange for the promises and other consideration set forth below, the parties agree as follows:

1. Duration. This personal services agreement shall be effective _____, and shall remain in effect until and including _____, unless terminated or extended as provided in this Agreement.

2. Scope of Work. Contractor shall provide all services and materials specified in the attached "Exhibit A -- Scope of Work," which is incorporated into this Agreement by reference. All services and materials shall be provided by Contractor in accordance with the Scope of Work, in a competent and professional manner. To the extent that the Scope of Work contains additional contract provisions or modifies any provision in the body of this Agreement, the Scope of Work shall control.

3. Payment. Metro shall pay Contractor for services performed and materials delivered in the maximum sum of _____ AND _____/100THS DOLLARS ($_____), in the manner and at the time specified in the Scope of Work.

4. Insurance.

a. Contractor shall purchase and maintain at the Contractor's expense, the following types of insurance, covering the Contractor, its employees, and agents:

(1) Broad form comprehensive general liability insurance covering personal injury and property damage, with automatic coverage for premises, operations, and product liability. The policy must be endorsed with contractual liability coverage; and

(2) Automobile bodily injury and property damage liability insurance.

b. Insurance coverage shall be a minimum of $500,000 per occurrence, $250,000 per person, and $50,000 property damage. If coverage is written with an annual aggregate limit, the aggregate limit shall not be less than $1,000,000.

c. Metro, its elected officials, departments, employees, and agents shall be named as ADDITIONAL INSUREDS. Notice of any material change or policy cancellation shall be provided to Metro 30 days prior to the change or cancellation.

d. Contractor, its subcontractors, if any, and all employers working under this Agreement are subject employers under the Oregon Workers' Compensation Law and shall comply with ORS 656.017, which requires them to provide Workers' Compensation coverage for all their subject workers. Contractor shall provide Metro with certification of Workers' Compensation insurance including employer's liability.

e. If required by the Scope of Work, Contractor shall maintain for the duration of this Agreement professional liability insurance covering personal injury and property damage arising from errors, omissions, or malpractice. Coverage shall be in the minimum amount of $500,000. Contractor shall provide to Metro a certificate of this insurance, and 30 days' advance notice of material change or cancellation.

5. Indemnification. Contractor shall indemnify and hold Metro, its agents, employees and elected officials harmless from any and all claims, demands, damages, actions, losses and expenses, including attorney's fees, arising out of or in any way connected with its performance of this Agreement, with any patent infringement arising out of the use of Contractor's designs or other materials by Metro and for any claims or disputes involving subcontractors.

6. Maintenance of Records. Contractor shall maintain all of its records relating to the Scope of Work on a generally recognized accounting basis and allow Metro the opportunity to inspect and/or copy such records at a convenient place during normal business hours. All required records shall be maintained by Contractor for three years after Metro makes final payment and all other pending matters are closed.

7. Ownership of Documents. All documents of any nature including, but not limited to, reports, drawings, works of art and photographs, produced by Contractor pursuant to this Agreement are the property of Metro, and it is agreed by the parties that such documents are works made for hire. Contractor hereby conveys, transfers, and grants to Metro all rights of reproduction and the copyright to all such documents.

8. Project Information. Contractor shall share all project information and fully cooperate with Metro, informing Metro of all aspects of the project including actual or potential problems or defects. Contractor shall abstain from releasing any information or project news without the prior and specific written approval of Metro.

9. Independent Contractor Status. Contractor shall be an independent contractor for all purposes and shall be entitled only to the compensation provided for in this Agreement. Under no circumstances shall Contractor be considered an employee of Metro. Contractor shall provide all tools or equipment necessary to carry out this Agreement, and shall exercise complete control in achieving the results specified in the Scope of Work. Contractor is solely responsible for its performance under this Agreement and the quality of its work; for obtaining and maintaining all licenses and certifications necessary to carry out this Agreement; for payment of any fees, taxes, royalties, or other expenses necessary to complete the work except as otherwise specified in the Scope of Work; and for meeting all other requirements of law in carrying out this Agreement.

Contractor shall identify and certify tax status and identification number through execution of IRS form W-9 prior to submitting any request for payment to Metro.

10. Right to Withhold Payments. Metro shall have the right to withhold from payments due to Contractor such sums as necessary, in Metro's sole opinion, to protect Metro against any loss, damage, or claim which may result from Contractor's performance or failure to perform under this Agreement or the failure of Contractor to make proper payment to any suppliers or subcontractors.

11. State and Federal Law Constraints. Both parties shall comply with the public contracting provisions of ORS chapter 279, and the recycling provisions of ORS 279.545 - 279.650, to the extent those provisions apply to this Agreement. All such provisions required to be included in this Agreement are incorporated herein by reference. Contractor shall comply with all applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations including those of the Americans with Disabilities Act.

12. Assignment. This Agreement is binding on each party, its successors, assigns, and legal representatives and may not, under any circumstance, be assigned or transferred by either party.

13. Termination. This Agreement may be terminated by mutual consent of the parties. In addition, Metro may terminate this Agreement by giving Contractor five days prior written notice of intent to terminate, without waiving any claims or remedies it may have against Contractor. Termination shall not excuse payment for expenses properly incurred prior to notice of termination, but neither party shall be liable for indirect or consequential damages arising from termination under this section.

14. No Waiver of Claims. The failure to enforce any provision of this Agreement shall not constitute a waiver by Metro of that or any other provision.

15. Modification. This Agreement is the entire agreement between the parties, and may only be modified in writing, signed by both parties.

CONTRACTOR	METROPOLITAN SERVICE DISTRICT
By: _____	By: _____
Title: _____	Title: _____
Date: _____	Date: _____

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ATTACHMENT D.
METRO CODE FOR DISADVANTAGED BUSINESS PROGRAM
and LETTER FROM DEPUTY EXECUTIVE OFFICER

METRO CODE SECTION 2.04.100
Disadvantaged Business Program
METROPOLITAN SERVICE DISTRICT
Revised June 1991

2.04.100 Disadvantaged Business Program, Purpose and Authority:

(a) It is the purpose of this ordinance to establish and implement a program to encourage the utilization by Metro of disadvantaged and women-owned businesses by creating for such

businesses the maximum possible opportunity to compete for and participate in Metro contracting activities.

(b) The portions of this ordinance which relate to federally funded contracts are adopted pursuant to 49 CFR 23 and are intended to comply with all relevant federal regulations. Federal regulation 49 CFR 23 and its amendments implement section (105)(f) of the Surface Transportation Assistance Act of 1982 relating to the participation by Minority Business Enterprises in Department of Transportation programs.

(c) This ordinance shall be known and may be cited as the "Metro Disadvantaged Business Program," hereinafter referred to as the "Program."

(d) This ordinance supersedes the Metro "Minority Business Enterprise (MBE) Program" dated October 1980 and amended December 1982.

(Ordinance No. 83-165, Sec. 1; amended by Ordinance No. 84-181, Sec. 1; all previous Ordinances repealed by Ordinance No. 87-216, Sec. 1; amended by Ordinance No. 87-231, Sec. 1)

2.04.105 Policy Statement:

(a) Through this Program, Metro:

(1) Expresses its strong commitment to provide maximum opportunity to disadvantaged and women-owned businesses in contracting;

(2) Informs all employees, governmental agencies and the general public of its intent to implement this policy statement; and

(3) Assures conformity with applicable federal regulations as they exist or may be amended.

(b) It is the policy of Metro to provide equal opportunity to all persons to access and participate in the projects, programs and services of Metro. Metro and Metro contractors will not discriminate against any person or firm on the basis of race, color, national origin, sex, sexual orientation, age, religion, physical handicap, political affiliation or marital status.

(c) The policies, practices and procedures established by this ordinance shall apply to all Metro departments and project areas except as expressly provided in this ordinance.

(d) The objectives of the program shall be:

(1) To assure that provisions of this ordinance are adhered to by all Metro departments, contractors, employees and USDOT subrecipients and contractors.

(2) To initiate and maintain efforts to increase program participation by disadvantaged and women businesses.

(e) Metro accepts and agrees to the statements of 49 CFR §23.43(a)(1) and (2), and said statements shall be included in all USDOT agreements with USDOT subrecipients and in all USDOT assisted contracts between Metro or USDOT subrecipients and any contractor.

(Ordinance No. 83-165, Sec. 2; amended by Ordinance No. 84-181, Sec. 1; all previous Ordinances repealed by Ordinance No. 87-216, Sec. 1; amended by Ordinance No. 87-231, Sec. 1)

2.04.110 Definitions: For purposes of this Ordinance, the following definitions shall apply:

(a) "Applicant" means one who submits an application, request or plan to be approved by a USDOT official or by Metro as a condition to eligibility for Department of Transportation (USDOT) financial assistance; and "application" means such an application, request or plan.

(b) "Construction Contract" means a contract for construction of buildings or other facilities, and includes reconstruction, remodeling and all activities which are appropriately associated with a construction project.

(c) "Contract" means a mutually binding legal relationship or any modification thereof obligating the seller to furnish supplies or services, including construction, and the buyer to pay for them. For purposes of this ordinance a lease or a purchase order of $500.00 or more is a contract.

(d) "Contractor" means the one who participates, through a contract or subcontract, in the Program and includes lessees.

(e) "Department or USDOT" means the United States Department of Transportation, including its operating elements.

(f) "Disadvantage Business Enterprise or DBE" means a small business concern which is certified by an authorized agency and:

(1) Which is at least 51 percent owned by one or more socially and economically disadvantaged individuals, or, in the case of any publicly-owned business, at least 51 percent of the stock of which is owned by one or more socially and economically disadvantaged individuals; and

(2) Whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it.

For purposes of USDOT assisted contracts, the term Disadvantaged Business Enterprise shall be deemed to include Women-Owned Business Enterprises.

(g) "Executive Department" means the State of Oregon's Executive Department.

(h) "Joint Venture" is defined as an association of two or more businesses to carry out a single business enterprise for profit for which purpose they combine their property, capital, efforts, skills and knowledge. In a joint venture between a DBE/WBE and non-DBE/WBE, the DBE/WBE must be responsible for a clearly defined portion of the work to be performed and must share in the ownership, control, management responsibilities, risks and profits of the joint venture. A joint venture of a DBE/WBE and a non-DBE/WBE must receive Metro approval prior to contract award to be counted toward any DBE/WBE contract goals.

(i) "Labor and Materials Contract" is a contract including a combination of service and provision of materials other than construction contracts. Examples may include plumbing repair, computer maintenance or electrical repair, etc.

(j) "Lessee" means a business or person that leases, or is negotiating to lease, property from a recipient or the Department on the recipient's or Department's facility for the purpose of operating a transportation-related activity or for the provision of goods or services to the facility or to the public on the facility.

(k) "Oregon Department of Transportation or ODOT" means the State of Oregon's Department of Transportation.

(l) "Personal Services Contract" means a contract for services of a personal or professional nature.

(m) "Procurement Contract" means a contract for the purchase or sale of supplies, materials, equipment, furnishings or other goods not associated with a construction or other contract.

(n) "Recipient" means any entity, public or private, to whom USDOT financial assistance is extended, directly or through another recipient for any program.

(o) "Small Business Concern" means a small business as defined pursuant to section 3 of the Small Business Act and relevant regulations promulgated pursuant thereto.

(p) "Socially and Economically Disadvantaged Individuals or Disadvantaged Individuals" means those individuals who are

citizens of the United States (or lawfully admitted permanent residents) and who are Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans or Asian-Indian Americans and any other minorities or individuals found to be disadvantaged by the Small Business Administration pursuant to section 8(a) of the Small Business Act. Certifying recipients shall make a rebuttable presumption that individuals in the following groups are socially and economically disadvantaged. Certifying recipients also may determine, on a case-by-case basis, that individuals who are not a member of one of the following groups are socially and economically disadvantaged:

(1) "Black Americans," which includes persons having origins in any of the Black racial groups of Africa;

(2) "Hispanic Americans," which includes persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Portuguese-American, Spanish culture or origin, regardless of race;

(3) "Native Americans," which includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians;

(4) "Asian-Pacific Americans," which includes persons whose origins are from Japan, China, Taiwan, Korea, Vietnam, Laos, Cambodia, the Philippines, Samoa, Guam, the U.S. Trust Territories of the Pacific, and the Northern Marianas; and

(5) "Asian-Indian Americans," which includes persons whose origins are from India, Pakistan, and Bangladesh.

(q) "USDOT Assisted Contract" means any contract or modification of a contract between Metro and a contractor which is paid for in whole or in part with USDOT financial assistance.

(r) "USDOT Financial Assistance" means financial aid provided by USDOT or the United States Railroad Association to a recipient, but does not include a direct contract. The financial aid may be provided directly in the form of actual money, or indirectly in the form of guarantees authorized by statute as financial assistance services of Federal personnel, title or other interest in real or personal property transferred for less than fair market value, or any other arrangement through which the recipient benefits financially, including licenses for the construction or operation of a Deep Water Port.

(s) "Women-Owned Business Enterprise or WBE" means a small business concern, as defined pursuant to section 3 of the Small

Business Act and implementing regulations which is owned and controlled by one or more women and which is certified by an authorized agency. "Owned and controlled" means a business which is at least 51 percent owned by one or more women or, in the case of a publicly owned business, at least 51 percent of the stock of which is owned by one or more women, and whose management and daily business operations are controlled by one or more women. For purposes of USDOT assisted contracts, the term Disadvantaged Business Enterprise shall be deemed to include Women-Owned Business Enterprises.

(Ordinance No. 165, Sec. 3; amended by Ordinance No. 84-181, Sec. 2; all previous Ordinances repealed by Ordinance No. 87-216, Sec. 1; amended by Ordinance No. 87-231, Sec. 1; and Ordinance No. 88-252, Sec. 1)

2.04.115 Notice to Contractors, Subcontractors and Subrecipients: Contractors, subcontractors and subrecipients of Metro accepting contracts or grants under the Program which are USDOT-assisted shall be advised that failure to carry out the requirements set forth in 49 CFR 23.43(a) shall constitute a breach of contract and, after notification by Metro, may result in termination of the agreement or contract by Metro or such remedy as Metro deems appropriate. Likewise, contractors of Metro accepting locally-funded contracts under the Program shall be advised that failure to carry out the applicable provisions of the Program shall constitute a breach of contract and, after notification by Metro, may result in termination or such other remedy as Metro deems appropriate.

(Ordinance No. 83-165, Sec. 4; all previous Ordinances repealed by Ordinance No. 87-216, Sec. 1; amended by Ordinance No. 87-231, Sec. 1)

2.04.120 Liaison Officer:

(a) The Executive Officer shall by executive order, designate a Disadvantaged Business Liaison Officer and, if necessary, other staff adequate to administer the Program. The Liaison Officer shall report directly to the Executive Officer on matters pertaining to the Program.

(b) The Liaison Officer shall be responsible for developing, managing and implementing the program, and for disseminating information on available business opportunities so that DBEs and WBEs are provided an equitable opportunity to bid on Metro contracts. In addition to the responsibilities of the Liaison Officer, all department heads and program managers shall have responsibility to assure implementation of the Program.

(Ordinance No. 83-165, Sec. 5; amended by Ordinance No. 86-197, Sec. 1; all previous Ordinances repealed by Ordinance No. 87-216, Sec. 1; amended by Ordinance No. 87-231, Sec. 1)

2.04.125 Directory: A directory of DBEs and WBEs certified by ODOT or the Executive Department, as applicable shall be maintained by the Liaison Officer to facilitate identifying such businesses with capabilities relevant to general contracting requirements and particular solicitations. The directory shall be available to contract bidders and proposers in their efforts to meet Program requirements.

(Ordinance No. 83-165, Sec. 6; all previous Ordinances repealed by Ordinance No. 87-216, Sec. 1; amended by Ordinance No. 87-231, Sec. 1)

2.04.130 Minority-Owned Banks: Metro will seek to identify minority-owned banks within the policies adopted by the Metro Council and make the greatest feasible use of their services. In addition, Metro will encourage prime contractors, subcontractors and consultants to utilize such services by sending them brochures and service information on certified DBE/WBE banks.

(Ordinance No. 83-165, Sec. 7; amended by Ordinance No. 84-181, Sec. 3; all previous Ordinances repealed by Ordinance No. 87-216, Sec. 1; amended by Ordinance No. 87-231, Sec. 1)

2.04.135 Affirmative Action and Equal Opportunity Procedures: Metro shall use affirmative action techniques to facilitate DBE and WBE participation in contracting activities. These techniques include:

(a) Arranging solicitations, time for the presentation of bids, quantities specifications, and delivery schedules so as to facilitate the participation of DBEs and WBEs.

(b) Referring DBEs and WBEs in need of management assistance to established agencies that provide direct management assistance to such businesses.

(c) Carrying out information and communications programs on contracting procedures and specific contracting opportunities in a timely manner, with such programs being bilingual where appropriate.

(d) Distribution of copies of the program to organizations and individuals concerned with DBE/WBE programs.

(e) Periodic reviews with department heads to insure that they are aware of the program goals and desired activities on their parts to facilitate reaching the goals. Additionally, departmental efforts toward and success in meeting DBE/WBE goals for department

contracts shall be factors considered during annual performance evaluations of the department heads.

(f) Monitor and insure that Disadvantaged and Women Business Enterprise planning centers and likely DBE/WBE contractors are receiving requests for bids, proposals and quotes.

(g) Study the feasibility of certain USDOT-assisted contracts and procurements being set aside for DBE/WBE participation.

(h) Distribution of lists to potential DBE/WBE contractors of the types of goods and services which Metro regularly purchases.

(i) Advising potential DBE/WBE vendors that Metro does not certify DBE/WBEs, and directing them to ODOT until December 31, 1987, and, thereafter, to the Executive Department.

(j) Specifying purchases by generic title rather than specific brand name whenever feasible.

(k) Establishing an interdepartmental contract management committee which will meet regularly to monitor and discuss, among other issues, potential DBE and WBE participation in contracts. In an effort to become more knowledgeable regarding DBE and WBE resources, the committee shall also invite potential DBE and WBE contractors to attend selected meetings.

(l) Requiring that at least one DBE or WBE vendor or contractor be contacted for all contract awards which are not exempt from Metro's contract selection procedures and which are 1) for more than $500 but not more than $15,001 in the case of non-personal services contracts; and 2) for more than $2,500 but not more than $10,001 for personal services contracts. The Liaison Officer may waive this requirement if he/she determines that there are no DBEs or WBEs on the certification list capable of providing the service or item. For contracts over the dollar amounts indicated in this section, all known DBEs and WBEs in the business of providing the service or item(s) required shall be mailed bid or proposal information.

(m) The Executive Officer or his/her designee, may establish and implement additional affirmative action techniques which are designed to facilitate participation of DBEs and WBEs in Metro contracting activities.

(Ordinance No. 83-165, Sec. 8; amended by Ordinance No. 84-181, Sec. 4; Ordinance No. 86-197, Sec. 1; all previous Ordinances repealed by Ordinance No. 87-216, Sec. 1; amended by Ordinance No. 87-231, Sec. 1)

2.04.140 Certification of Disadvantaged Business Eligibility:

(a) To participate in the Program as a DBE or WBE, contractors, subcontractors and joint ventures must have been certified by an authorized certifying agency as described in subsection (b) of this section.

(b) Metro will not perform certification or recertification of businesses or consider challenges to socially and economically disadvantaged status. Rather Metro will rely upon the certification and recertification processes of ODOT and will utilize ODOT's certification list until December 31, 1987, and, thereafter, the Executive Department's list in determining whether a prospective contractor or subcontractor is certified as a DBE or WBE. A prospective contractor or subcontractor must be certified as a DBE or WBE by one of the above agencies, as applicable, and appear on the respective certification list of said agency, prior to the pertinent bid opening or proposal submission date to be considered by Metro to be an eligible DBE or WBE and be counted toward meeting goals. Metro will adhere to the Recertification Rulings resulting from 105(f) or state law, as applicable.

(c) Prospective contractors or subcontractors which have been denied certification by one of the above agencies may appeal such denial to the certifying agency pursuant to applicable law. However, such appeal shall not cause a delay in any contract award by Metro. Decertification procedures for USDOT-assisted contractor or potential contractors will comply with the requirements of Appendix A "Section by Section Analysis" of the July 21, 1983, Federal Register, Vol. 45, No. 130, p. 45287, and will be administered by the agency which granted certification.

(d) Challenges to certification or to any presumption of social or economic disadvantage with regard to the USDOT- assisted portion of this Program, as provided for in 49 CFR 23.69, shall conform to and be processed under the procedures prescribed by each agency indicated in paragraph (b) of this section. That challenge procedure provides that:

(1) Any third party may challenge the socially and economically disadvantaged status of any individual (except an individual who has a current 8(a) certification from the Small Business Administration) presumed to be socially and economically disadvantaged if that individual is an owner of a firm certified by or seeking certification from the certifying agency as a disadvantaged business. The challenge shall be made in writing to the recipient.

(2) With its letter, the challenging party shall include all information available to it relevant to

a determination of whether the challenged party is in fact socially and economically disadvantaged.

(3) The recipient shall determine, on the basis of the information provided by the challenging party, whether there is reason to believe that the challenged party is in fact not socially and economically disadvantaged.

(i) if the recipient determines that there is not reason to believe that the challenged party is not socially and economically disadvantaged, the recipient shall so inform the challenging party in writing. This terminates the proceeding.

(ii) if the recipient determines that there is reason to believe that the challenged party is not socially and economically disadvantaged, the recipient shall begin a proceeding as provided in paragraphs (b), (4), (5) and (6) of this paragraph.

(4) The recipient shall notify the challenged party in writing that his or her status as a socially and economically disadvantaged individual has been challenged. The notice shall identify the challenging party and summarize the grounds for the challenge. The notice shall also require the challenged party to provide to the recipient, within a reasonable time, information sufficient to permit the recipient to evaluate his or her status as a socially and economically disadvantaged individual.

(5) The recipient shall evaluate the information available to it and make a proposed determination of the social and economic disadvantage of the challenged party. The recipient shall notify both parties of this proposed determination in writing, setting forth the reasons for its proposal. The recipient shall provide an opportunity to the parties for an informal hearing, at which they can respond to this proposed determination in writing and in person.

(6) Following the informal hearing, the recipient shall make a final determination. The recipient shall inform the parties in writing of the final determination, setting forth the reasons for its decision.

(7) In making the determinations called for in paragraphs (b)(3)(5) and (6) of this paragraph, the recipient shall use the standards set forth in Appendix C of this subpart.

(8) During the pendency of a challenge under this section, the presumption that the challenged party is a socially and economically disadvantaged individual shall remain in effect." 49 CFR 23.69.

(Ordinance No. 83-165, Sec. 9; amended by Ordinance No. 84-181, Sec. 5; all previous Ordinances repealed by Ordinance No. 87-216, Sec. 1; amended by Ordinance No. 87-231, Sec. 1; and Ordinance No. 88-252, Sec. 1)

2.04.145 Annual Disadvantaged Business Goals:

(a) The Metro Council shall, by resolution each June, establish annual DBE goals and for locally-funded contracts, separate WBE goals for the ensuing fiscal year. Such annual goals shall be established separately for construction contracts, labor and materials contracts, personal services contracts, procurement contracts, and USDOT assisted contracts regardless of type.

(b) Annual goals will be established taking into consideration the following factors:

(1) Projection of the number and types of contracts to be awarded by Metro;

(2) Projection of the number, expertise and types of DBEs and WBEs likely to be available to compete for the contracts;

(3) Past results of Metro's efforts under the Program;

(4) For USDOT-assisted contract goals, existing goals of other local USDOT recipients and their experience in meeting these goals; and

(5) For locally-funded contract goals, existing goals of other Portland metropolitan area contracting agencies, and their experience in meeting these goals.

(c) Annual goals for USDOT-assisted contracts must be approved by the United States Department of Transportation. 49 CFR §23.45(g)(3).

(d) Metro will publish notice that the USDOT-assisted contract goals are available for inspection when they are submitted to USDOT or other federal agencies. They will be made available

for 30 days following publication of notice. Public comment will be accepted for 45 days following publication of the notice.

(e) Metro will publish notice regarding proposed locally-funded contract goals not later than ten (10) days prior to adoption of the goals.

(Ordinance No. 83-165, Sec. 10; amended by Ordinance No. 86-197, Sec. 1; all previous Ordinances repealed by Ordinance No. 87-216; amended by Ordinance No. 87-231, Sec. 1; and Ordinance No. 88-252, Sec. 1)

2.04.150 Contract Goals:

(a) The annual goals established for construction contracts shall apply as individual contract goals for construction contracts over $50,000.

(b) The Liaison Officer may set a contract goal for any contract other than construction contracts over $25,000. The setting of such contract goal shall be made in writing prior to the solicitation of bids for such contract. Contract goals for contracts other than construction contracts over $50,000 shall be set at the discretion of the Liaison Officer and shall not be tied, necessarily, to the annual goal for such contract type.

(c) Even though no DBE/WBE goals are established at the time that bid/proposal documents are drafted, the Liaison Officer may direct the inclusion of a clause in any RFP or bid documents for any contract described in this section which requires that the prime contractor, prior to entering into any subcontracts, make good faith efforts, as that term is defined in Section 2.04.160, to achieve DBE/WBE participation in the same goal amount as the current annual goal for that contract type.

(d) Contract goals may be complied with pursuant to Section 2.04.160 and/or 2.04.175. The extent to which DBE/WBE participation will be counted toward contract goals is governed by the latter section.

(Ordinance No. 83-165, Sec. 11; repealed by Ordinance No. 87-216, Sec. 1; amended by Ordinance No. 87-231, Sec. 1; and Ordinance No. 88-252, Sec. 1)

2.04.155 Contract Award Criteria:

(a) To be eligible for award of contracts containing a DBE/WBE goal, prime contractors must either meet or exceed the specific goal for DBE and WBE participation, or prove that they have made good faith efforts to meet the goal prior to the time bids are opened or proposal are due. Bidders/Proposers are required to utilize the most current list of DBEs and WBEs

certified by ODOT until December 31, 1987, and, thereafter, by the Executive Department, in all of the bidders'/proposers' good faith efforts solicitations. The address where certified lists may be obtained shall be included in all applicable bid/proposal documents.

(b) All invitations to bid or request for proposals on contracts for which goals have been established shall require all bidders/proposers to submit with their bids and proposals a statement indicating that they will comply with the contract goal or that they have made good faith efforts as defined in Section 2.04.160 to do so. To document the intent to meet the goals, all bidders and proposers shall complete and endorse a Disadvantaged Business Program Compliance form and include said form with bid or proposal documents. The form shall be provided by Metro with bid/proposal solicitations.

(c) Agreements between a bidder/proposer and a DBE/WBE in which the DBE/WBE promises not to provide subcontracting quotations to other bidders/proposers are prohibited.

(d) Apparent low bidders/proposers shall, by the close of the next working day following bid opening (or proposal submission date when no public opening is had), submit to Metro detailed DBE and WBE Utilization Forms listing names of DBEs and WBEs who will be utilized and the nature and dollar amount of their participation. This form will be binding upon the bidder/proposer. Within five working days of bid opening or proposal submission date, such bidders/proposers shall submit to Metro signed Letters of Agreement between the bidder/proposer and DBE/WBE subcontractors and suppliers to be utilized in performance of the contract. A sample Letter of Agreement will be provided by Metro. The DBE and WBE Utilization Forms shall be provided by Metro with bid/proposal documents.

(e) An apparent low bidder/proposer who states in its bid/proposal that the DBE/WBE goals were not met but that good faith efforts were performed shall submit written evidence of such good faith efforts within two working days of bid opening or proposal submission in accordance with Section 2.04.160. Metro reserves the right to determine the sufficiency of such efforts.

(f) Except as provided in paragraph (g) of this section, apparent low bidders or apparent successful proposers who state in their bids/proposals that they will meet the goals or will show good faith efforts to meet the goals, but who fail to comply with paragraph (d) or (e) of this section, shall have their bids or proposals rejected and shall forfeit any required bid security or bid bond. In that event the next lowest bidder or, for personal services contracts, the firm which scores second highest shall, within two days of notice of such ineligibility of the low bidder, submit evidence of goal compliance or good faith effort as provided

above. This process shall be repeated until a bidder or proposer is determined to meet the provisions of this section or until Metro determines that the remaining bids are not acceptable because of amount of bid or otherwise.

(g) The Liaison Officer, at his or her discretion, may waive minor irregularities in a bidder's or proposer's compliance with the requirements of this section provided, however, that the bid or proposal substantially complies with public bidding requirements as required by applicable law.

(Ordinance No. 83-165, Sec. 12; amended by Ordinance No. 86-197, Sec. 1; all previous Ordinances repealed by Ordinance No. 87-216, Sec. 1; amended by Ordinance No. 87-231, Sec. 1)

2.04.160 Determination of Good Faith Efforts:

(a) Bidders or Proposers on USDOT-assisted contracts to which DBE goals apply must, to be eligible for contract award, comply with the applicable contract goal or show that good faith efforts have been made to comply with the goal. Good faith efforts should include at least the following standards established in the amendment to 49 CFR §23.45(h), Appendix A, dated Monday, April 27, 1981. A showing of good faith efforts must include written evidence of at least the following:

(1) Attendance at any presolicitation or prebid meetings that were scheduled by Metro to inform disadvantaged and women business enterprises of contracting and subcontracting or material supply opportunities available on the project;

(2) Advertisement in trade association, general circulation, minority and trade-oriented, women-focus publications, if any and through a minority-owned newspaper or minority-owned trade publication concerning the sub- contracting or material supply opportunities at least 10 days before bids or proposals are due.

(3) Written notification to a reasonable number but no less than five (5) DBE firms that their interest in the contract is solicited. Such efforts should include the segmenting of work to be subcontracted to the extent consistent with the size and capability of DBE firms in order to provide reasonable subcontracting opportunities. Each bidder should send solicitation letters inviting quotes or proposals from DBE firms, segmenting portions of the work and specifically describing, as accurately as possible, the portions of the work for which quotes or proposals are solicited from

DBE firms and encouraging inquiries for further details. Letters that are general and do not describe specifically the portions of work for which quotes or proposals are desired are discouraged, as such letters generally do not bring responses. It is expected that such letters will be sent in a timely manner so as to allow DBE sufficient opportunity to develop quotes or proposals for the work described.

(4) Evidence of follow-up to initial solicitations of interest, including the following:

(A) The names, addresses, telephone numbers of all DBE contacted;

(B) A description of the information provided to DBE firms regarding the plans and specifications for portions of the work to be performed; and

(C) A statement of the reasons for non-utilization of DBE firms, if needed to meet the goal.

(5) Negotiation in good faith with DBE firms. The bidder shall not, without justifiable reason, reject as unsatisfactory bids prepared by any DBE firms;

(6) Where applicable, the bidder must provide advice and assistance to interested DBE firms in obtaining bonding, lines of credit or insurance required by Metro or the bidder;

(7) Overall, the bidder's efforts to obtain DBE participation must be reasonably expected to produce a level of participation sufficient to meet Metro's goals; and

(8) The bidder must use the services of minority community organizations, minority contractor groups, local, state and federal minority business assistance offices and other organizations identified by the Executive Department's Advocate for Minority and Women Business that provide assistance in the recruitment and placement of DBEs and WBEs.

(b) Bidders or proposers on locally-funded contracts to which DBE/WBE goals apply shall achieve the applicable contract goal or demonstrate that they have made good faith efforts to achieve the

goals. Good faith efforts shall include written documentation of at least the following actions by bidders:

(1) Attendance at any presolicitation or prebid meetings that were scheduled by Metro to inform DBEs and WBEs of contracting and subcontracting or material supply opportunities available on the project;

Documentation required: Signature of representative of bidder or proposer on prebid meeting attendance sheet.

(2) Identifying and selecting specific economically feasible units of the project to be performed by DBEs or WBEs to increase the likelihood of participation by such enterprises;

Minimum documentation required: At least the documentation required under subsection (4) below.

(3) Advertising in, at a minimum, a newspaper of general circulation, and trade association, minority and trade oriented, women-focused publications, if any, concerning the subcontracting or material supply opportunities on the project at least ten (10) days before bids or proposals are due;

Documentation required: copies of ads published.

(4) Providing written notice soliciting sub-bids/proposals to not less than five (5) DBEs or WBEs for each subcontracting or material supply work item selected pursuant to (2) above not less than ten (10) days before bids/proposals are due.

If there are less than five certified DBEs/WBEs listed for that work or supply specialty then the solicitation must be mailed to at least the number of DBEs/WBEs listed for that specialty. The solicitation shall include a description of the work for which subcontract bids/proposals are requested and complete information on bid/proposal deadlines along with details regarding where project specifications may be reviewed.

Documentation required: Copies of all solicitation letters sent to DBE/WBE along with a written statement from the bidder/proposer that all the letters were sent by regular or certified mail not less than 10 days before bids/proposals were due.

(5) Making, not later than five days before bids/proposals are due, follow-up phone calls to all DBEs/WBEs who have not responded to the solicitation letters to determine if they would be submitting bids and/or to encourage them to do so.

Minimum documentation required: Log showing a) dates and times of follow-up calls along with names of individuals contacted and individuals placing the calls; and b) results attained from each DBE/WBE to whom a solicitation letter was sent (e.g., bid submitted, declined, no response). In instances where DBE/WBE bids were rejected, the dollar amount of the bid rejected from the DBE/WBE must be indicated along with the reason for rejection and the dollar amount of the bid which was accepted for that subcontract or material supply item.

(6) Using the services of minority community organizations, minority contractor groups, local, state and federal minority business assistance offices and other organizations identified by the Executive Department's Advocate for Minority and Women Business that provide assistance in the recruitment and placement of DBEs and WBEs; where applicable, advising and assisting DBEs and WBEs in obtaining lines of credit or insurance required by Metro or the bidder/proposer; and, otherwise, making efforts to encourage participation by DBEs and WBEs which could reasonably be expected to produce a level of participation sufficient to meet the goals.

Minimum documentation required: Letter from bidder/proposer indicating all special efforts made to facilitate attainment of contract goals, the dates such actions were taken and results realized.

(7) Notwithstanding any other provision of this section, bidders and proposers on locally-funded contracts to which DBE/WBE goals apply need not accept the bid of a DBE or WBE on any particular subcontract or material supply item if the bidder/proposer demonstrates that none of the DBEs or WBEs submitting bids were the lowest responsible, responsive and qualified bidders/proposers on that particular subcontract item and that the subcontract item was awarded to the lowest responsible, responsive bidder/proposer.

Metro reserves the right to require additional written documentation of good faith efforts and bidders and proposers shall comply with all such requirements by Metro. It shall be a rebuttable presumption that a bidder or proposer has made a good faith effort to comply with the contract goals if the bidder has performed and submits written documentation of all of the above actions. It shall be a rebuttable presumption that the bidder has not made a good faith effort if the bidder has not performed or has not submitted documentation of all of the above actions.

(Ordinance No. 83-165, Sec. 13; amended by Ordinance No. 84-181, Sec. 6 and Ordinance No. 86-197, Sec. 1; all previous Ordinances repealed by Ordinance No. 87-216, Sec. 1; amended by Ordinance No. 87-231, Sec. 1; and Ordinance No. 88-252, Sec. 1)

2.04.165 Replacement of DBE or WBE Subcontractors: Prime contractors shall not replace a DBE/WBE subcontractor with another subcontractor, either before contract award or during contract performance, without prior Metro approval. Prime contractors who replace a DBE or WBE subcontractor shall replace such DBE/WBE subcontractor with another certified DBE/WBE subcontractor or make good faith efforts as described in the preceding section to do so.

(Ordinance No. 83-165, Sec. 14; amended by Ordinance No. 86-197, Sec. 1; all previous Ordinances repealed by Ordinance No. 87-216, Sec. 1; amended by Ordinance No. 87-231, Sec. 1)

2.04.170 Records and Reports:

(a) Metro shall develop and maintain a recordkeeping system to identify and assess DBE and WBE contract awards, prime contractors' progress in achieving goals and affirmative action efforts. Specifically, the following records will be maintained:

(1) Awards to DBEs and WBEs by number, percentage and dollar amount.

(2) A description of the types of contracts awarded.

(3) The extent to which goals were exceeded or not met and reasons therefor.

(b) All DBE and WBE records will be separately maintained. Required DBE and WBE information will be provided to federal agencies and administrators on request.

(c) The Liaison Officer shall prepare reports, at least semiannually, on DBE and WBE participation to include the following:

(1) The number of contracts awarded;

(2) Categories of contracts awarded;

(3) Dollar value of contracts awarded;

(4) Percentage of the dollar value of all contracts awarded to DBE/WBE firms in the reporting period; and

(5) The extent to which goals have been met or exceeded.

(Ordinance No. 83-165, Sec. 15; amended by Ordinance No. 84-181, Sec. 7, and Ordinance No. 86-197, Sec. 1; all previous Ordinances repealed by Ordinance No. 87-216, Sec. 1; amended by Ordinance No. 87-231, Sec. 1)

2.04.175 Counting Disadvantaged Business Participation Toward Meeting Goals:

(a) DBE/WBE participation shall be counted toward meeting the goals on each contract as follows:

(1) Subject to the limitations indicated in paragraphs (2) through (8) below, the total dollar value of a prime contract or subcontract to be performed by DBEs or WBEs is counted toward the applicable goal for contract award purposes as well as annual goal compliance purposes.

(2) The total dollar value of a contract to a disadvantaged business owned and controlled by both disadvantaged males and non-disadvantaged females is counted toward the goals for disadvantaged businesses and women, respectively, in proportion to the percentage of ownership and control of each group in the business.

The total dollar value of a contract with a disadvantaged business owned and controlled by disadvantaged women is counted toward either the disadvantaged business goal or the goal for women, but not to both. Metro shall choose the goal to which the contract value is applied.

(3) Metro shall count toward its goals a portion of the total dollar value of a contract with an eligible joint venture equal to the percentage of the ownership and control of the disadvantaged or female business partner in the joint venture.

(4) Metro shall count toward its goals only expenditures to DBEs and WBEs that perform a commercially useful function in the work of a contract. A DBE or WBE is considered to perform a commercially useful function when it is responsible for execution of a distinct element of the work of a contract and carrying out its responsibilities by actually performing, managing and supervising the work involved. To determine whether a DBE or WBE is performing a commercially useful function, Metro shall evaluate the amount of work subcontracted, industry practices and other relevant factors.

(5) Consistent with normal industry practices, a DBE or WBE may enter into subcontracts. If a DBE or WBE contractor subcontracts a significantly greater portion of the work of the contract than would be expected on the basis of normal industry practices, the DBE or WBE shall be presumed not to be performing a commercially useful function. The DBE or WBE may present evidence to Metro to rebut this presumption. Metro's decision on the rebuttal of this presumption is subject to review by USDOT for USDOT-assisted contracts.

(6) A DBE or WBE which provides both labor and materials may count toward its disadvantaged business goals expenditures for materials and supplies obtained from other than DBE or WBE suppliers and manufacturers, provided that the DBE or WBE contractor assumes the actual and contractual responsibility for the provision of the materials and supplies.

(7) Metro shall count its entire expenditure to a DBE or WBE manufacturer (i.e., a supplier that produces goods from raw materials or substantially alters them before resale).

(8) Metro shall count against the goals 60 percent of its expenditures to DBE or WBE suppliers that are not manufacturers, provided that the DBE or WBE supplier performs a commercially useful function in the supply process.

(9) When USDOT funds are passed-through by Metro to other agencies, any contracts made with those funds and any DBE participation in those contracts shall only be counted toward Metro's goals. Likewise, any USDOT funds passed-through to Metro from other agencies and then used for contracting shall count only toward that agency's goals. Project managers

responsible for administration of pass-through agreements shall include the following language in those agreements:

(a) Policy. It is the policy of the Department of Transportation that minority business enterprises as defined in 49 CFR Part 23 shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with federal funds under this agreement. Consequently, the MBE requirements of 49 CFR Part 23 apply to this agreement.

(b) MBE Obligation. The recipient or its contractor agrees to ensure that minority business enterprises as defined in 49 CFR Part 23 have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with federal funds provided under this agreement. In this regard, all recipients or contractors shall take all necessary and reasonable steps in accordance with 49 CFR Part 23 to ensure that minority business enterprises have the maximum opportunity to compete for and perform contracts. Recipients and their contractors shall not discriminate on the basis of race, color, national origin or sex in the award and performance of USDOT-assisted contracts."

(b) DBE or WBE participation shall be counted toward meeting annual goals as follows:

(1) Except as otherwise provided below, the total dollar value of any contract which is to be performed by a DBE or WBE is counted toward meeting annual goals.

(2) The provisions of paragraphs (a)(2) through (a)(8) of this section, pertaining to contract goals, shall apply equally to annual goals.

(Ordinance No. 83-165, Sec. 16; amended by Ordinance No. 84-181, Sec. 8; and Ordinance No. 86-197, Sec. 1; all previous Ordinances repealed by Ordinance No. 87-216, Sec. 1; amended by Ordinance No. 87-231, Sec. 1; and Ordinance No. 88-252, Sec. 1)

2.04.180 Compliance and Enforcement:

(a) Metro shall reserve the right, at all times during the period of any contract, to monitor compliance with the terms of this chapter and the contract and with any representation made by

a contractor prior to contract award pertaining to DBE and WBE participation in the contract.

(b) The Liaison Officer may require, at any stage of contract completion, documented proof from the contractor of actual DBE and WBE participation.

(Ordinance No. 83-165, Sec. 17; all previous Ordinances repealed by Ordinance No. 87-216, Sec. 1; amended by Ordinance No. 87-231, Sec. 1)

METRO

2000 SW First Avenue
Portland, OR 97201-5398
(503) 221-1646
Fax 241-7417

October 22, 1991

Dear Potential Bidder/Proposer:

For the past ten years, the Metropolitan Service District has had a special contracting program to encourage participation in metro contracts by businesses owned by minorities including women. This program has been applied to both federally funded and locally funded projects.

We have now been advised by our General Counsel that the Metro Code provisions relating to participation by minority-owned businesses in locally funded contracts are unconstitutional.

Therefore, I must reluctantly advise you that until the Metro Council acts to correct this defect and/or adopts a new program, I cannot and will not act in probable violation of the law and attempt to enforce the present Metro DBE and WBE Program requirements on locally funded projects.

The economy of the Metro region is comprised of a multitude of emerging and small businesses which mirror the racial diversity within our boundaries. They're our customers and clients. They pay taxes. They hire the local work force. They determine the health of the local economy. Supporting those businesses should not be viewed as just a requirement. Supporting those businesses should be viewed as good business!

I, therefore encourage you to set the legal question aside and voluntarily follow good faith efforts to utilize Disadvantaged, Minority and Women Owned Business Enterprises as your subcontractors and suppliers.

Please consider these issues carefully. Talk to your legal counsel. Reflect upon the larger issue. If you have questions, please contact Rich Wiley at Metro 221-1646 x 116.

Respectfully,

Richard D. Engstrom
Deputy Executive Officer

ATTACHMENT E.
METRO DISADVANTAGED BUSINESS PROGRAM FORMS

DISADVANTAGED BUSINESS PROGRAM COMPLIANCE FORM

(To be submitted with Bid or Proposal)

Name of Metro Project: _____

Name of Bidder: _____

Address: _____

Telephone: _____

In accordance with Metro's Disadvantaged Business Program, the above-named Bidder has accomplished the following:

_____ 1. Has fully met the Contract goals and will subcontract
___ percent of the Contract amount to DBEs and
___ percent to WBEs.

_____ 2. Has partially met the Contract goals and will subcontract ___ percent of the Contract amount to DBEs and ___ percent to WBEs. The Contractor has made good faith efforts prior to Bid opening (or proposal submission date, as applicable) to meet the full goals and will submit documentation of the same to Metro within two working days of Bid opening (or proposal submission date).

_____ 3. Will not subcontract any of the contract amount to DBEs or WBEs but has made good faith efforts prior to Bid opening (or proposal submission date, as applicable) to meet the contract goals and will submit documentation of such good faith efforts to Metro within two working days of Bid opening (or proposal submission date).

_____ _____

Authorized Signature Date

DISADVANTAGED BUSINESS ENTERPRISE UTILIZATION FORM

1. Name of Metro Project _____

2. Name of Bidder _____

   Address of Bidder _____

3. The above-named bidder intends to subcontract _____ percent of the Total Bid Price to the following Disadvantaged Business Enterprises (DBEs):

Names, Contact Persons, _____
Addresses and Telephone Numbers _____

Dollar of DBE Firms Bidder Anticipates Utilizing	Nature of Participation	Value of Participation
_____	_____	_____
_____		
_____		
_____	_____	_____
_____		
_____		
_____	_____	_____
_____		
_____		

Total _____

Amount of Total Bid Price _____

DBE Percent of Total Bid Price _____

_____
Authorized Signature

Date: _____

THIS FORM IS TO BE COMPLETED, SIGNED AND SUBMITTED
BY THE CLOSE OF THE NEXT WORKING DAY FOLLOWING BID OPENING

WOMEN-OWNED BUSINESS ENTERPRISES UTILIZATION FORM

1. Name of Metro Project _____

2. Name of Bidder _____

   Address of Bidder _____

3. The above-named bidder intends to subcontract _____ percent of the Total Bid Price to the following Disadvantaged Business Enterprises (WBEs):

Names, Contact Persons, _____
Addresses and Telephone Numbers _____

Dollar of DBE Firms Bidder Anticipates Utilizing	Nature of Participation	Value of Participation

Total _____

Amount of Total Bid Price _____

DBE Percent of Total Bid Price _____

_____
Authorized Signature

Date: _____

THIS FORM IS TO BE COMPLETED, SIGNED AND SUBMITTED
BY THE CLOSE OF THE NEXT WORKING DAY FOLLOWING BID OPENING

ATTACHMENT F.
1991 VEHICLE TONNAGES DELIVERED TO DISPOSAL FACILITIES

ATTACHMENT F.

1991 VEHICLE TONNAGES DELIVERED TO DISPOSAL FACILITIES

Site	Rear Loaders	Front Loaders	Side Loaders	Loose Drop Box	Compacted Drop Box	Self Haul
Metro South	113,185	54,476	23,401	65,310	15,478	40,405
Metro Central	67,732	79,796	5,471	70,376	9,888	22,025
MSW Composter	54,729	5,635	28,916	4,830	1,334	449

ATTACHMENT G.
SORT ESTIMATE TABLES

ATTACHMENT G.
SORT ESTIMATE TABLES

General Instructions:
Complete all three Sort Estimate Tables using the number of sorts per season given in the tables. Based on the different number of sorts to be performed, provide cost estimates for the separate sort types (general disposal facilities, single-family residential, multi-family residential, and non-residential generators).

ESTIMATE A

Sort Type	Hours per Day	Days per Season	# Sorts per Hour	# Sorts per Day	1 Season: # Sorts Cost	2 Seasons: # Sorts Cost	3 Seasons: # Sorts Cost	4 Seasons: # Sorts Cost
General Disposal Facility Sorts **Per Facility:** **#Days =** _____ **#Sorts =** _____	_____	_____	_____	_____	180 sorts $_____	360 sorts $_____	540 sorts $_____	720 sorts $_____
SF Residential	_____	_____	_____	_____	40 sorts $_____	80 sorts $_____	120 sorts $_____	160 sorts $_____
MF Residential	_____	_____	_____	_____	40 sorts $_____	80 sorts $_____	120 sorts $_____	160 sorts $_____
Commercial	_____	_____	_____	_____	40 sorts $_____	80 sorts $_____	120 sorts $_____	160 sorts $_____
Totals **Average Cost per Sort = $**_____					**300 sorts** $_____	**600 sorts** $_____	**900 sorts** $_____	**1200 sorts** $_____

ATTACHMENT G
SORT ESTIMATE TABLES

ESTIMATE B

Sort Type	Hours per Day	Days per Season	# Sorts per Hour	# Sorts per Day	1 Season: #Sorts Cost	2 Seasons: # Sorts Cost	3 Seasons: # Sorts Cost	4 Seasons: # Sorts Cost
General Disposal Facility Sorts Per Facility: #Days = _____ #Sorts = _____	_____	_____	_____	_____	325 sorts $_____	650 sorts $_____	975 sorts $_____	1300 sorts $_____
SF Residential	_____	_____	_____	_____	75 sorts $_____	150 sorts $_____	225 sorts $_____	300 sorts $_____
MF Residential	_____	_____	_____	_____	75 sorts $_____	150 sorts $_____	225 sorts $_____	300 sorts $_____
Commercial	_____	_____	_____	_____	75 sorts $_____	150 sorts $_____	225 sorts $_____	300 sorts $_____
Totals Average Cost per Sort = $_____					**550 sorts** $_____	**1100 sorts** $_____	**1650 sorts** $_____	**2200 sorts** $_____

ATTACHMENT G
SORT ESTIMATE TABLES

ESTIMATE C

Sort Type	Hours per Day	Days per Season	# Sorts per Hour	# Sorts per Day	1 Season: #Sorts Cost	2 Season: # Sorts Cost	3 Seasons: # Sorts Cost	4 Seasons: # Sorts Cost
General Disposal Facility Sorts Per Facility: #Days = _____ #Sorts = _____	____	____	____	____	400 sorts $_____	800 sorts $_____	1200 sorts $_____	1600 sorts $_____
SF Residential	____	____	____	____	200 sorts $_____	400 sorts $_____	600 sorts $_____	800 sorts $_____
MF Residential	____	____	____	____	200 sorts $_____	400 sorts $_____	600 sorts $_____	800 sorts $_____
Commercial	____	____	____	____	200 sorts $_____	400 sorts $_____	600 sorts $_____	800 sorts $_____
Totals Average Cost per Sort = $_____					**1000 sorts** $_____	**2000 sorts** $_____	**3000 sorts** $_____	**4000 sorts** $_____

ATTACHMENT G - SORT ESTIMATE TABLE D							
Cost Estimate Work Sheet by Study Element and Task							
Study Element I						**Cost**	
Sample and classify waste as delivered to disposal sites							
Task 1	Finalize sampling plan					$	
Task 2	Hauler coordination					$	
Task 3	Selection and training of crew					$	
Task 4a	Field work - commercial load sampling					$	
Task 4b	Field work - self haul load sampling					$	
					Subtotal	$	
Study Element II							
Sample and classify waste from points of generation							
Task 1	Finalize sampling plan					$	
Task 2	Hauler coordination					$	
Task 3	Selection and training of crew					$	
Task 4a	Field work - sort & classify single-family residential waste					$	
Task 4b	Field work - sort & classify multi-family residential waste					$	
Task 4c	Field work - sort & classify non-residential waste					$	
					Subtotal	$	
Study Element III							
Survey of users and visual characterization at disposal facilities							
Task 1	Finalize plan					$	
Task 2	Survey and collect data on facility users					$	
Task 3	Field work - visual characterization of waste disposed					$	
					Subtotal	$	
MISCELLANEOUS COSTS							
Equipment rental or purchase						$	
Hauler assistance reimbursement						$	
					Subtotal	$	
					TOTAL	$	

ATTACHMENT H.
METRO 1989/90 WASTE CHARACTERIZATION STUDY
FINAL REPORT

METRO WASTE CHARACTERIZATION STUDY

1989–90 FINAL REPORT

Solid Waste Department

Metropolitan Service District

Project Managers:

Terry Petersen
Metropolitan Service District
2000 S.W. First Avenue
Portland, OR 97201–5398
(503) 221–1646

David Luneke
Wilsey and Ham Pacific
1099 S.W. Columbia Street
Portland, OR 97201
(503) 227–0455

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ACKNOWLEDGEMENTS

The waste sort was conducted by Wilsey and Ham Pacific under contract with the Metropolitan Service District. The project manager for Wilsey and Ham was David Luneke. Brad Crement and Bill Stewart of Wilsey and Ham supervised field crews. Metro staff also appreciates the assistance and cooperation of Mike Sandburg of Hillsboro Landfill, Mike Casetta with BFI at St. Johns Landfill, and Bruce Burgoyne with Waste Management of Oregon at Metro South Station.

INTRODUCTION

This report presents the results of the waste characterization study conducted during 1989/1990. The study consists of four seasonal sorts.

The waste characterization study is part of Metro's system measurement program. The objectives of this study are to:

(1) determine the composition of the total waste stream in the Metro region,

(2) determine the composition of major waste substreams produced by residential and non-residential generators, and

(3) estimate waste generation rates for residential and non-residential generators.

Interim reports were prepared after each of the four seasonal sorts. This final report summarizes the seasonal data. It also compares the current waste composition to the previous waste composition study conducted in 1987.

The data will be used in developing waste reduction programs, projecting waste flow within the region, and designing the regional system of solid waste facilities.

METHODS

Facilities

Sampling was conducted at three facilities: Hillsboro Landfill, St. Johns Landfill, and Metro South Station. Hillsboro Landfill is a limited-purpose landfill located in Hillsboro. St. Johns Landfill is a general-purpose landfill located in north Portland. Metro South is a transfer station located in Oregon City.

Sampling

Sorts were conducted during the winter, spring, summer, and fall seasons. Winter sampling was conducted February 15-16, 1990 at Hillsboro Landfill, February 20-23 at St. Johns Landfill, and February 27 - March 2 at Metro South Station. Spring sampling was conducted May 16-20, 1989 at Hillsboro Landfill, May 9-13 at St. Johns Landfill, and May 2-6 at Metro South Station. Summer sampling was conducted September 7-9, 1989 at Hillsboro Landfill, September 12-16 at St. Johns Landfill, and September 19-23 at Metro South Station. Fall sampling was conducted November 2-3, 1989 at Hillsboro Landfill, November 7-10 at St. Johns Landfill, and November 14-17 at Metro South Station.

Different truck types (front packer, side packer, rear packer, loose drop box, compacted drop box, and self-haul) were sampled in proportion to the amount of waste each truck delivered to the facility. For example, if side packer trucks delivered 10% of all waste to the facility, approximately 10% of the samples were from side packer loads. Loads of each truck type were selected according to their sequence of arrival at the facility.

An average of 30 loads were sampled each day. A total of 1239 loads were sampled at all facilities during the entire study. All data was recorded on the field form shown in the Appendix.

Hauler Interviews

Haulers were asked for information about the origin and type of waste being delivered. When appropriate, the address of the load origin was obtained. If the address was not available, the intersection nearest the center of the route was recorded. Haulers were also asked to estimate the percentage of waste present in the load from residential and non-residential generators. The fall and winter sorts included more detailed analysis of non-residential generators. This additional information is reported in the separate reports for those seasons.

Sampling Method

Loads selected for sampling were directed to a sorting area after the driver was interviewed. After unloading, a single sample of approximately 300 pounds was taken from the center of the load with a front-end loader. This sample was then deposited on tarps for sorting. Large pieces of material were first extracted and weighed. The remaining waste was then placed in sorting boxes for final separation.

Waste Categories

The main categories of waste were paper, plastic, yard debris, wood, glass, aluminum, ferrous metal, miscellaneous organics, and miscellaneous inorganics. A total of 39 subcategories were identified within these main groupings. Changes from sorts prior to September 1989 were: (1) the addition of polystyrene foam in the plastic category, (2) the addition of food containers in the paper category, (3) the addition of other food containers in the plastic category, (4) the addition of food containers in the glass category, and (5) the addition of medical waste. Definitions and examples of each subcategory are given in the Appendix.

Waste Streams

For this final report, th compositions of three waste substreams are analyzed. These subs reams are: (1) construction and demolition debris, (2) residential waste excluding construction and demolition debris, and (3) non-residential waste excluding construction and demolition debris.

Calculation of Waste Generation Rates

The rates (lbs/person/day and lbs/household/day) at which waste is produced by residential and non-residential generators were calculated using the following procedures. Based on the hauler interviews, the percentage of the regional wastestream produced by residential and non-residential generators was estimated.

The annual tonnage produced by each generator was estimated using the total tons delivered to all regional facilities from April 1989 to March 1990. The source of disposal tonnage is Metro's May 15, 1990 Solid Waste Information System quarterly report. The total number of households and employees in the region were then used to calculate daily production rates. The source of demographic data was The Regional Forecast (Transportation Department, Metropolitan Services District).

This methodology depends on accurate estimates by the hauler of the generator percentages in mixed loads. While such estimation may be a source of error in calculating the substream percentages, the majority of loads delivered to regional facilities are from single-source generators (e.g. residential packer routes, single account commercial drop boxes). Less than 20% of the loads sampled in this study were from a mixture of generator types.

Analysis

Sample percentages were calculated by dividing the weight of each material present in the sample by the total weight of the sample. The percentages express the percent of tons delivered, not a percent of tons generated. Percentages are on a wet-weight basis, not dry weight.

Weighted averaging was used to calculate the average composition of site and regional waste. For the analysis of waste within each site, the weighting variable was truck type. For the analysis of each season, the sample percentages were weighted by both truck type and the percentage of regional waste delivered to the facility. Similarly, average annual percentages were calculated suing the seasonal distribution of waste delivery to regional facilities. All data analysis was conducted using the Statistical Analysis System for personal computers.

Demolition, construction, remodeling, and yard debris was attributed to the type of generator where the material originated. For example, roofing debris from single-family dwellings was attributed to the residential sector.

RESULTS

Waste Composition

The composition of the regional waste stream is shown in Figure 1. Paper (30%) was the most common material, followed by construction wood (12%), yard debris (11%), plastics (9%), and food wastes (7%).

Site and seasonal data for all 39 waste categories are given in Table 1. Waste delivered to Hillsboro Landfill consisted mostly of construction wood (24%), yard debris (14%), and miscellaneous organic (13%) and inorganic (18%) waste (e.g. roofing debris and industrial wastes). In contrast, the most common materials at Metro South Station and St. Johns Landfill were paper (35% and 39% respectively) and plastics (11% at both sites).

Yard debris was the only material that had significant seasonal variation, ranging from a low of 7% during the winter season to a high of 15% during the spring season.

Waste Stream Characterization

Of the 1,132,165 tons delivered to all regional facilities during the 12 month period of April 1989 to March 1990, 192,468 tons (17%) are estimated to be construction/demolition debris based on the hauler interviews and waste sorting in this project (see Table 1 and Figure 2). Of the waste that was not construction/demolition debris, 350,971 tons were estimated to be from residential generators and 588,726 tons were from non-residential generators.

350,971 tons of residential waste is equivalent to 4.2 lbs/household/day or 29.4 lbs/household/week (based on 458,147 single- and multi-family households in the tri-county area). Haulers who collect residential waste have reported rates ranging from 15 to 40 lbs/single-family household/week depending on the demographics of the collection area.

The composition of each waste substream is given in Table 3. Construction and demolition debris consisted mostly of construction wood (27%), and miscellaneous organic (15%) and inorganic (32%) waste.

Paper (28%) was the most common material in the residential waste stream followed by yard debris (26%) (Table 3). This includes all yard debris generated by single- and multi-family households regardless of the method of delivery to disposal facilities (e.g commercial haul of regular residential routes, self-haul by landscaping services or homeowners, and drop box deliveries of cleanups).

Major categories in the non-residential waste stream were paper (35%), wood (15%), and plastics (11%) (Table 3). Corrugated paper (18%) was the primary type of paper in the non-residential waste stream.

The composition of waste streams varied among facilities. For example, yard debris was 75% of residential waste delivered to Hillsboro but only 16% and 17% of the residential waste delivered to St. Johns and Metro South respectively. Hillsboro does not accept residential loads containing putrescible waste. As a result, most deliveries of residential waste to Hillsboro are self-haul which contain a much higher percentage of yard debris.

Comparison to 1987 Waste Composition

Figure 3 compares the percentages of materials in the current waste to those reported in 1987. All 39 types of waste and the percent change are shown in Table 4. Percentages for most materials were not significantly different than in 1987.

The two materials that did significantly change were plastics and ferrous metal. Plastics increased from 7% to 9% while ferrous metal decreased from 7% to 5%.

Per Capita Disposal Rates

Table 5 compares the estimated tonnages of each material disposed of in 1987 and 1989. Total disposal increased by about 81,000 tons. Plastics increased from 72,000 tons in 1987 to 100,000 tons in 1989. In contrast, ferrous metals decreased from 72,000 tons in 1987 to 51,000 tons in 1989.

The regional population did not increase at the same relative rate as the disposal tonnage. As a result, the per capita disposal rate increases from 5.0 lbs/person/day in 1987 to 5.2 lbs/person/day in 1989. This change is part of a trend of increasing per capita disposal rates from 1983 to the present (see Solid Waste Information System quarterly reports, Metro Solid Waste Department).

Figure 1. Composition of waste (percent of wet weight) delivered to all regional facilities during the 1989/1990 sample period. See Table 1 for details.

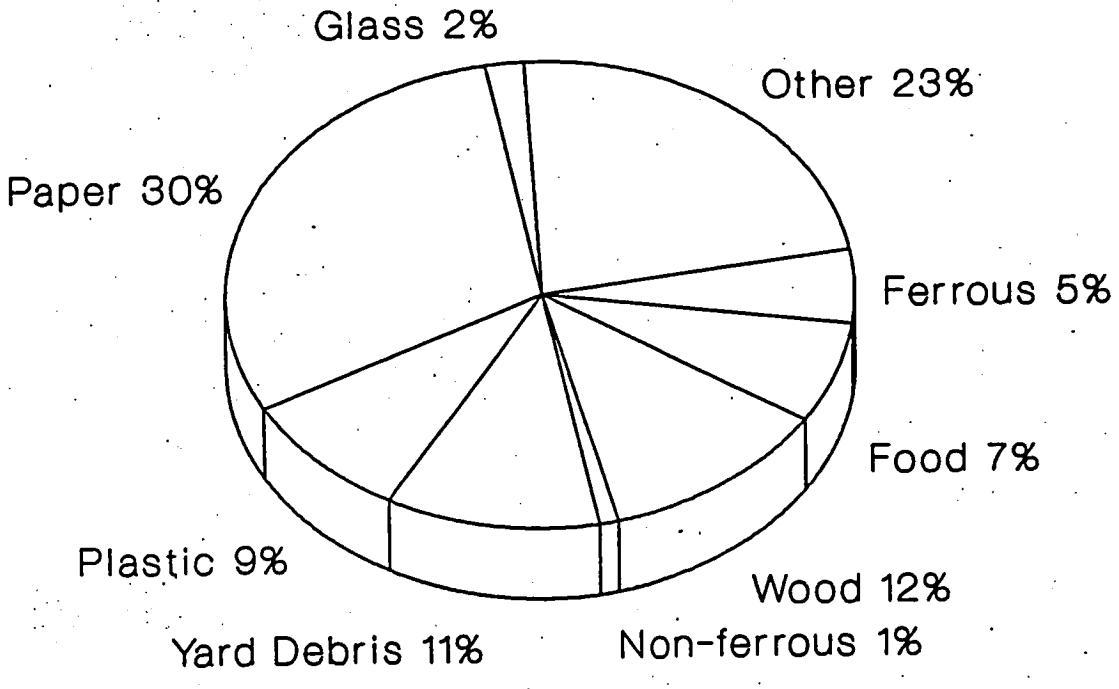

Table 1. Composition of waste (percent of wet weight) delivered to each of the three study study sites during each of the four sample seasons. Regional values are averages of the site values.

	Winter				Spring (see note)				Summer				Fall				1989/90 Average (see note)			
	HB	MS	SJ	Region	HB	MS	SJ	Region	HB	MS	SJ	Region	HB	MS	SJ	Region	HB	MS	SJ	Region
PAPER	9.59	39.14	39.81	31.09	11.76	29.37	40.10	29.37	14.76	36.04	39.22	27.29	14.76	36.04	39.22	32.64	12.80	34.63	39.37	29.97
food container	0.71	2.90	2.07	1.89	NA	NA	NA	NA	0.00	2.60	1.28	1.08	0.00	2.60	1.28	1.46	NA	NA	NA	NA
corrugated	6.53	12.52	14.72	11.77	6.11	14.13	11.44	10.94	8.75	13.14	18.42	12.35	8.75	13.14	18.42	14.34	7.55	13.27	15.72	12.32
newspaper	0.42	4.50	5.42	3.78	0.89	3.84	5.24	3.67	1.28	5.01	4.76	2.75	1.28	5.01	4.76	4.06	0.98	4.58	5.04	3.84
office	0.94	3.89	5.22	3.61	1.68	1.69	4.37	2.81	1.13	2.64	4.77	1.92	1.13	2.64	4.77	3.18	1.24	2.66	4.78	2.84
magazine	0.05	1.56	1.44	1.11	0.83	0.57	1.71	1.12	0.89	3.04	1.38	0.90	0.89	3.04	1.38	1.86	0.69	2.05	1.48	1.24
book	0.51	4.23	3.09	2.79	0.77	1.28	3.25	1.98	0.30	3.53	2.58	1.28	0.30	3.53	2.58	2.41	0.47	3.08	2.87	2.06
other	0.43	9.54	8.85	6.00	1.49	7.86	14.09	8.85	2.40	6.08	6.03	7.01	2.40	6.08	6.03	5.23	1.88	9.29	9.49	7.06
PLASTIC	10.38	10.58	8.69	9.78	5.35	9.89	9.11	8.39	6.29	11.74	12.14	8.36	6.29	11.74	12.14	10.06	6.04	10.96	10.88	9.28
food jug	0.04	0.54	0.39	0.35	0.00	0.42	0.44	0.32	0.00	0.64	0.47	0.27	0.00	0.64	0.47	0.43	0.01	0.56	0.44	0.34
non-food container	0.01	0.37	0.23	0.22	0.71	1.02	1.67	1.22	0.00	0.46	0.43	0.21	0.00	0.46	0.43	0.35	0.19	0.59	0.72	0.62
durable	1.82	1.78	2.02	1.88	1.95	3.26	2.17	2.47	1.38	2.05	2.86	1.21	1.38	2.05	2.86	2.23	1.63	2.32	2.49	1.95
film	2.66	3.96	3.85	3.56	2.33	3.95	4.20	3.64	3.13	4.29	5.38	3.73	3.13	4.29	5.38	4.48	2.81	4.13	4.72	3.85
styrofoam	2.08	1.25	0.66	1.25	NA	NA	NA	NA	1.19	0.95	0.93	0.46	1.19	0.95	0.93	0.99	NA	NA	NA	NA
other food container	0.43	1.36	0.81	0.90	NA	NA	NA	NA	0.00	2.40	1.73	0.81	0.00	2.40	1.73	1.58	NA	NA	NA	NA
other	3.31	1.30	0.73	1.62	0.35	1.24	0.62	0.75	0.59	0.95	0.34	1.67	0.59	0.95	0.34	0.62	2.29	2.39	2.18	2.60
YARD DEBRIS	6.43	12.89	2.48	7.14	20.61	18.46	10.03	16.44	14.76	8.77	8.71	11.71	14.76	8.77	8.71	10.10	14.47	12.29	7.88	11.51
prunings	4.34	4.73	1.30	3.30	8.81	7.04	3.23	5.89	4.03	2.55	2.77	5.51	4.03	2.55	2.77	2.97	5.39	4.24	2.57	4.51
bulky	0.65	0.96	0.00	0.48	0.56	0.31	0.00	1.78	0.08	0.17	0.76	0.87	0.08	0.17	0.76	0.40	1.93	0.38	0.39	0.91
leaf	1.54	7.20	1.18	3.36	5.14	11.11	6.80	7.77	10.67	6.05	5.18	5.33	10.67	6.05	5.18	6.73	7.16	7.67	4.73	6.89
WOOD	23.49	4.07	13.43	12.89	21.03	9.96	7.32	11.69	25.45	4.83	7.72	13.31	25.45	4.83	7.72	10.66	23.83	6.04	8.88	12.14
construction	13.94	3.07	6.65	7.37	16.88	7.17	3.80	8.24	18.81	3.38	5.31	9.22	18.81	3.38	5.31	7.66	17.21	4.33	5.20	8.17
packaging	9.55	1.00	6.78	5.82	4.15	2.79	3.52	3.45	6.64	1.45	2.41	4.09	6.64	1.45	2.41	3.02	6.62	1.71	3.68	3.96
TEXTILE	6.23	3.30	4.74	4.38	1.85	2.02	4.63	3.00	1.44	5.11	4.19	4.02	1.44	5.11	4.19	3.90	2.31	3.88	4.43	3.80
FOOD	0.15	8.23	12.92	7.88	0.04	9.81	11.40	7.97	0.03	8.28	6.37	5.38	0.03	8.28	6.37	5.63	0.06	8.68	9.18	6.89
DIAPERS	0.02	2.16	1.08	1.17	0.00	1.66	1.30	1.08	0.00	1.61	1.16	0.71	0.00	1.61	1.16	1.06	0.00	1.75	1.18	1.00
MISC. ORGANIC	22.11	4.78	1.42	8.12	9.27	4.92	4.21	5.74	9.97	6.38	4.23	7.02	9.97	6.38	4.23	6.30	12.50	5.63	3.60	6.80
GLASS	0.71	2.52	2.07	1.86	0.99	2.84	3.67	2.72	0.28	3.71	2.53	2.19	0.28	3.71	2.53	2.44	0.67	3.21	2.73	2.32
beverage	0.07	1.19	0.76	0.73	0.06	1.34	2.43	1.47	0.00	1.83	1.28	0.81	0.00	1.83	1.28	1.22	0.03	1.61	1.47	1.02
non-food container	0.00	0.38	0.03	0.14	0.26	1.31	1.02	0.92	0.00	0.11	0.05	0.21	0.00	0.11	0.05	0.06	0.07	0.49	0.31	0.35
food container	0.05	0.59	0.35	0.35	NA	NA	NA	NA	0.00	1.28	0.63	0.61	0.00	1.28	0.63	0.72	NA	NA	NA	NA
other	0.59	0.36	0.93	0.64	0.68	0.19	0.22	0.33	0.28	0.39	0.57	0.76	0.28	0.39	0.57	0.44	0.47	1.11	0.95	0.85
ALUMINUM	0.93	0.45	0.34	0.54	0.20	0.74	0.85	0.65	0.65	1.15	0.66	0.72	0.65	1.15	0.66	0.84	0.69	0.88	0.64	0.69
food container	0.04	0.28	0.26	0.21	0.00	0.31	0.39	0.27	0.00	0.91	0.48	0.42	0.00	0.91	0.48	0.53	0.01	0.61	0.41	0.36
other	0.89	0.17	0.08	0.33	0.20	0.43	0.46	0.38	0.65	0.24	0.18	0.30	0.65	0.24	0.18	0.31	0.68	0.28	0.23	0.33
FERROUS METAL	1.19	5.43	3.89	3.60	9.06	4.25	3.41	5.13	1.93	4.45	4.15	6.19	1.93	4.45	4.15	3.76	3.69	4.61	3.69	4.76
food container	0.15	2.02	1.47	1.30	4.53	1.24	1.35	2.13	0.00	1.77	1.13	1.67	0.00	1.77	1.13	1.11	1.25	1.68	1.26	1.58
other	1.04	3.41	2.42	2.29	4.52	3.01	2.05	3.00	1.93	2.68	3.02	4.52	1.93	2.68	3.02	2.65	2.43	2.93	2.63	3.18
NON-FERROUS META	0.02	0.00	0.04	0.37	0.12	0.26	0.06	0.14	6.71	0.15	0.11	0.59	6.71	0.15	0.11	1.39	2.04	0.16	0.28	0.61
MISC. INORGANIC	19.38	8.03	5.01	8.87	14.42	4.24	1.48	5.09	18.70	5.48	5.51	10.51	18.70	5.48	5.51	8.48	17.70	5.06	4.31	8.36
APPLIANCE	0.03	0.21	1.05	0.48	0.00	0.00	0.10	0.10	0.00	0.88	0.22	0.64	0.00	0.88	0.22	0.41	0.17	0.49	0.37	0.48
WHITE GOODS	0.00	0.00	0.00	0.00	0.09	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.01
FURNITURE	0.01	0.58	2.62	1.14	4.85	0.41	0.30	1.50	0.00	0.74	1.69	0.85	0.00	0.74	1.69	0.97	1.81	0.57	1.52	1.18
HAZARDOUS WASTE	0.34	0.14	0.48	0.33	0.05	0.02	0.05	0.01	0.02	0.53	0.18	0.14	0.02	0.53	0.18	0.26	0.10	0.47	0.44	0.34
MEDICAL WASTE	0.01	0.00	0.00	0.04	NA	NA	NA	NA	0.00	0.16	1.22	0.08	0.00	0.16	1.22	0.86	NA	NA	NA	NA
OTHER MATERIAL	0.00	0.65	0.00	0.23	0.11	0.53	1.07	0.65	0.00	0.00	0.03	0.22	0.00	0.00	0.03	0.01	0.03	0.39	0.92	0.45

HB=Hillsboro Landfill; SJ=St. Johns Landfill; MS=Metro South Transfer Station.

NOTE: The following sub-categories were not measured in the spring sort: 1) paper food containers, 2) styrofoam, 3) plastic other food container, 4) glass food container, and 5) medical waste

For the calculation of the 1989/90 averages, the summer, fall, and winter values were added to the "other" sub-category within each main category.

Table 2. Quantity of construction/demolition debris, residential waste (excluding construction/demolition), and non-residential waste (excluding construction/demolition) delivered to regional disposal facilities during each of the four sample seasons.

	% of Waste Disposed			Tons Disposed			
	C/D	O/R	O/NR	C/D	O/R	O/NR	Total
Winter (Jan–Mar 1990)	16	29	55	43,110	78,137	148,191	269,438
Spring (Apr–Jun 1989)	NA	NA	NA	NA	NA	NA	298,470
Summer (Jul–Sep 1989)	16	37	47	47,233	109,225	138,746	295,204
Fall (Oct–Dec 1989)	19	27	54	51,120	72,644	145,289	269,053
Annual	17	31	52	192,468	350,971	588,726	1,132,165

C/D=Construction/Demolition debris (from both residential and non-residential sources)
O/R=Other/Residential waste (all waste from residential generators except for construction/demolition debris)
O/NR=Other/Non-Residential (all waste from non-residential generators except for construction/demolition debris)

NOTE: The percent of all waste that was construction/demolition was not estimated in the spring sort.
The annual averages are based on the other three sorts.

Figure 2. Annual quantity of construction/demolition debris, residential waste (excludin- construction/demolition), and non-residential waste (excludir construction/demolition) delivered to regional disposal faci] .ies.

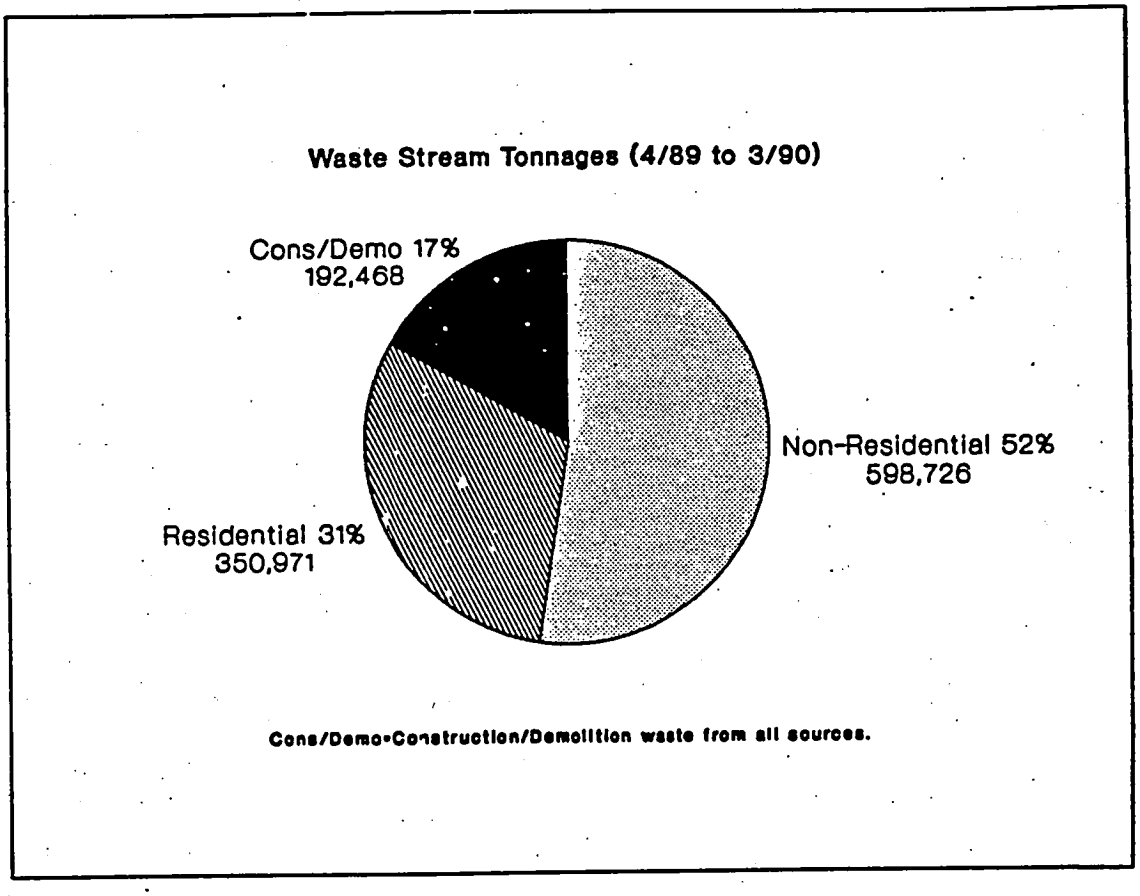

Table 3. Composition of waste (percent of wet weight) of three waste streams: (1) construction/demolition debris, (2) residential waste (excluding construction/demolition), and (3) non-residential waste (excluding construction/demolition) delivered to each of the three study sites.

	Hillsboro			St. Johns			Metro South			Region		
Waste Stream (see code):	C/D	O/R	O/NR	C/D	O/R	O/NR	C/D	O/R	O/NR	C/D	O/R	O/NR
PAPER	6.07	5.83	17.74	11.90	25.79	43.27	11.52	35.20	38.96	7.77	27.99	36.10
food container	0.00	0.00	0.70	0.14	1.06	1.48	0.10	2.41	2.02	0.04	1.59	1.41
corrugated	4.45	3.19	8.71	8.07	11.24	23.91	7.17	12.65	17.47	5.39	10.73	18.03
newspaper	0.33	0.37	1.05	1.29	3.78	3.37	1.41	6.34	3.07	0.64	4.57	2.65
office	0.25	1.85	1.37	2.15	1.64	4.77	0.31	1.61	4.53	0.51	1.66	3.77
magazine	0.00	0.00	0.76	0.00	1.95	0.66	0.20	1.82	1.35	0.03	1.58	0.87
book	0.16	0.13	0.74	0.10	3.20	1.91	0.18	2.32	3.14	0.16	2.27	1.91
other	0.88	0.29	4.41	0.15	2.92	7.17	2.15	8.05	7.37	1.00	5.16	6.46
PLASTIC	2.33	2.24	10.52	4.59	8.68	11.43	3.64	9.80	11.24	2.85	8.28	11.13
food jug	0.00	0.00	0.01	0.03	0.26	0.43	0.00	0.47	0.31	0.00	0.33	0.28
non-food container	0.00	0.00	0.09	0.00	0.14	0.32	0.00	0.20	0.25	0.00	0.15	0.24
durable	0.38	0.82	2.33	1.60	1.29	2.51	1.85	0.88	1.21	0.79	1.00	2.12
film	0.95	0.78	3.47	1.97	4.43	4.64	0.52	4.35	5.71	1.01	3.83	4.60
styrofoam	0.42	0.11	0.92	0.79	0.76	0.86	0.01	0.75	1.51	0.40	0.66	1.05
other food container	0.00	0.00	0.03	0.14	1.01	1.44	0.05	1.42	1.37	0.03	1.07	1.03
other	0.58	0.53	3.67	0.06	0.79	1.23	1.21	1.73	0.88	0.62	1.24	1.81
YARD DEBRIS	4.56	75.06	5.98	8.91	15.61	2.55	2.01	17.49	9.94	4.43	25.74	5.44
prunings	3.29	36.41	2.26	1.90	6.67	1.12	0.49	8.09	4.97	2.63	11.99	2.45
bulky	0.86	5.79	0.06	0.10	0.54	0.24	0.00	1.23	0.10	0.61	1.70	0.15
leaf	0.41	32.86	3.66	4.91	8.40	1.19	1.52	8.17	4.87	1.19	12.05	2.84
WOOD	26.75	4.17	23.61	25.44	7.00	12.66	27.96	2.63	8.85	26.79	4.31	14.07
construction	22.96	4.14	11.38	18.07	3.71	5.18	26.74	2.47	5.88	22.97	3.14	7.07
packaging	3.79	0.03	12.23	7.37	3.29	7.48	1.22	0.16	2.97	3.82	1.17	7.60
TEXTILE	3.66	3.73	4.79	6.71	5.59	5.17	6.72	3.38	4.21	4.85	4.16	4.91
FOOD	0.05	0.12	0.90	0.40	10.53	6.68	0.99	8.51	6.85	0.26	7.89	5.13
DIAPERS	0.00	0.00	0.02	0.00	1.17	0.26	0.52	2.66	0.46	0.09	1.75	0.25
MISC. ORGANIC	17.48	3.24	17.99	6.15	4.18	3.73	10.75	3.39	4.84	14.85	3.63	7.95
GLASS	0.20	0.97	0.52	1.69	2.71	1.62	0.26	4.52	2.14	0.40	3.39	1.46
beverage	0.03	0.00	0.00	0.42	0.74	0.84	0.03	2.08	1.17	0.08	1.32	0.70
non-food container	0.00	0.91	0.01	0.00	0.12	0.07	0.00	0.14	0.08	0.00	0.26	0.06
food container	0.00	0.00	0.05	0.27	0.75	0.30	0.02	1.47	0.61	0.04	1.01	0.31
other	0.17	0.06	0.46	1.00	1.10	0.41	0.21	0.83	0.28	0.28	0.80	0.39
ALUMINUM	0.06	0.00	0.85	0.60	0.91	0.54	0.25	0.57	0.56	0.16	0.60	0.63
food container	0.00	0.00	0.04	0.00	0.73	0.39	0.00	0.49	0.37	0.00	0.50	0.29
other	0.06	0.00	0.81	0.60	0.18	0.15	0.25	0.08	0.19	0.16	0.10	0.34
FERROUS METAL	1.06	3.84	3.11	13.89	4.12	4.13	2.07	5.48	5.53	2.91	4.78	4.21
food container	0.00	0.00	0.14	0.09	1.80	1.27	0.00	2.05	1.56	0.01	1.59	1.03
other	1.06	3.84	2.97	13.80	2.52	2.86	2.07	3.43	3.97	2.90	3.19	3.18
NON-FERROUS METAL	2.36	0.07	1.24	0.85	0.50	0.35	0.27	0.01	0.14	1.81	0.18	0.54
MISC. INORGANIC	35.17	0.72	11.51	17.50	5.64	5.25	31.73	1.22	5.54	32.27	2.60	7.05
APPLIANCE	0.02	0.00	0.00	0.31	0.83	0.03	0.82	1.99	0.26	0.20	1.30	0.08
WHITE GOODS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FURNITURE	0.00	0.00	1.03	1.04	6.65	1.07	0.45	2.76	0.28	0.21	3.02	0.85
HAZARDOUS WASTE	0.23	0.00	0.20	0.00	0.08	0.27	0.00	0.16	0.12	0.16	0.11	0.21
MEDICAL WASTE	0.01	0.00	0.00	0.00	0.01	1.02	0.00	0.03	0.02	0.01	0.02	0.48
OTHER MATERIAL	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.17	0.06	0.01	0.09	0.02

C/D=Construction/Demolition debris (from both residential and non-residential sources):
O/R=Other/Residential waste (all waste from residential generators except for construction/demolition debris)
O/NR=Other/Non-Residential (all waste from non-residential generators except for contruction/demolition debris)

Figure 3. Comparison of the 1987 and 1989 waste compositions.

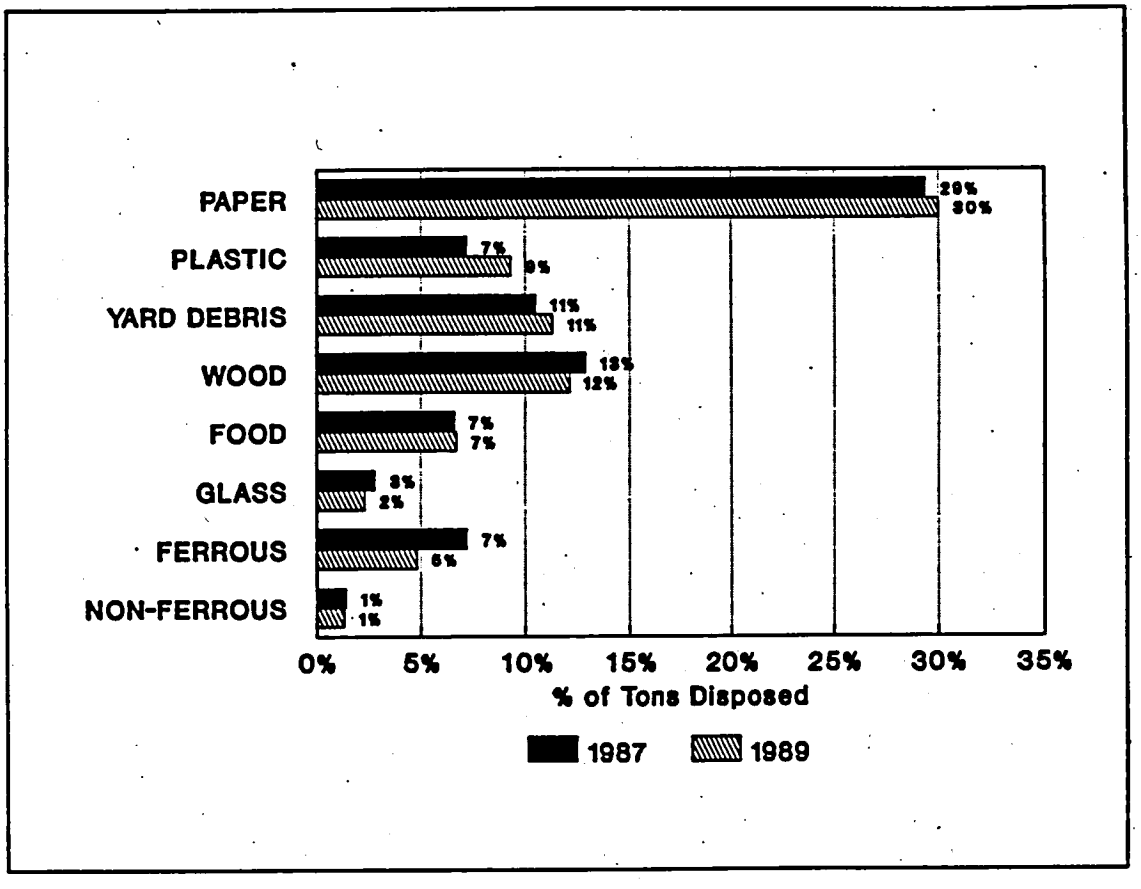

Table 4. Change in waste composition from 1987 to 1989 at each of the three study sites.

	KFD	HB		MS			SJ			Region		
	1987	1989	Change	1987	1989	Change	1987	1989	Change	1987	1989	Change
PAPER	13.4	12.8	-0.6	34.5	34.9	0.4	35.1	39.4	4.3	29.4	30.0	0.6
corrugated	5.8	7.6	1.8	8.8	13.3	4.5	11.0	15.7	4.7	9.0	12.3	3.3
newspaper	1.0	1.0	-0.0	4.5	4.6	0.1	4.1	5.0	0.9	3.4	3.5	0.1
office	1.6	1.2	-0.4	3.1	2.7	-0.4	6.0	4.8	-1.2	3.9	2.8	-1.1
other	5.1	3.0	-2.1	18.2	14.4	-3.8	14.0	13.8	-0.2	13.1	11.3	-1.8
PLASTIC	5.3	6.9	1.6	7.6	11.0	3.4	8.1	10.6	2.5	7.2	9.3	2.1
food jug	0.0	0.0	0.0	0.4	0.6	0.2	0.3	0.4	0.1	0.3	0.3	0.0
non-food container	0.3	0.2	-0.1	0.8	0.6	-0.2	1.0	0.7	-0.3	0.8	0.5	-0.3
durable	1.3	1.6	0.3	0.6	2.3	1.7	1.0	2.5	1.5	0.9	2.0	1.1
other	3.6	5.1	1.5	5.8	6.5	0.7	5.6	6.9	1.3	5.3	6.5	1.2
YARD DEBRIS	11.9	14.5	2.6	9.0	12.3	3.3	10.8	7.7	-3.1	10.5	11.3	0.8
prunings	7.3	5.4	-1.9	1.9	4.2	2.3	3.9	2.6	-1.3	4.1	4.5	0.4
leaf	4.7	9.1	4.4	7.1	8.1	1.0	6.9	5.1	-1.8	6.4	6.8	0.4
WOOD	26.8	23.8	-3.0	7.7	6.0	-1.7	8.4	8.9	0.5	12.9	12.1	-0.8
TEXTILE	3.3	2.3	-1.0	3.1	3.9	0.8	4.3	4.4	0.1	3.7	3.8	0.1
FOOD	0.3	0.1	-0.2	9.4	8.7	-0.7	8.2	9.2	1.0	6.6	6.7	0.1
DIAPERS	0.0	0.0	0.0	1.7	1.8	0.1	1.3	1.2	-0.1	1.1	1.0	-0.1
MISC. ORGANIC	7.6	12.5	4.9	10.1	5.6	-4.5	7.4	3.6	-3.8	8.3	6.8	-1.5
GLASS	0.3	0.6	0.3	3.8	3.2	-0.6	3.5	2.7	-0.8	2.8	2.3	-0.5
beverage	0.2	0.0	-0.2	2.0	1.6	-0.4	2.1	1.5	-0.6	1.6	1.0	-0.6
other	0.1	0.5	0.4	1.8	1.6	-0.2	1.4	1.3	-0.1	1.2	1.3	0.1
ALUMINUM	1.2	0.6	-0.6	0.9	0.9	-0.0	0.9	0.6	-0.3	1.0	0.7	-0.3
food container	0.0	0.0	0.0	0.3	0.6	0.3	0.3	0.4	0.1	1.2	0.4	-0.8
other	1.2	0.6	-0.6	0.7	0.3	-0.4	0.6	0.2	-0.4	0.8	0.3	-0.5
FERROUS METAL	10.7	3.7	-7.0	6.1	4.6	-1.5	5.9	3.9	-2.0	7.2	4.8	-2.4
food container	0.1	1.3	1.2	2.1	1.7	-0.4	2.1	1.3	-0.8	1.6	1.6	-0.0
other	10.6	2.4	-8.2	4.0	2.9	-1.1	3.8	2.6	-1.2	5.6	3.2	-2.4
NON-FERROUS METAL	0.9	2.9	2.0	0.2	0.2	-0.1	0.2	0.3	0.1	0.4	0.6	0.2
MISC. INORGANIC	16.7	17.7	1.0	5.7	5.1	-0.6	5.3	4.3	-1.0	8.3	8.4	0.1
HAZARDOUS WASTE	0.6	0.1	-0.5	0.1	0.5	0.4	0.0	0.4	0.4	0.2	0.3	0.1
OTHER MATERIAL	0.9	1.5	0.6	0.3	1.5	1.2	0.6	2.8	2.2	0.6	2.0	1.4

KFD=Killingsworth Fast Disposal; HB=Hillsboro Landfill; SJ=St. Johns Landfill; MS=Metro South Transfer Station.
NOTE: Sub-categories in the 1989/90 sort were combined to correspond to the categories in the 1987 sort.

Table 5. Comparison of per capita disposal rates in 1987 and 1989.

	% of Waste Disposed			Tons Disposed			Per Capita Disposal Rate (lbs/person/day)		
	1987	1989	Change	1987	1989	Change	1987	1989	Change
PAPER	29.4	30.0	0.6	293,609	324,185	30,577	1.47	1.55	0.09
corrugated	9.0	12.3	3.3	89,880	133,265	43,385	0.45	0.64	0.19
newspaper	3.4	3.5	0.1	33,955	38,292	4,337	0.17	0.18	0.01
office	3.9	2.8	-1.1	38,948	30,720	(8,228)	0.19	0.15	-0.05
other	13.1	11.3	-1.8	130,826	121,908	(8,918)	0.65	0.58	-0.07
PLASTIC	7.2	9.3	2.1	71,904	100,057	28,153	0.36	0.48	0.12
food jug	0.3	0.3	0.0	2,996	3,678	682	0.01	0.02	0.00
non-food container	0.8	0.5	-0.3	7,989	5,625	(2,365)	0.04	0.03	-0.01
durable	0.9	2.0	1.1	8,988	21,093	12,105	0.04	0.10	0.06
other	5.3	6.5	1.2	52,930	69,770	16,840	0.26	0.33	0.07
YARD DEBRIS	10.5	11.3	0.8	104,860	122,340	17,480	0.52	0.59	0.06
prunings	4.1	4.5	0.4	40,945	48,785	7,839	0.20	0.23	0.03
leaf	6.4	6.8	0.4	63,915	73,556	9,641	0.32	0.35	0.03
WOOD	12.9	12.1	-0.8	128,828	131,318	2,490	0.64	0.63	-0.01
TEXTILE	3.7	3.8	0.1	36,951	41,105	4,154	0.18	0.20	0.01
FOOD	6.6	6.7	0.1	65,912	72,366	6,454	0.33	0.35	0.02
DIAPERS	1.1	1.0	-0.1	10,985	10,817	(168)	0.05	0.05	-0.00
MISC. ORGANIC	8.3	6.8	-1.5	82,890	73,556	(9,334)	0.41	0.35	-0.06
GLASS	2.8	2.3	-0.5	27,963	25,095	(2,867)	0.14	0.12	-0.02
beverage	1.6	1.0	-0.6	15,979	11,033	(4,945)	0.08	0.05	-0.03
other	1.2	1.3	0.1	11,984	14,062	2,078	0.06	0.07	0.01
ALUMINUM	1.0	0.7	-0.3	9,987	7,464	(2,523)	0.05	0.04	-0.01
food container	1.2	0.4	-0.8	11,984	3,894	(8,090)	0.06	0.02	-0.04
other	0.8	0.3	-0.5	7,989	3,570	(4,420)	0.04	0.02	-0.02
FERROUS METAL	7.2	4.8	-2.4	71,904	51,489	(20,415)	0.36	0.25	-0.11
food container	1.6	1.6	-0.0	15,979	17,091	1,112	0.08	0.08	0.00
other	5.6	3.2	-2.4	55,926	34,398	(21,527)	0.28	0.16	-0.11
NON-FERROUS METAL	0.4	0.6	0.2	3,995	6,598	2,604	0.02	0.03	0.01
MISC. INORGANIC	8.3	8.4	0.1	82,890	90,430	7,541	0.41	0.43	0.02
HAZARDOUS WASTE	0.2	0.3	0.1	1,997	3,678	1,680	0.01	0.02	0.01
OTHER MATERIAL	0.6	2.0	1.4	5,992	21,418	15,426	0.03	0.10	0.07
TOTAL	100	100		1,000,667	1,081,916	81,249	5.00	5.19	0.19

NOTE: Sub-categories in the 1989/90 sort were combined to correspond to the categories in the 1987 sort.

LIST OF APPENDICES

A. DEFINITIONS OF WASTE CATEGORIES

B. FIELD DATA FORM

DEFINITIONS OF WASTE STREAM COMPONENTS

1. Paper

   a. Corrugated Cardboard (OCC)/Kraft Paper - Kraft linerboard and containerboard cartons and shipping boxes with corrugated paper medium (unwaxed). This category also include Kraft (brown) paper bags.

   b. Newspaper (News) - Printed ground-wood newsprint (minimally bleached fiber); referred to as #1 news. This category also include some glossy non-recyclable paper typically used in newspaper insert advertisements, unless found separately.

   c. Office Paper (Supermix) - Printing, writing and computer papers, including both ground wood and thermo-chemical pulps. Both virgin pulp substitutes and high-grade de-ink fibers are included. This category is composed of high-grade paper, which includes white ledger, colored ledger, computer printouts, computer tab cards, bond and copy machine paper.

   d. Magazines - This category includes publications done on glossy paper with a thickness of less than 1/2".

   e. Books, Manuals and Junk Mail - This category includes bound paper reference manuals, textbooks, phone books and junk mail materials.

   f. Other Paper - This category includes construction paper, non-corrugated paperboard (such as boxboard and chipboard), carbon paper, tissue, paper food cartons, waxed paper and waxed cardboard.

2. Plastics

   a. Food Grade Jugs - Rigid plastic containers for milk, juices, and distilled water, including crushed, split or broken jugs.

   b. Non-Food Container Plastics - This category includes rigid brittle, rigid pliable, "crystal" and expanded or foamed polystyrene plastics. Among these groups are household product containers (e.g., disposable razors,food trays, vitamin bottles), empty chemical containers and other materials.

   c. Durable Plastics - This category is composed of thermoplastics (recyclable) and thermoset plastics (non-recyclable) products that cannot be reformed after

heating. Items in this category include toys, foam pads, plastic shells, plastic formica, trash cans, automotive products, toilet seats, etc.

d. Plastic Films and Bags - This category is composed mostly of low density polyethylene such as dry cleaning and merchandise bags, bread sacks, and bubble pack packaging material.

e. Plastic Food Containers - (polystyrene foam) - this category includes expanded or foamed polystyrene food containers (e.g. hot cups, "clamshells" for hamburgers, egg cartons, dairy tubs).

f. Other plastic food containers (non-films, non polystyrene) this includes beverage containers and returnable pop bottles.

g. Other Plastics - Plastic materials not included in the previous plastic categories.

3. Yard Debris

a. Pruning - Naturally occurring wood material from trees, plants, and shrubs, including trimmings less than two inches in diameter. The source of materials in this category is from garden, park, and landscape maintenance.

b. Bulky Wood Yard Waste - This category is composed of land clearing debris: trees, large branches, stumps, dirt and other similar material which can not be composted due to their size, weight and composition.

c. Leaves and Grass Clippings - Naturally occurring vegetative material and other fine organic waste from park, lawn and garden maintenance. Typically leaves and grass clippings.

4. Wood

a. Construction Lumber - Dimension lumber construction materials resulting from remodeling, repair, demolition, or construction of residences, buildings and other structures.

b. Packaging Lumber - Dimension lumber material used in pallets and crates.

5. Textiles

Fabric materials including natural and man-made textile materials such as cottons, wools, silks, woven nylon, rayon, polyesters, and other materials. This category includes clothing, rags, curtains, carpets and other fabric materials.

6. Food Waste (Putrescibles)

Material capable of being decomposed by microorganisms with sufficient rapidity as to cause nuisances from odors and gases. Kitchen wastes, offal, dead animals and food from containers are examples.

7. Disposable Diapers

Disposable diapers, including fecal materials contained within. Cloth diapers are to be sorted under textiles.

8. Miscellaneous Organics

This category consists of carbon- containing materials which oxidize or burn easily, contain nitrogen or sulfur or both, and usually give off odorous by-products. Wastes not otherwise categorized, include fines and other non-sortable combustibles.

9. Glass

a. Beverage Glass - All beverage container glass, including broken glass that could be clearly identified as beverage glass. Included are wine bottles, wine cooler bottles, liquor bottles, pop bottles, beer bottles, juice bottles and other glass beverage containers.

b. Container Glass (non-food, non-beverage) - This category includes glass jars, medicine bottles.

c. Glass food containers (non-beverage) - includes glass food jars, ketchup/mustard bottles, baby food jars, pickle jars, and mayonnaise jars.

d. Other Glass - This category includes flat, pressed, and blown products, such as light bulbs, window, auto and cooking ware glass and etc.

10. Aluminum

a. Food Containers - All aluminum food and beverage containers, whi are generally unalloyed.

b. Other Aluminum - All aluminum materials that do not appear to conta alloys, including foil, non-food containers, furni.. ce, house siding, cooking ware and scrap from industrial sources.

11. Ferrous Metals

a. Food Containers - All coated (tin, zinc) and other ferrous food and beverage containers, including alloyed materials. This category includes soup cans, vegetable cans, food tins etc.

b. Other Ferrous Metals - Ferrous and alloyed ferrous scrap materials derived from iron, including household, industrial and commercial products not containing significant contaminants. This category includes scrap iron and steel to which a magnet adheres.

12. Non-ferrous Metals

Metals that are not materials derived from iron, including copper, brass, bronze, aluminum bronze, lead, pewter, zinc, and other metals to which a magnet will not adhere. Metals that are significantly contaminated are not included.

13. Miscellaneous Inorganics

This category includes non-combustible waste materials composed of matter other than plant, animal or certain chemical compounds of carbon and excludes non recyclable glass. Examples of materials includes rocks, dirt, asphalt, cement, plaster, drywall, and other inert materials. Also included are contaminated metals and plastics that can not be separated such as electrical components.

OTHER

14. Appliances

a. White Goods - This category is composed of discarded stoves, washers, dryers, refrigerators and other large household appliances.

b. Other Appliances - This category includes household appliances such as television, toasters, broilers, can openers, blender, etc.

15. Furniture and Furnishings

This includes reusable and non-reusable household items that are large such as chairs, tables, and mattresses.

16. Household Hazardous Wastes

Household Hazardous Wastes category is made up of such materials as car batteries, dry cell batteries, used motor oil, solvents (non water-based), paints, pesticides and non-pesticide poisons ("poison" on label).

17. Medical Wastes - includes syringes, tubing, gauge, etc.

18. Other

This category includes materials that could not be classified in any of the above categories and subcategories.

Figure 1. Composition of waste (percent of wet weight) delivered to all regional facilities during the 1989/1990 sample period. See Table 1 for details.

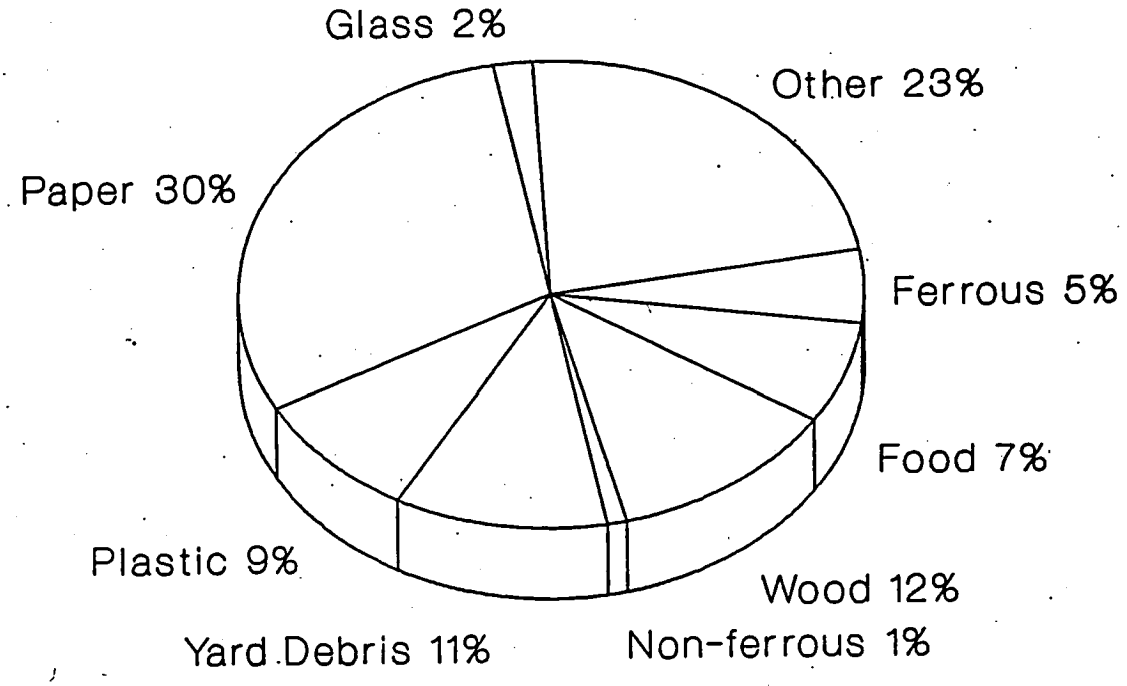

Table 1. Composition of waste (percent of wet weight) delivered to each of the three study study sites during each of the four sample seasons. Regional values are averages of the site values.

	Winter				Spring (see note)				Summer				Fall				1989/90 Average (see note)			
	HB	MS	SJ	Region	HB	MS	SJ	Region	HB	MS	SJ	Region	HB	MS	SJ	Region	HB	MS	SJ	Region
PAPER	9.59	39.14	38.81	31.09	11.76	29.37	40.10	29.37	14.75	36.04	39.22	27.29	14.75	36.04	39.22	32.54	12.80	34.83	39.37	29.67
food container	0.71	2.90	2.07	1.99	NA	NA	NA	NA	0.00	2.60	1.28	1.08	0.00	2.60	1.28	1.46	NA	NA	NA	NA
corrugated	6.53	12.52	14.72	11.77	6.11	14.13	11.44	10.94	8.75	13.14	18.42	12.35	8.75	13.14	18.42	14.34	7.55	13.27	15.72	12.32
newspaper	0.42	4.50	5.42	3.76	0.89	3.84	5.24	3.67	1.28	5.01	4.76	2.75	1.28	5.01	4.76	4.06	0.98	4.58	5.04	3.54
office	0.94	3.89	5.22	3.61	1.68	1.69	4.37	2.81	1.13	2.64	4.77	1.92	1.13	2.64	4.77	3.18	1.24	2.66	4.76	2.84
magazine	0.05	1.56	1.44	1.11	0.83	0.57	1.71	1.12	0.89	3.04	1.38	0.90	0.89	3.04	1.38	1.86	0.69	2.05	1.48	1.24
book	0.51	4.23	3.09	2.79	0.77	1.28	3.25	1.98	0.30	3.53	2.58	1.28	0.30	3.53	2.58	2.41	0.47	3.08	2.87	2.06
other	0.43	9.54	8.85	6.06	1.49	7.86	14.09	8.85	2.40	6.08	6.03	7.01	2.40	6.08	6.03	5.23	1.88	9.29	9.49	7.95
PLASTIC	10.35	10.56	8.09	9.78	6.36	9.89	9.11	8.39	6.29	11.74	12.14	8.36	6.29	11.74	12.14	10.68	6.04	10.98	10.59	9.28
food jug	0.04	0.54	0.39	0.35	0.00	0.42	0.44	0.32	0.00	0.64	0.47	0.27	0.00	0.64	0.47	0.43	0.01	0.56	0.44	0.34
non-food container	0.01	0.37	0.23	0.22	0.71	1.02	1.67	1.22	0.00	0.46	0.43	0.21	0.00	0.46	0.43	0.35	0.19	0.59	0.72	0.52
durable	1.82	1.78	2.02	1.88	1.95	3.26	2.17	2.47	1.38	2.05	2.86	1.21	1.38	2.05	2.86	2.23	1.63	2.32	2.49	1.96
film	2.66	3.90	3.85	3.56	2.33	3.95	4.20	3.64	3.13	4.29	5.38	3.73	3.13	4.29	5.38	4.48	2.81	4.13	4.72	3.85
styrofoam	2.08	1.25	0.66	1.25	NA	NA	NA	NA	1.19	0.95	0.93	0.46	1.19	0.95	0.93	0.99	NA	NA	NA	NA
other food container	0.43	1.36	0.81	0.90	NA	NA	NA	NA	0.00	2.40	1.73	0.81	0.00	2.40	1.73	1.58	NA	NA	NA	NA
other	3.31	1.30	0.73	1.82	0.35	1.24	0.62	0.75	0.59	0.95	0.34	1.67	0.59	0.95	0.34	0.82	2.29	2.39	2.18	2.00
YARD DEBRIS	6.43	12.89	2.48	7.14	20.51	18.46	10.03	16.44	14.78	8.77	8.71	11.71	14.78	8.77	8.71	10.10	14.47	12.29	7.68	11.31
prunings	4.34	4.73	1.30	3.30	8.81	7.04	3.23	5.89	4.03	2.55	2.77	5.51	4.03	2.55	2.77	2.97	5.39	4.24	2.57	4.51
bulky	0.55	0.66	0.00	0.48	6.56	0.31	0.00	1.78	0.08	0.17	0.76	0.87	0.08	0.17	0.76	0.40	1.83	0.38	0.39	0.91
leaf	1.54	7.20	1.18	3.36	5.14	11.11	6.80	7.77	10.67	6.05	5.18	5.33	10.67	6.05	5.18	6.73	7.16	7.67	4.73	6.89
WOOD	23.49	4.07	13.43	12.89	21.03	9.66	7.32	11.66	25.45	4.83	7.72	13.31	25.45	4.83	7.72	10.68	23.83	6.04	8.88	12.14
construction	13.94	3.07	6.85	7.37	16.88	7.17	3.80	8.24	18.81	3.38	5.31	9.22	18.81	3.38	5.31	7.66	17.21	4.33	5.20	8.17
packaging	9.55	1.00	6.78	5.62	4.15	2.79	3.52	3.45	6.64	1.45	2.41	4.09	6.64	1.45	2.41	3.02	6.62	1.71	3.68	3.98
TEXTILE	5.23	3.30	4.74	4.38	1.55	2.02	4.63	3.00	1.44	5.11	4.19	4.02	1.44	5.11	4.19	3.90	2.31	3.88	4.43	3.90
FOOD	0.15	8.23	12.92	7.88	0.04	9.81	11.40	7.97	0.03	8.28	6.37	5.38	0.03	8.28	6.37	5.63	0.06	8.68	9.18	6.09
DIAPERS	0.02	2.10	1.08	1.17	0.00	1.66	1.30	1.08	0.00	1.61	1.16	0.71	0.00	1.61	1.16	1.06	0.00	1.75	1.18	1.00
MISC. ORGANIC	22.11	4.78	1.42	8.12	9.27	4.92	4.21	5.74	9.97	6.38	4.23	7.02	9.97	6.38	4.23	6.30	12.50	5.63	3.60	6.80
GLASS	0.71	2.52	2.07	1.86	0.99	2.84	3.67	2.72	0.28	3.71	2.53	2.19	0.28	3.71	2.53	2.44	0.57	3.21	2.73	2.22
beverage	0.07	1.19	0.78	0.73	0.06	1.34	2.43	1.47	0.00	1.93	1.28	0.81	0.00	1.93	1.28	1.22	0.03	1.61	1.47	1.02
non-food container	0.00	0.38	0.03	0.14	0.26	1.31	1.02	0.92	0.00	0.11	0.05	0.21	0.00	0.11	0.05	0.06	0.07	0.49	0.31	0.35
food container	0.05	0.59	0.35	0.35	NA	NA	NA	NA	0.00	1.28	0.63	0.61	0.00	1.28	0.63	0.72	NA	NA	NA	NA
other	0.59	0.36	0.93	0.64	0.68	0.19	0.22	0.33	0.28	0.39	0.57	0.76	0.28	0.39	0.57	0.44	0.47	1.11	0.95	0.95
ALUMINUM	0.93	0.45	0.34	0.64	0.20	0.74	0.85	0.65	0.65	1.15	0.66	0.72	0.65	1.15	0.66	0.84	0.59	0.88	0.64	0.69
food container	0.04	0.28	0.26	0.21	0.00	0.31	0.39	0.27	0.00	0.91	0.48	0.42	0.00	0.91	0.48	0.53	0.01	0.61	0.41	0.36
other	0.89	0.17	0.08	0.33	0.20	0.43	0.46	0.38	0.65	0.24	0.18	0.30	0.65	0.24	0.18	0.31	0.58	0.28	0.23	0.33
FERROUS METAL	1.19	5.43	3.89	3.69	9.06	4.25	3.41	5.13	1.93	4.45	4.15	5.19	1.93	4.45	4.15	3.76	3.69	4.61	3.89	4.70
food container	0.15	2.02	1.47	1.30	4.53	1.24	1.35	2.13	0.00	1.77	1.13	1.67	0.00	1.77	1.13	1.11	1.25	1.88	1.26	1.58
other	1.04	3.41	2.42	2.39	4.52	3.01	2.05	3.00	1.93	2.68	3.02	4.52	1.93	2.68	3.02	2.65	2.43	2.93	2.83	3.18
NON-FERROUS META	0.02	0.00	0.04	0.37	0.12	0.26	0.06	0.14	5.71	0.15	0.11	0.59	5.71	0.15	0.11	1.39	2.04	0.15	0.28	0.61
MISC. INORGANIC	19.38	5.03	5.01	8.87	14.42	4.24	1.48	5.69	18.70	5.48	5.51	10.51	18.70	5.48	5.51	8.48	17.70	5.06	4.31	8.36
APPLIANCE	0.03	0.21	1.05	0.48	0.60	0.00	0.10	0.19	0.00	0.88	0.22	0.64	0.00	0.88	0.22	0.41	0.17	0.49	0.37	0.40
WHITE GOODS	0.00	0.00	0.00	0.00	0.09	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.01
FURNITURE	0.01	0.38	2.62	1.14	4.85	0.41	0.30	1.50	0.00	0.74	1.69	0.85	0.00	0.74	1.69	0.97	1.31	0.57	1.52	1.12
HAZARDOUS WASTE	0.34	0.14	0.48	0.33	0.05	0.62	0.95	0.61	0.02	0.53	0.16	0.14	0.02	0.53	0.16	0.28	0.10	0.47	0.44	0.34
MEDICAL WASTE	0.01	0.09	0.00	0.04	NA	NA	NA	NA	0.00	0.16	1.22	0.06	0.00	0.16	1.22	0.36	NA	NA	NA	NA
OTHER MATERIAL	0.00	0.65	0.00	0.23	0.11	0.53	1.07	0.65	0.00	0.00	0.03	0.22	0.00	0.00	0.03	0.01	0.03	0.39	0.92	0.45

HB=Hillsboro Landfill; SJ=St. Johns Landfill; MS=Metro South Transfer Station.

NOTE: The following sub-categories were not measured in the spring sort: 1) paper food containers, 2) styrofoam, 3) plastic other food container, 4) glass food container, and 5) medical waste. For the calculation of the 1989/90 averages, the summer, fall, and winter values were added to the "other" sub-category within each main category.

Table 2. Quantity of construction/demolition debris, residential waste (excluding construction/demolition), and non-residential waste (excluding construction/demolition) delivered to regional disposal facilities during each of the four sample seasons.

	% of Waste Disposed			Tons Disposed			
	C/D	O/R	O/NR	C/D	O/R	O/NR	Total
Winter (Jan–Mar 1990)	16	29	55	43,110	78,137	148,191	269,438
Spring (Apr–Jun 1989)	NA	NA	NA	NA	NA	NA	298,470
Summer (Jul–Sep 1989)	16	37	47	47,233	109,225	138,746	295,204
Fall (Oct–Dec 1989)	19	27	54	51,120	72,644	145,289	269,053
Annual	17	31	52	192,468	350,971	588,726	1,132,165

C/D=Construction/Demolition debris (from both residential and non-residential sources)
O/R=Other/Residential waste (all waste from residential generators except for construction/demolition debris)
O/NR=Other/Non-Residential (all waste from non-residential generators except for construction/demolition debris)

NOTE: The percent of all waste that was construction/demolition was not estimated in the spring sort.
The annual averages are based on the other three sorts.

Figure 2. Annual quantity of construction/demolition debris, residential waste (excluding construction/demolition), and non-residential waste (excluding construction/demolition) delivered to regional disposal facilities.

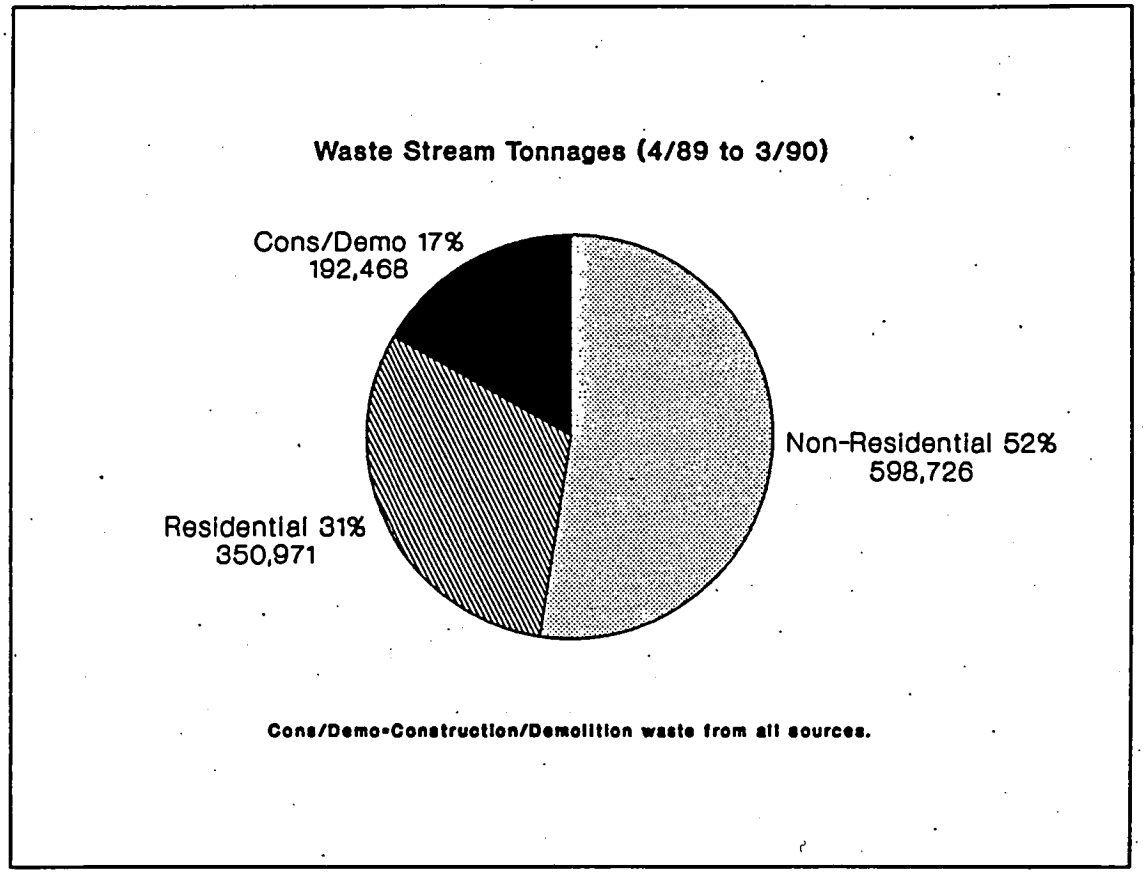

Table 3. Composition of waste (percent of wet weight) of three waste streams: (1) construction/demolition debris, (2) residential waste (excluding construction/demolition), and (3) non-residential waste (excluding construction/demolition) delivered to each of the three study sites.

	Hillsboro			St. Johns			Metro South			Region		
Waste Stream (see code):	C/D	O/R	O/NR	C/D	O/R	O/NR	C/D	O/R	O/NR	C/D	O/R	O/NR
PAPER	6.07	5.83	17.74	11.90	25.79	43.27	11.52	35.20	38.95	7.77	27.56	35.10
food container	0.00	0.00	0.70	0.14	1.06	1.48	0.10	2.41	2.02	0.04	1.59	1.41
corrugated	4.45	3.19	8.71	8.07	11.24	23.91	7.17	12.65	17.47	5.39	10.73	18.03
newspaper	0.33	0.37	1.05	1.29	3.78	3.37	1.41	6.34	3.07	0.64	4.57	2.65
office	0.25	1.85	1.37	2.15	1.64	4.77	0.31	1.61	4.53	0.51	1.66	3.77
magazine	0.00	0.00	0.76	0.00	1.95	0.66	0.20	1.82	1.35	0.03	1.58	0.87
book	0.16	0.13	0.74	0.10	3.20	1.91	0.18	2.32	3.14	0.16	2.27	1.91
other	0.88	0.29	4.41	0.15	2.92	7.17	2.15	8.05	7.37	1.00	5.16	6.46
PLASTIC	2.33	2.24	10.52	4.59	8.68	11.43	3.64	9.80	11.24	2.85	8.28	11.13
food jug	0.00	0.00	0.01	0.03	0.26	0.43	0.00	0.47	0.31	0.00	0.33	0.28
non-food container	0.00	0.00	0.09	0.00	0.14	0.32	0.00	0.20	0.25	0.00	0.15	0.24
durable	0.38	0.82	2.33	1.60	1.29	2.51	1.85	0.88	1.21	0.79	1.00	2.12
film	0.95	0.78	3.47	1.97	4.43	4.64	0.52	4.35	5.71	1.01	3.83	4.60
styrofoam	0.42	0.11	0.92	0.79	0.76	0.86	0.01	0.75	1.51	0.40	0.66	1.05
other food container	0.00	0.00	0.03	0.14	1.01	1.44	0.05	1.42	1.37	0.03	1.07	1.03
other	0.58	0.53	3.67	0.06	0.79	1.23	1.21	1.73	0.88	0.62	1.24	1.81
YARD DEBRIS	4.56	75.06	5.98	6.91	15.61	2.55	2.01	17.49	9.94	4.43	25.74	5.44
prunings	3.29	36.41	2.26	1.90	6.67	1.12	0.49	8.09	4.97	2.63	11.99	2.45
bulky	0.86	5.79	0.06	0.10	0.54	0.24	0.00	1.23	0.10	0.61	1.70	0.15
leaf	0.41	32.86	3.66	4.91	8.40	1.19	1.52	8.17	4.87	1.19	12.05	2.84
WOOD	26.75	4.17	23.61	25.44	7.00	12.66	27.96	2.63	8.85	26.79	4.31	14.67
construction	22.96	4.14	11.38	18.07	3.71	5.18	26.74	2.47	5.88	22.97	3.14	7.07
packaging	3.79	0.03	12.23	7.37	3.29	7.48	1.22	0.16	2.97	3.82	1.17	7.60
TEXTILE	3.66	3.73	4.79	8.71	5.59	5.17	6.72	3.38	4.21	4.85	4.16	4.81
FOOD	0.05	0.12	0.90	0.40	10.53	6.68	0.99	8.51	6.85	0.26	7.89	5.13
DIAPERS	0.00	0.00	0.02	0.00	1.17	0.26	0.52	2.66	0.46	0.09	1.75	0.25
MISC. ORGANIC	17.48	3.24	17.99	6.15	4.18	3.73	10.75	3.39	4.84	14.85	3.63	7.95
GLASS	0.20	0.97	0.52	1.69	2.71	1.62	0.26	4.52	2.14	0.40	3.39	1.46
beverage	0.03	0.00	0.00	0.42	0.74	0.84	0.03	2.08	1.17	0.08	1.32	0.70
non-food container	0.00	0.91	0.01	0.00	0.12	0.07	0.00	0.14	0.08	0.00	0.26	0.06
food container	0.00	0.00	0.05	0.27	0.75	0.30	0.02	1.47	0.61	0.04	1.01	0.31
other	0.17	0.06	0.46	1.00	1.10	0.41	0.21	0.83	0.28	0.28	0.80	0.39
ALUMINUM	0.06	0.00	0.85	0.60	0.91	0.54	0.25	0.57	0.56	0.16	0.60	0.63
food container	0.00	0.00	0.04	0.00	0.73	0.39	0.00	0.49	0.37	0.00	0.50	0.29
other	0.06	0.00	0.81	0.60	0.18	0.15	0.25	0.08	0.19	0.16	0.10	0.34
FERROUS METAL	1.06	3.84	3.11	13.89	4.12	4.13	2.07	5.48	5.53	2.91	4.78	4.21
food container	0.00	0.00	0.14	0.09	1.60	1.27	0.00	2.05	1.56	0.01	1.59	1.03
other	1.06	3.84	2.97	13.80	2.52	2.86	2.07	3.43	3.97	2.90	3.19	3.18
NON-FERROUS METAL	2.36	0.07	1.24	0.88	0.50	0.35	0.27	0.01	0.14	1.81	0.18	0.54
MISC. INORGANIC	35.17	0.72	11.51	17.50	5.64	5.25	31.73	1.22	5.54	32.27	2.60	7.05
APPLIANCE	0.02	0.00	0.00	0.31	0.83	0.03	0.82	1.99	0.26	0.20	1.30	0.08
WHITE GOODS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FURNITURE	0.00	0.00	1.03	1.04	6.65	1.07	0.45	2.76	0.28	0.21	5.62	0.85
HAZARDOUS WASTE	0.23	0.00	0.20	0.00	0.08	0.27	0.00	0.16	0.12	0.16	0.11	0.21
MEDICAL WASTE	0.01	0.00	0.00	0.00	0.01	1.32	0.00	0.03	0.02	0.01	0.02	0.48
OTHER MATERIAL	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.17	0.06	0.01	0.09	0.02

C/D=Construction/Demolition debris (from both residential and non-residential sources);
O/R=Other/Residential waste (all waste from residential generators except for construction/demolition debris)
O/NR=Other/Non-Residential (all waste from non-residential generators except for contruction/demolition debris)

Figure 3. Comparison of the 1987 and 1989 waste compositions.

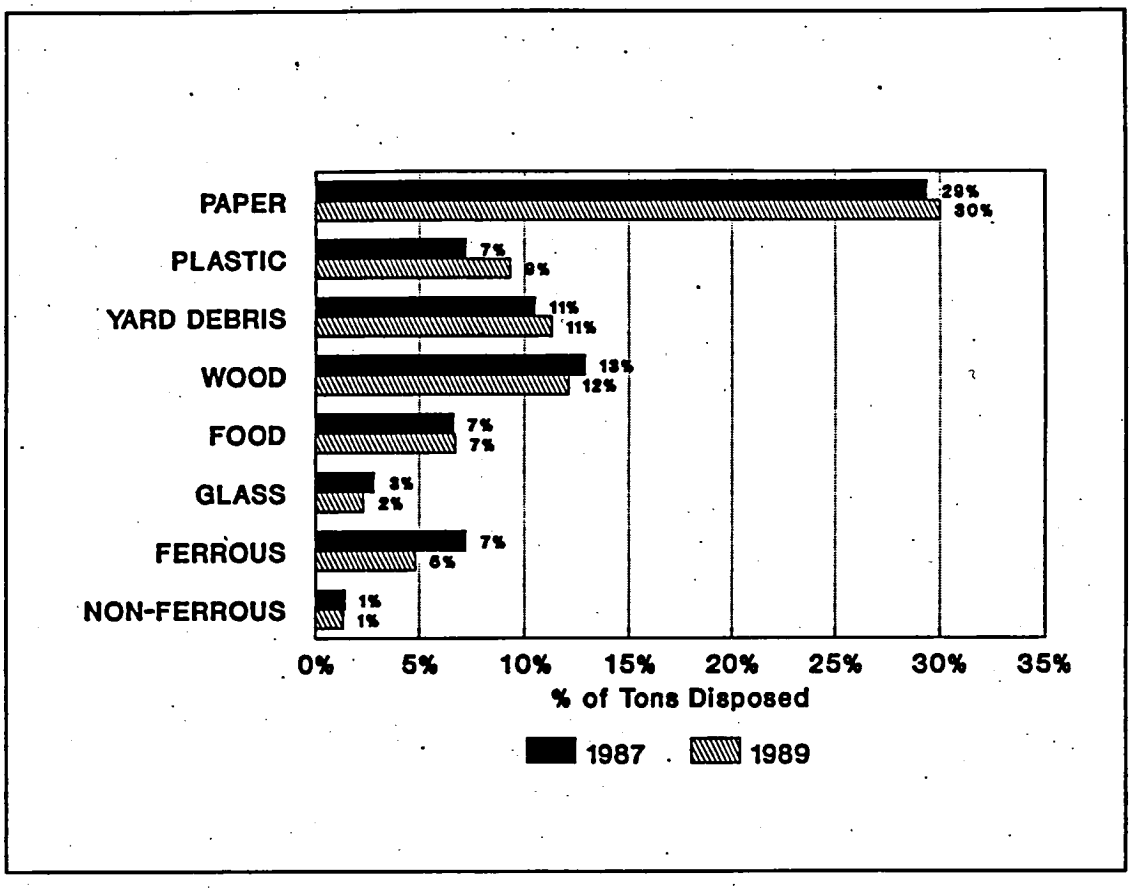

Table 4. Change in waste composition from 1987 to 1989 at each of the three study sites.

	KFD	HB		MS			SJ			Region		
	1987	1989	Change	1987	1989	Change	1987	1989	Change	1987	1989	Change
PAPER	13.4	12.8	-0.6	34.5	34.9	0.4	35.1	39.4	4.3	29.4	30.0	0.6
corrugated	5.8	7.6	1.8	8.8	13.3	4.5	11.0	15.7	4.7	9.0	12.3	3.3
newspaper	1.0	1.0	-0.0	4.5	4.6	0.1	4.1	5.0	0.9	3.4	3.5	0.1
office	1.6	1.2	-0.4	3.1	2.7	-0.4	6.0	4.8	-1.2	3.9	2.8	-1.1
other	5.1	3.0	-2.1	18.2	14.4	-3.8	14.0	13.8	-0.2	13.1	11.3	-1.8
PLASTIC	5.3	6.9	1.6	7.6	11.0	3.4	8.1	10.6	2.5	7.2	9.3	2.1
food jug	0.0	0.0	0.0	0.4	0.6	0.2	0.3	0.4	0.1	0.3	0.3	0.0
non-food container	0.3	0.2	-0.1	0.8	0.6	-0.2	1.0	0.7	-0.3	0.8	0.5	-0.3
durable	1.3	1.6	0.3	0.6	2.3	1.7	1.0	2.5	1.5	0.9	2.0	1.1
other	3.6	5.1	1.5	5.8	6.5	0.7	5.6	6.9	1.3	5.3	6.5	1.2
YARD DEBRIS	11.9	14.5	2.6	9.0	12.3	3.3	10.8	7.7	-3.1	10.5	11.3	0.8
prunings	7.3	5.4	-1.9	1.9	4.2	2.3	3.9	2.6	-1.3	4.1	4.5	0.4
leaf	4.7	9.1	4.4	7.1	8.1	1.0	6.9	5.1	-1.8	6.4	6.8	0.4
WOOD	26.8	23.8	-3.0	7.7	6.0	-1.7	8.4	8.9	0.5	12.9	12.1	-0.8
TEXTILE	3.3	2.3	-1.0	3.1	3.9	0.8	4.3	4.4	0.1	3.7	3.8	0.1
FOOD	0.3	0.1	-0.2	9.4	8.7	-0.7	8.2	9.2	1.0	6.6	6.7	0.1
DIAPERS	0.0	0.0	0.0	1.7	1.8	0.1	1.3	1.2	-0.1	1.1	1.0	-0.1
MISC. ORGANIC	7.6	12.5	4.9	10.1	5.6	-4.5	7.4	3.6	-3.8	8.3	6.8	-1.5
GLASS	0.3	0.6	0.3	3.8	3.2	-0.6	3.5	2.7	-0.8	2.8	2.3	-0.5
beverage	0.2	0.0	-0.2	2.0	1.6	-0.4	2.1	1.5	-0.6	1.6	1.0	-0.6
other	0.1	0.5	0.4	1.8	1.6	-0.2	1.4	1.3	-0.1	1.2	1.3	0.1
ALUMINUM	1.2	0.6	-0.6	0.9	0.9	-0.0	0.9	0.6	-0.3	1.0	0.7	-0.3
food container	0.0	0.0	0.0	0.3	0.6	0.3	0.3	0.4	0.1	1.2	0.4	-0.8
other	1.2	0.6	-0.6	0.7	0.3	-0.4	0.6	0.2	-0.4	0.8	0.3	-0.5
FERROUS METAL	10.7	3.7	-7.0	6.1	4.6	-1.5	5.9	3.9	-2.0	7.2	4.8	-2.4
food container	0.1	1.3	1.2	2.1	1.7	-0.4	2.1	1.3	-0.8	1.6	1.6	-0.0
other	10.6	2.4	-8.2	4.0	2.9	-1.1	3.8	2.6	-1.2	5.6	3.2	-2.4
NON-FERROUS METAL	0.9	2.9	2.0	0.2	0.2	-0.1	0.2	0.3	0.1	0.4	0.6	0.2
MISC. INORGANIC	16.7	17.7	1.0	5.7	5.1	-0.6	5.3	4.3	-1.0	8.3	8.4	0.1
HAZARDOUS WASTE	0.6	0.1	-0.5	0.1	0.5	0.4	0.0	0.4	0.4	0.2	0.3	0.1
OTHER MATERIAL	0.9	1.5	0.6	0.3	1.5	1.2	0.6	2.8	2.2	0.6	2.0	1.4

KFD=Killingsworth Fast Disposal; HB=Hillsboro Landfill; SJ=St. Johns Landfill; MS=Metro South Transfer Station.
NOTE: Sub-categories in the 1989/90 sort were combined to correspond to the categories in the 1987 sort.

Table 5. Comparison of per capita disposal rates in 1987 and 1989.

	% of Waste Disposed			Tons Disposed			Per Capita Disposal Rate (lbs/person/day)		
	1987	1989	Change	1987	1989	Change	1987	1989	Change
PAPER	29.4	30.0	0.6	293,609	324,185	30,577	1.47	1.55	0.09
corrugated	9.0	12.3	3.3	89,880	133,265	43,385	0.45	0.64	0.19
newspaper	3.4	3.5	0.1	33,955	38,292	4,337	0.17	0.18	0.01
office	3.9	2.8	-1.1	38,948	30,720	(8,228)	0.19	0.15	-0.05
other	13.1	11.3	-1.8	130,826	121,908	(8,918)	0.65	0.58	-0.07
PLASTIC	7.2	9.3	2.1	71,904	100,057	28,153	0.36	0.48	0.12
food jug	0.3	0.3	0.0	2,996	3,678	682	0.01	0.02	0.00
non-food container	0.8	0.5	-0.3	7,989	5,625	(2,365)	0.04	0.03	-0.01
durable	0.9	2.0	1.1	8,988	21,093	12,105	0.04	0.10	0.06
other	5.3	6.5	1.2	52,930	69,770	16,840	0.26	0.33	0.07
YARD DEBRIS	10.5	11.3	0.8	104,860	122,340	17,480	0.52	0.59	0.06
prunings	4.1	4.5	0.4	40,945	48,785	7,839	0.20	0.23	0.03
leaf	6.4	6.8	0.4	63,915	73,556	9,641	0.32	0.35	0.03
WOOD	12.9	12.1	-0.8	128,828	131,318	2,490	0.64	0.63	-0.01
TEXTILE	3.7	3.8	0.1	36,951	41,105	4,154	0.18	0.20	0.01
FOOD	6.6	6.7	0.1	65,912	72,366	6,454	0.33	0.35	0.02
DIAPERS	1.1	1.0	-0.1	10,985	10,817	(168)	0.05	0.05	-0.00
MISC. ORGANIC	8.3	6.8	-1.5	82,890	73,556	(9,334)	0.41	0.35	-0.06
GLASS	2.8	2.3	-0.5	27,963	25,095	(2,867)	0.14	0.12	-0.02
beverage	1.6	1.0	-0.6	15,979	11,033	(4,945)	0.08	0.05	-0.03
other	1.2	1.3	0.1	11,984	14,062	2,078	0.06	0.07	0.01
ALUMINUM	1.0	0.7	-0.3	9,987	7,464	(2,523)	0.05	0.04	-0.01
food container	1.2	0.4	-0.8	11,984	3,894	(8,090)	0.06	0.02	-0.04
other	0.8	0.3	-0.5	7,989	3,570	(4,420)	0.04	0.02	-0.02
FERROUS METAL	7.2	4.8	-2.4	71,904	51,489	(20,415)	0.36	0.25	-0.11
food container	1.6	1.6	-0.0	15,979	17,091	1,112	0.08	0.08	0.00
other	5.6	3.2	-2.4	55,926	34,398	(21,527)	0.28	0.16	-0.11
NON-FERROUS METAL	0.4	0.6	0.2	3,995	6,598	2,604	0.02	0.03	0.01
MISC. INORGANIC	8.3	8.4	0.1	82,890	90,430	7,541	0.41	0.43	0.02
HAZARDOUS WASTE	0.2	0.3	0.1	1,997	3,678	1,680	0.01	0.02	0.01
OTHER MATERIAL	0.6	2.0	1.4	5,992	21,418	15,426	0.03	0.10	0.07
TOTAL	100	100		1,000,667	1,081,916	81,249	5.00	5.19	0.19

NOTE: Sub-categories in the 1989/90 sort were combined to correspond to the categories in the 1987 sort.

LIST OF APPENDICES

A. DEFINITIONS OF WASTE CATEGORIES

B. FIELD DATA FORM

APPENDIX A

DEFINITIONS OF WASTE CATEGORIES

APPENDIX B
FIELD DATA FORM

METRO

2000 S.W. First Avenue
Portland, OR 97201-5398
503/221-1646

Waste Characterization Survey

Field sort form

Date Time am/pm

Sample number

Recorder

High-grade ☐ Full waste stream ☐

St. Johns ☐ Metro South ☐ Hillsboro ☐

Vehicle data

Metro no.

Company

Volume

Net weight

Truck type

Packers: rear ☐ side ☐ front ☐

Drop boxes: compacted ☐ loose ☐

Self-haul: car ☐ pick-up ☐ trailer ☐

Other (describe)

Load source

Address (or nearest intersection)

City County Census tract

*Name (if single source)

Description of source (type of business, etc.)

Description of waste

Commercial ☐ Residential ☐ Mixed ☐

Includes construction/demolition debris? yes ☐ no ☐

Generator type (% by weight)

	0%	25%	50%	75%	100%
Residential:					
Homes	☐	☐	☐	☐	☐
Apartments	☐	☐	☐	☐	☐
Commercial:					
Services	☐	☐	☐	☐	☐
Retail trade	☐	☐	☐	☐	☐
Manufacturing	☐	☐	☐	☐	☐
Government	☐	☐	☐	☐	☐
Financial, Insurance, Real Estate	☐	☐	☐	☐	☐
Wholesale trade	☐	☐	☐	☐	☐
Transportation, commercial, public utilities	☐	☐	☐	☐	☐
Construction	☐	☐	☐	☐	☐
Electrical	☐	☐	☐	☐	☐
Agricultural	☐	☐	☐	☐	☐

Waste classification	Subsample Weights	Total wt.
Paper		
Food Container		
Corrugated		
News		
Office		
Magazines		
Books, manuals, junk mail		
Other		
Plastics		
Jugs		
Non-food container		
Durable		
Films and Bags		
Food container		
Styrene foam		
Other		
Yard Debris		
Prunings		
Bulky woody		
Leaves and grass		
Wood		
Construction lumber		
Packaging Lumber		
Textiles		
Food Wastes		
Diapers		
Misc. Organics		

Waste classification	Subsample Weights	Total wt.
Glass		
Beverage		
Container		
Food Container		
Other		
Aluminum		
Food Container		
Other		
Ferrous metal		
Food Container		
Other		
Other non-ferrous		
Misc. inorganics		
Other		
Appliances		
White goods		
Furniture		
Household hazadous		
Medical		
Other		
Counts		
Returnables		
Wine coolers		
Milk jugs		