Prepared for:

Property and Transport Services

By:

Cascadia Consulting Group, Inc.

With assistance from:
Sky Valley Associates, Inc.

Acknowledgments

University Property and Transport Services – The solid waste collection staff were integral to planning and carrying out the collection of waste for sampling. Billing staff and interns gathered detailed information about waste dumpsters and University demographics. Moreover, transportation and solid waste management staff were most helpful during all phases of the study – from design to implementation and reporting – particularly by keeping the study relevant to current University programs and future opportunities.

The University's Waste Collection Vendor – Waste Management, the waste collection vendor, coordinated drivers for the collection of waste for sampling, made space available at the Eastmont Transfer Station for waste sorting activities, and assisted in the study's design and reporting phases by providing collection schedules and waste quantities.

Sky Valley Associates, Inc. – Brad Anderson and Matt Tracy of Sky Valley Associates supervised all waste sorting activities. They worked in conjunction with the University and vendor collection staff, transfer station personnel, and the other sort crewmembers to meet the study's sampling goals within the allotted timeframe and to provide high quality and consistent field data for analysis.

Table of Contents

Table of Figures

Table of Maps

Table of Tables

Table of Photos

1. Organization of the Report

This report presents the results of a 2003 waste characterization study conducted at the University of Washington's main campus in Seattle. The report is organized into the major sections listed below.

- **Study Background and Purpose – Chapter 2**, beginning on page 9, provides a historical context for this study and a brief description of the key objectives.
- **Summary of Study Methods – Chapter 3,** beginning on page 11, explains the methodology used to design and implement the study, including definitions of the *generator groups* the study examined; procedures used to schedule, collect, and sort samples; and analytical and statistical methods.
- **Waste Disposal by Generator Group – Chapter 4**, beginning on page 17, shows the distribution of waste tonnages among the 12 generator groups listed in the following section.
- **Waste Results: Campus-Wide and for the 12 Generator Groups – Chapters 5 - 17**, beginning on page 20, present key findings about waste generated at the University. Waste composition results and recycling program opportunities are discussed. **Chapter 5** presents campus-wide results, and the subsequent chapters cover the 12 generator groups as follows:
    - Upper campus classrooms (Chapter 6)
    - Lower campus laboratories (Chapter 7)
    - Residence halls (Chapter 8)
    - Food services (Chapter 9)
    - Medical center (Chapter 10)
    - Health sciences (Chapter 11)
    - Art buildings (Chapter 12)
    - ICA & IMA facilities (Chapter 13)
    - Maintenance buildings (Chapter 14)
    - West campus buildings (Chapter 15)
    - Outdoor litter receptacles:
        - Smart cans, with recycling option (Chapter 16)
        - Cement garbage cans, without recycling option (Chapter 17)
- **Appendices** follow the main body of the report, beginning on page A-1. These documents provide study details, such as definitions of all waste sorting categories, additional waste composition results, a complete explanation of the methodology, and copies of field forms used during the study.

2. Study Background and Purpose

The University of Washington's Property and Transport Services (PTS) manages all municipal solid waste (MSW) generated on the University's main campus in Seattle. In an effort to reduce the amount of waste materials going to landfills and the associated costs, PTS conducted a *Solid Waste Minimization and Management Study* in 1989. In 2003, PTS commissioned a second waste characterization study to fulfill the following objectives:

- Examine changes in the composition and quantity of materials disposed by the University since its previous study in 1989;[1]
- Evaluate the effectiveness of waste reduction and recycling programs; and,
- Identify opportunities for increased material recovery to meet or exceed Seattle's recycling goal by 2008.

Through this study, PTS is leading efforts to increase waste reduction and diversion in Seattle and answering Mayor Greg Nickels' call for a recommitment to Seattle's 60% recycling goal.

This study focused on all municipal solid waste disposed by the University of Washington's main campus during the 2002-2003 fiscal year (July 2002 – June 2003). The University shares responsibility for collecting this waste with its contractor, Waste Management, Inc. This waste is delivered to local transfer stations, and then sent to regional landfills for disposal.

Cascadia Consulting Group, Inc., with the assistance of Sky Valley Associates, conducted the current study. Cascadia was the primary contractor responsible for overseeing all aspects of the project; Sky Valley conducted the waste sorting activities.

The following chapters present the methods and results of the 2003 waste characterization study.

[1] Phase I of the UW's *Solid Waste Minimization and Management Study* included a waste characterization analysis designed to provide a statistically valid estimate of the quantity and composition of wastes disposed by the University (*Waste Stream Analysis*, CCAinc, Matrix Management Group, Peter Moy and Associates, Washington State Recycling Association, 1989).

3. Summary of Study Methods

This chapter summarizes the methodology used to conduct the study and present its results. *Generator groups* are defined in the first section, followed by an explanation of how the waste samples were allocated to those generator groups. Next, the chapter describes the waste sampling field procedures and waste categories studied. The last section of the chapter explains the data analysis and statistical methods used in the study. The study methodology was generally consistent with that of the 1989 study, and waste characterization projects in other Washington state jurisdictions such as the City of Seattle, King County, and the State itself.

3.1. Generator Groups Defined

To improve the accuracy of the analysis, the University's waste stream was divided into 12 *generator groups*, defined below, according to the source of the waste. These groups were based in part on the groups defined for the 1989 study, and new groups were added to reflect the University's current waste management program. The definitions also identify whether the University or Waste Management collects the waste. (*An asterisk designates groups added for the current study.)

1. Upper Campus Classrooms – Waste from upper campus buildings, typically containing classrooms and offices. The University collects waste from the majority of these locations.

2. Lower Campus Laboratories – Waste from lower campus buildings, typically containing laboratories, classrooms, or other special use facilities. The University collects waste from the majority of these locations.

3. Residence Halls – Waste from student dormitories (and associated food service facilities). Waste Management collects waste from all of these locations.

4. Food Services – Waste from food service facilities, such as the Husky Union Building. Waste Management collects waste from all of these locations.

5. Medical Center – Waste from the UW Medical Center and a few associated buildings, such as the Roosevelt Clinic. Waste Management collects waste from the majority of these locations.

6. Health Sciences – Waste from the Health Sciences complexes, containing a combination of laboratories, offices, and classrooms. Waste Management collects waste from the majority of these locations.

7. Art Buildings* – Waste from University galleries, theaters, and buildings housing art, architecture, and other small-scale construction projects (e.g., Ceramic and Metal Arts building). Both the University and Waste Management collect this waste.

8. ICA & IMA Facilities* – Waste from indoor and outdoor athletic complexes such as the Husky Stadium and Conibear Shellhouse. Both the University and Waste Management collect this waste.

The generator group definitions continue on the next page.

Summary of Study Methods

This list continues the generator group definitions from the previous page.

9. Maintenance Buildings* – Waste from buildings with a maintenance component such as the Urban Horticulture Center and the Plant Services Building. Both the University and Waste Management collect this waste.

10. West Campus Buildings* – Waste from various types of buildings located west of 15th Avenue. Both the University and Waste Management collect this waste.

11. Outdoor Litter Receptacles: Smart Cans, with recycling option* – Waste from approximately 30 small public-use bins located outside of buildings throughout campus. These bins have both a garbage and recycling compartment. University staff collects waste from these bins.

12. Outdoor Litter Receptacles: Cement Garbage Cans, without recycling option* – Waste from approximately 300 small public-use bins located outside of buildings throughout campus. These bins are cement, and have a garbage compartment only. University staff collects waste from these bins.

Campus-wide waste refers to waste disposed by all 12 generator groups listed above.

Following are the 1989 and 2003 generator groups. Locations categorized under the *Other Service Buildings* and *Mixed Generators* groups were segregated into the more specific generator groups added to the 2003 study.

1989 Generator Groups	*2003 Generator Groups*
Upper Campus Classrooms	**Upper Campus Classrooms**
Lower Campus Laboratories	**Lower Campus Laboratories**
Residence Halls	**Residence Halls**
Food Services	**Food Services**
Medical Center	**Medical Center**
Health Sciences	**Health Sciences**
Other Service Buildings (UW-collected)	**Art Buildings**
Mixed Generators (Bayside-collected)	**ICA & IMA Facilities**
	Maintenance Buildings
	West Campus Buildings
	Outdoor Litter Receptacles – Smart Cans (with recycling option)
	Outdoor Litter Receptacles – Cement Garbage Cans (without recycling option)

3.2. Allocation of Samples to Generator Groups

To ensure adequate representation of each generator group as well as compatibility with the previous study, 240 waste samples were divided among the 12 generator groups. Table 3-1 shows the number of samples assigned to each generator group.[2]

Table 3-1. Sample Allocation, by Generator Group

Generator Group	Samples
Upper Campus Classrooms	20
Lower Campus Laboratories	21
Residence Halls	20
Food Services	18
Medical Center	12
Health Sciences	17
Art Buildings	12
ICA & IMA Facilities	12
Maintenance Buildings	16
West Campus Buildings	12
Outdoor Litter Receptacles - Smart Cans (with recycling option)	40
Outdoor Litter Receptacles - Cement Garbage Cans (without recycling option)	40
Total	**240**

At the outset of the study, the University and its waste collection vendor provided a complete list of all dumpsters located within the main campus. The dumpsters were categorized into the 12 generator groups based on the source of their waste and sampled accordingly (see Appendix C following the main body of the report for complete list of UW dumpsters).

[2] More samples were taken from the two *Outdoor Litter Receptacle* generator groups because the samples for those categories were smaller – equivalent to one 40-gallon bag of waste from a litter can, weighing between eight and nine pounds on average. Samples for all other generator groups were substantially larger, weighing between 200 and 250 pounds on average.

3.3. Waste Sampling Procedures

Consistent with the 1989 study, all sampling activities were scheduled to occur during the spring season. Based on the sorting crew's efficiency and study sampling goals, a total of 14 field days were planned. Holidays and other events such as student move-out were avoided to ensure that sampling results were representative of normal University operations. Next, daily sampling schedules were planned.

Each day, multiple waste dumpsters were scheduled for sampling. This step was accomplished by first identifying those dumpsters that were normally collected on the given day, then randomly selecting enough dumpsters to meet that day's sampling goals. This selection procedure ensured unbiased data collection. The University's collection staff and waste collection vendor, Waste Management were then sent a list of the dumpsters selected for that day. During the course of the study, waste from every dumpster on campus was collected for sampling.

For this study, all waste was sent to Waste Management's Eastmont transfer station located in South Seattle. As each vehicle entered the facility, the field supervisor verified information with the driver about the waste collected and directed the front loader operator to scoop a randomly selected portion of the waste disposed by the vehicle. Between 200 and 250 pounds of this material was placed on a tarpaulin for sorting.

Most samples were then hand sorted into 91 waste categories listed in section 3.4, such as office paper or PET plastic bottles. For safety reasons, the 29 samples from the medical center and health sciences facilities were examined using a visual observation method. Care was taken to ensure that this method was consistent with the way in which medical waste was characterized for the 1989 study. This visual method is commonly used for other waste studies, including a recent study of King County's construction and demolition waste stream.

All sort data were recorded on custom forms and sent to the project manager for review and data entry. Following the main body of this report, Appendix D contains the complete sampling methodology for the 2003 study, and Appendix G includes copies of the field forms.

3.4. Waste Categories

The waste composition results in this report are presented using two sets of materials – *material classes* and *material categories*. There are eight broad material classes – *paper, plastic, glass, metal, organics, other materials, CDL wastes*, and *regulated materials*. Each of these material classes is composed of multiple material categories. All samples were sorted into 91 material categories – the finest level of detail for sorting. Table 3-2 shows the eight broad material classes and the 91 individual material categories they contain.

Table 3-2. Hierarchy of Material Classes and Material Categories

Material Classes and Material Categories			
Paper Class	**Glass Class**	**Organics Class**	**CDL Wastes Class**
Newspaper	Clear glass beverage	Wooden pallets	Dimension lumber
Unwaxed cardboard	Green glass beverage	Wooden crates	Other untreated wood
Waxed cardboard	Brown glass beverage	Leaves and grass	Treated wood
Office paper	Container glass	Prunings	Contaminated wood
Computer paper	Fluorescent tubes	Food	New gypsum scrap
Mixed low-grade paper	Lab glass	**Other Materials Class**	Demo gypsum scrap
Phone books	Other glass	Textiles	Fiberglass insulation
Milk/juice polycoat paper	**Metal Class**	Carpet/upholstery	Rock/concrete/bricks
Frozen food polycoat paper	Aluminum cans	Leather	Asphaltic roofing
Compostable/soiled paper	Aluminum foil/containers	Disposable diapers	Other construction debris
Paper/other materials	Other aluminum	Animal by-products	Sand/soil/dirt
Other papers	Other nonferrous metal	Tires	**Regulated Class**
Plastic Class	Tin food cans	Ash	Latex paints
#1 pop & liquor bottles	Empty aerosol cans	Furniture	Dangerous adhesives/glues
Other #1 plastic bottles	Other ferrous metal	Mattresses	Other adhesives/glues
#2 milk/juice containers	Oil filters	Small appliances	Oil-based paint/solvents
Other #2 plastic bottles	Mixed metals/materials	Audio/visual equip.	Cleaners
Other plastic bottles (#3-#7)		Computer monitors	Pesticides/herbicides
Plastic jars & tubs (#1-#7)		Televisions	Dry-cell batteries
Expanded polystyrene (#6)		Other computer equip.	Wet-cell batteries
Rigid plastic packaging		Ceramics/porcelain	Gasoline oil/diesel oil
Plastic grocery/bread bags		Nondistinct fines	Asbestos
Plastic garbage bags		Misc. organics	Explosives
Other plastic film		Misc. inorganics	Clear & orange bag medical
Plastic products			Red bag medical
Plastic/other materials			Other medical waste

3.5. Data Analysis and Statistics

Following the waste sorts, all data recorded on the field forms were entered into a customized database and reviewed for data entry errors. Waste composition estimates were calculated using this database.

In addition to the waste composition estimates, annual waste tonnages were determined. This calculation was accomplished using a combination of information gathered during the sampling period and waste tonnages provided by the University and Waste Management, Inc., the University's waste collection vendor.

The composition and tonnage estimates were then merged. Composition estimates were applied to the annual tonnages to produce material-specific quantity estimates for campus-wide waste and for each generator group (e.g., tons of newspaper disposed by residence halls during a year's time). This report contains both composition data and tonnages that were calculated using these methodologies.

The data from the waste sorting were treated with a statistical procedure that provided two kinds of information for each of the material categories:

- the estimated composition of waste, shown as a percentage by weight of the total amount disposed; and
- the degree of precision of these estimates.

All estimates of precision were calculated at the 90% confidence level. The equations used in these calculations appear in Appendix E following the main body of the report.

Figure 3-1 below provides an example of how the waste composition results are displayed. The example indicates that the best estimate of the amount of newspaper present in the campus-wide waste stream is 3.2%. When calculations are performed at the 90% confidence level, we are 90% certain that the mean estimate for newspaper is between 2.4% and 4.0%.

Figure 3-1. Sample Waste Composition Results

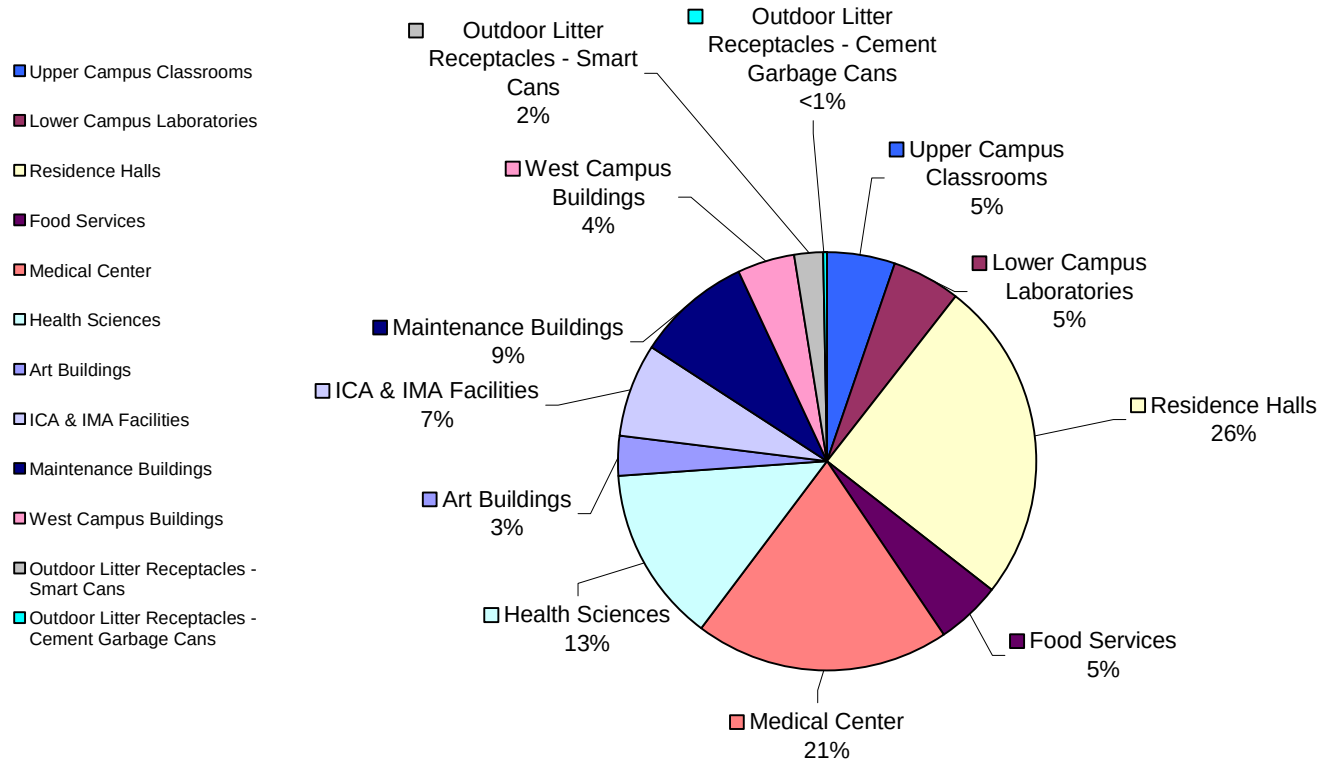
Material Category	Mean	Low	High
Newspaper	3.2%	2.4%	4.0%

4. Waste Disposal by Generator Group

In the 2002-2003 fiscal year, the University of Washington's main campus disposed 8,551 tons of waste. Figure 4-1 shows the portion (%) that each of the 12 generator groups, defined starting on page 11 in the previous chapter, contributed to the University's annual tons disposed. As depicted, residence halls (26%), the medical center (21%), and health sciences (13%) were the three largest generators of campus-wide disposed waste. As shown in Figure 4-1, outdoor litter receptacle waste was included in this study. At the time of this study, there were approximately 330 outdoor litter receptacles – 300 smart cans (with recycling option) and about 30 cement garbage cans (without recycling option).

Figure 4-1. Quantities Disposed by Each Generator Group (8,551 tons total)

(July 2002 – June 2003)



The following chapters show waste composition results for the campus as a whole (Chapter 5) and for each of the 12 generator groups (Chapters 6 through 17). The waste composition results are divided into the eight material classes and 91 material categories listed on page 15 in section 3.4.

5. Campus-Wide Disposed Waste

This chapter examines the waste disposed by the University's main campus. The chapter is organized into three sections:

1. a definition of campus-wide disposed waste;
2. composition of campus-wide disposed waste; and
3. an assessment of recycling accomplishments and future opportunities.

5.1. Definition of Campus-Wide Disposed Waste

Campus-wide disposed waste comes from all 12 generator groups defined for the study, including: upper campus classrooms, lower campus laboratories, residence halls (and associated food services), food services, medical center, health sciences, art buildings, ICA and IMA facilities, maintenance buildings, west campus buildings, and two types of outdoor litter receptacles – smart cans (with recycling option) and cement garbage cans (without recycling option). Together these generators disposed 8,551 tons of waste during the 2002-2003 fiscal year. After being collected, this waste is taken to local transfer stations and then sent to regional landfills for disposal.

Map 5-1, on page 21, indicates all dumpsters that were included in campus-wide disposed waste. Each color represents a generator group (please see legend for details). Outdoor litter receptacles are not included on this map due to the large number of receptacles on campus (about 330 in total).

Map 5-1. Dumpster Locations, Campus-Wide Waste

(July 1, 2002 – June 30, 2003)

Campus-Wide Dumpster Locations

- **Upper Campus Classrooms**
- **Lower Campus Laboratories**
- **Residence Halls**
- **Food Services**
- **Medical Center**
- **Health Sciences**
- **Art Buildings**
- **ICA & IMA Facilities**
- **Maintenance Buildings**
- **West Campus Buildings**

5.2. Composition of Campus-Wide Disposed Waste

The makeup of campus-wide waste is presented in two ways. First, a summary of waste composition is presented in a pie chart. Then, the 10 most predominant materials of campus-wide waste appear in a bar graph.

Composition by Material Class

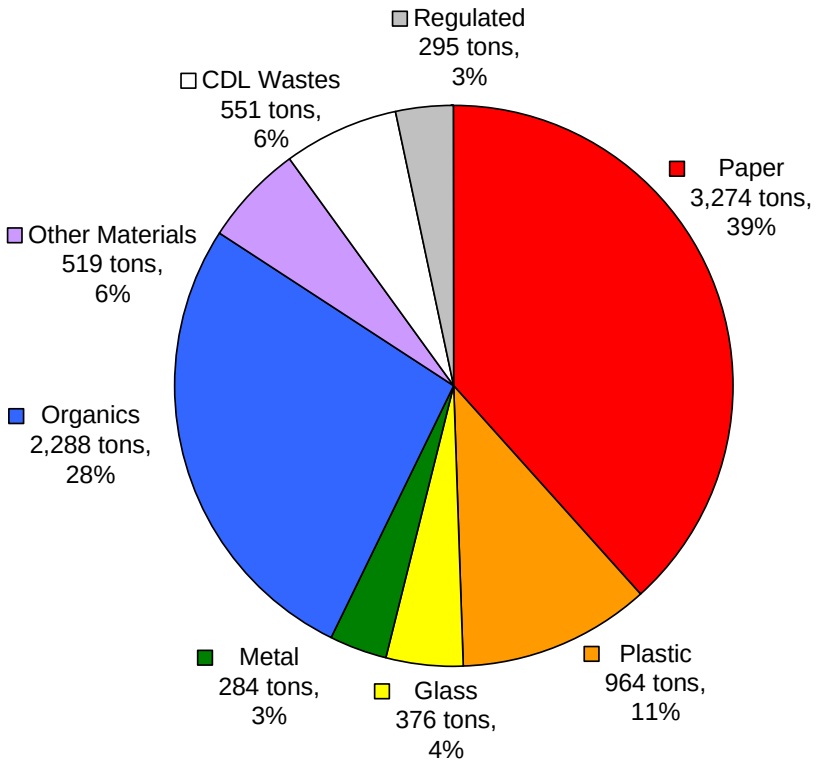
Figure 5-1 depicts the composition of campus-wide waste by material class. There are eight material classes, which include: *paper, plastic, glass, metal, organics, other materials, CDL wastes*, and *regulated materials*. Each of these material classes is composed of several material categories (e.g., the paper material class includes cardboard, newspaper, office paper, and other paper categories). Please see Appendix A for a complete listing of material class and category definitions.

Of the eight material classes, *paper*, *organics,* and *plastic* are the three largest by weight, accounting for approximately 39%, 28%, and 11% of campus-wide waste, respectively. Of the 8,551 tons disposed, paper comprised 3,274 tons, organics comprised 2,288 tons, and plastic comprised 964 tons.

Figure 5-1. Composition by Material Class, Campus-Wide Waste (n = 240)

(July 1, 2002 – June 30, 2003)

- **Paper** – all papers including cardboard, newspaper, and other fibers
- **Plastic** – plastic products and packaging such as drink bottles, film, and polystyrene
- **Glass** – glass products and packaging such as drink bottles, jars, and laboratory glassware
- **Metal** – ferrous and nonferrous metals such as aluminum and tin cans
- **Organics** – biodegradable materials commonly composted, including yard debris and food
- **CDL Wastes** – materials commonly generated by construction and demolition, including wood, gypsum wallboard, and insulation
- **Regulated** – materials such as paints, solvents, oils, medical wastes, and other chemicals
- **Other Materials** – materials that don't fit into any other category, including clothes, furniture, and electronic equipment



Appendix B presents a detailed composition of campus-wide waste.

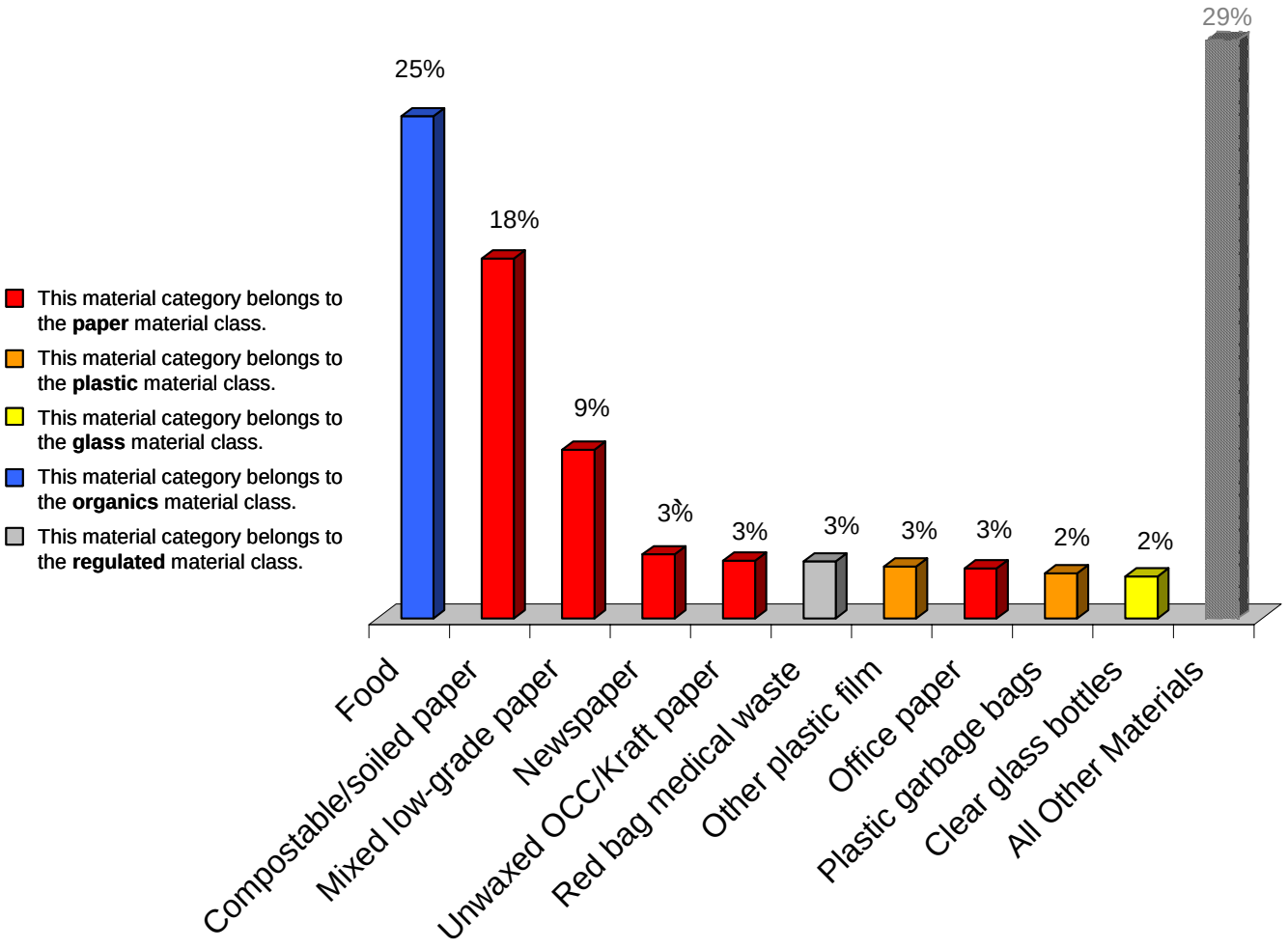
Top 10 Material Categories in Detail

For this study, each waste sample was sorted into 91 material categories. Figure 5-2 lists the 10 most predominant categories by weight. The remaining 81 categories are grouped into the *all other materials* column. The three single largest material categories of campus-wide waste are *food* (25%), *compostable/soiled paper* (18%), and *mixed low-grade paper* (9%). Appendix A provides definitions for all 91 categories.

The 10 largest material categories of campus-wide waste account for about 71% of the total, by weight.

Figure 5-2. Top 10 Material Categories, Campus-Wide Waste (n = 240)

(July 1, 2002 – June 30, 2003)



5.3. Progress and Opportunities

The University's waste reduction and recycling progress as well as existing and future opportunities are considered here.

15 Years of Progress

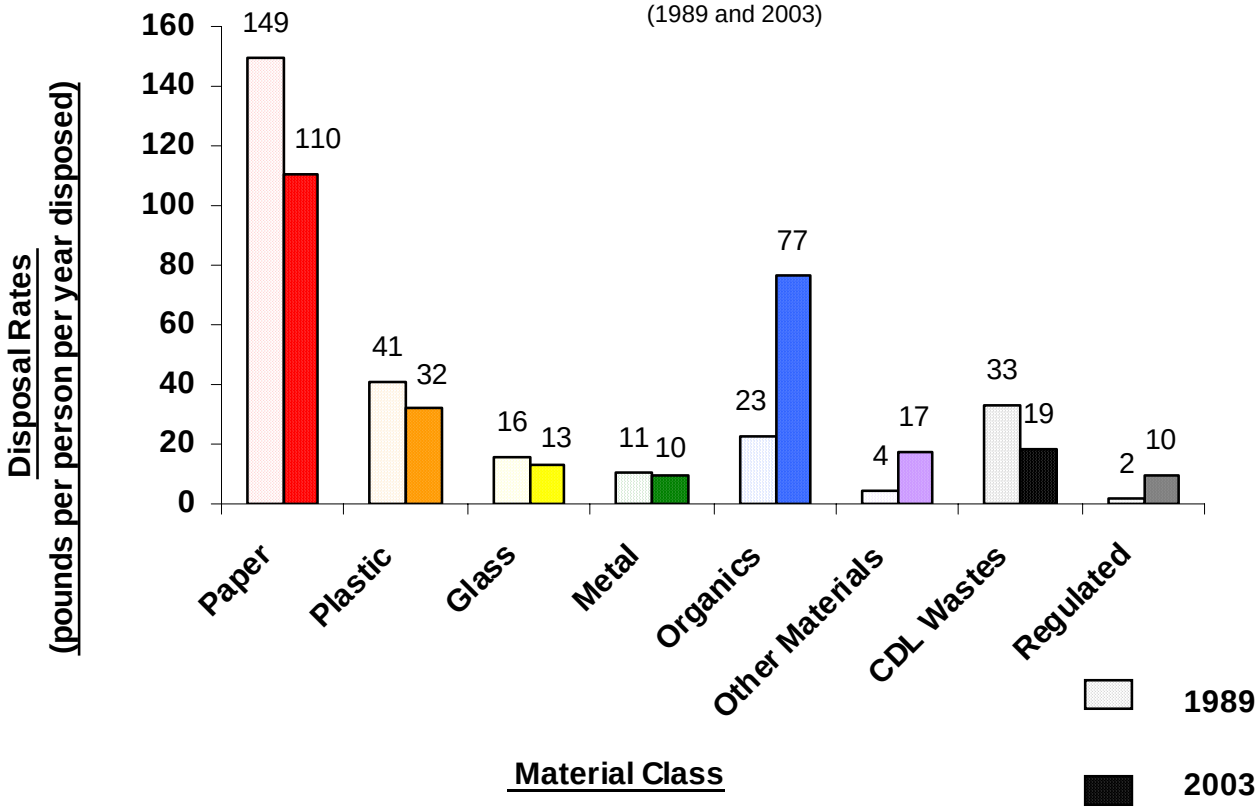
A common metric for measuring waste disposal and recycling is the amount of waste disposed per capita. Figure 5-3 compares 1989 and 2003 per capita disposal rates by material class. Per capita refers to quarterly faculty, staff, and student enrollment, which totaled to 46,166 in 1989. In 2003, the population rose 29% to 59,516 (please see Appendix E, page E-13 for detailed population and square footage data). Two key changes in disposal are summarized in the text and bar chart below.

On average, each person at the University disposed a total of 279 pounds of waste in 1989. In 2003, this rate increased to 287 pounds per person.

- Campus-wide per capita disposal has increased by 3% since 1989. In other words, each person at the University disposed a total of 279 pounds of waste in 1989. In 2003, this rate increased by 3% to 287 pounds per person. This data indicates that the average person at the University is disposing eight pounds more in 2003 than in 1989.
- However, the University is disposing 26% less paper and 20% less plastic per capita than in 1989.

Figure 5-3. Per Capita Disposal Rates in pounds, Campus-Wide Waste

(1989 and 2003)

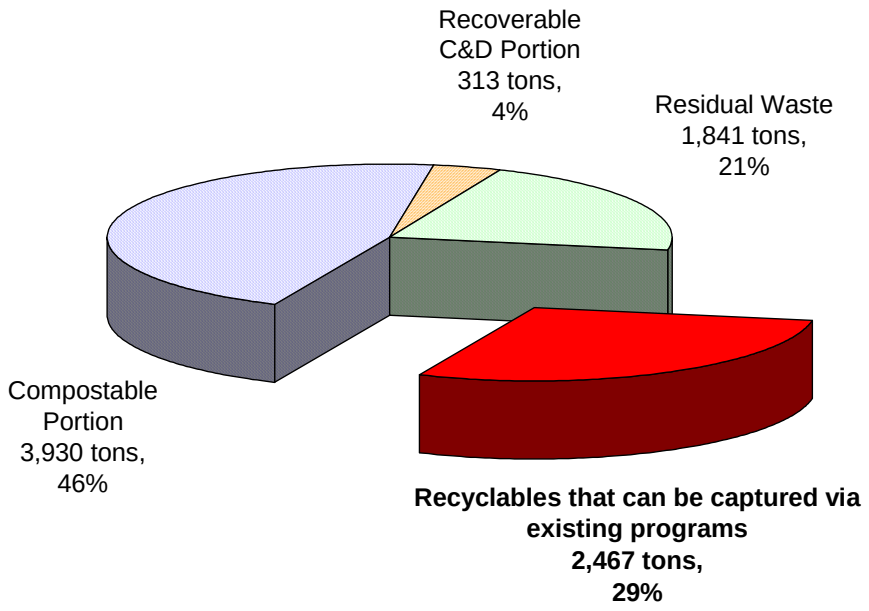


Existing Recycling Opportunities

The University has made considerable progress in diverting recyclable materials from disposal. However, there are recycling opportunities that can be realized through more effective use of existing programs. As Figure 5-4 shows, about 29% of all disposed waste, or 2,467 tons of material, are available for recovery through existing recycling programs. Between 50% to 60% of the 2,467 tons (or 1,234 tons to 1,480 tons) could be captured for recycling.

Figure 5-4. Recyclable Portion, Campus-Wide Waste

(July 1, 2002 – June 30, 2003)



- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For campus-wide waste this is predominantly paper, cans and bottles, and plastic film.
- **Compostable Portion** – These materials are potentially compostable. For campus-wide building waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For campus-wide waste this is predominantly clean wood, gypsum, and concrete.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.

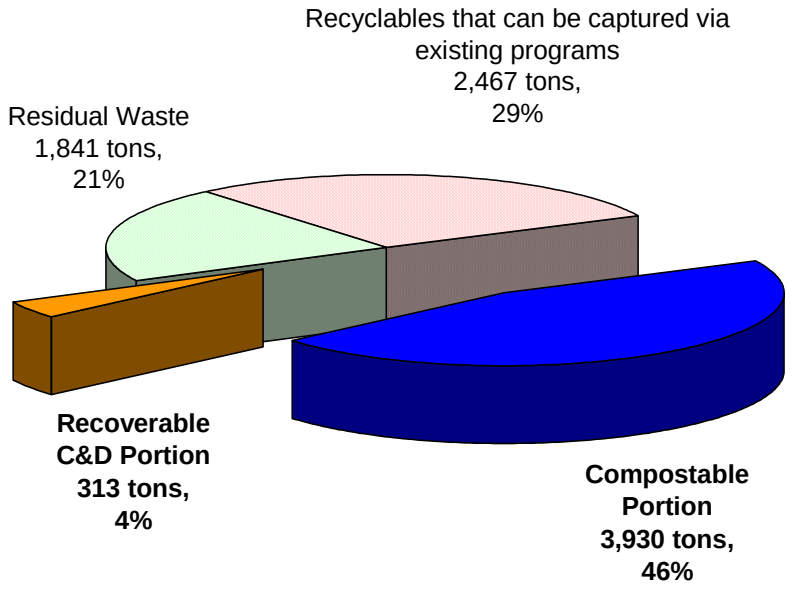
Future Recycling Opportunities

Figure 5-5 illustrates the future recycling opportunities for furthering waste reduction and recycling at the University. These opportunities are primarily focused on recovering construction and demolition (C&D) materials for which viable markets exist, and source separating organic materials for composting. To realize these future recycling opportunities, new programs must be developed.

Collecting and composting organic materials represents a significant campus-wide opportunity for recovering new materials. There are a total of 3,930 tons of organic materials currently disposed by the University (about 46% of campus-wide waste). Between 25% to 50% of this organic material could be captured for recovery. Opportunities for C&D recovery through campus-wide programs are limited, with only 313 tons available (or about 4% of total disposed waste).

Figure 5-5. Compostable and Recoverable Construction & Demolition Portions, Campus-Wide Waste[3]

(July 1, 2002 – June 30, 2003)



- **Compostable Portion** – These materials are potentially compostable. For campus-wide building waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For campus-wide waste this is predominantly clean wood, gypsum, and concrete.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For campus-wide waste this is predominantly paper, cans and bottles, and plastic film.

[3] Material categories were categorized as *compostable* and r*ecoverable C&D* according to their best and highest use. For example, lumber was categorized as a *C&D recoverable* material because it has a higher associated market value when recycled through C&D recovery programs than when it is composted. Please see Appendix A for more information on material categories classified as *recyclable*, *compostable,* or *recoverable C&D*.

6. Upper Campus Classroom Disposed Waste

This chapter examines the waste disposed by upper campus classrooms. The chapter is organized into three sections:

1. a definition of upper campus classroom disposed waste;
2. composition of upper campus classroom disposed waste; and
3. an assessment of recycling accomplishments and future opportunities.

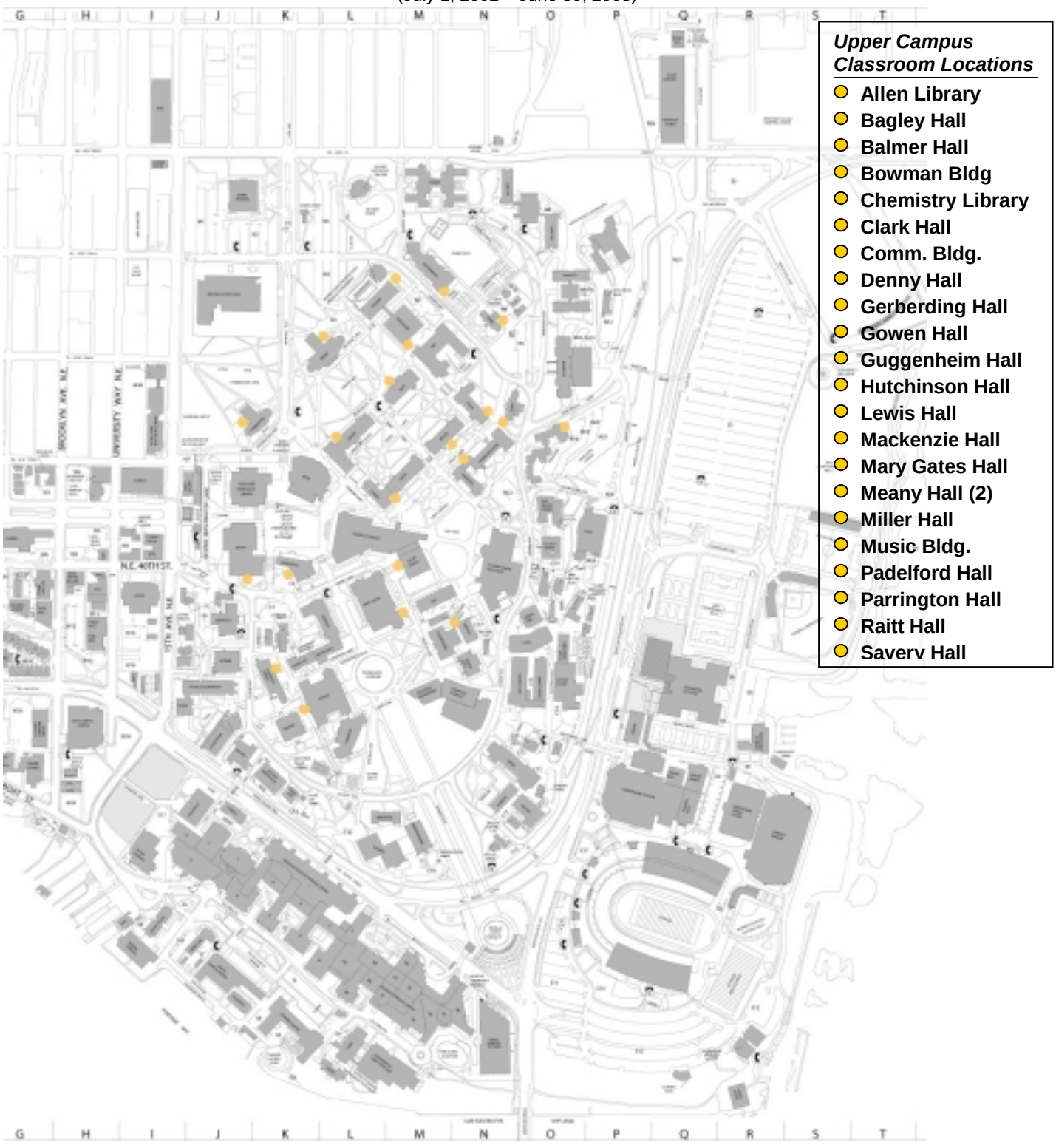
6.1. Definition of Upper Campus Classroom Disposed Waste

Upper campus classroom waste comes from buildings located in the north part of campus. They typically contain classrooms and offices. Upper campus classrooms disposed a total of 456 tons of waste during the 2002-2003 fiscal year. After being collected, this waste is taken to local transfer stations and then sent to regional landfills for disposal.

Map 6-1, on page 29, indicates all dumpsters that were included in upper campus classroom waste. Each dot represents an upper campus classroom dumpster location (please see legend for details).

Map 6-1. Dumpster Locations, Upper Campus Classroom Waste

(July 1, 2002 – June 30, 2003)



6.2. Composition of Upper Campus Classroom Disposed Waste

The makeup of upper campus classroom waste is presented in two ways. First, a summary of waste composition is presented in a pie chart. Then, the 10 most predominant materials of upper campus classroom waste appear in a bar graph.

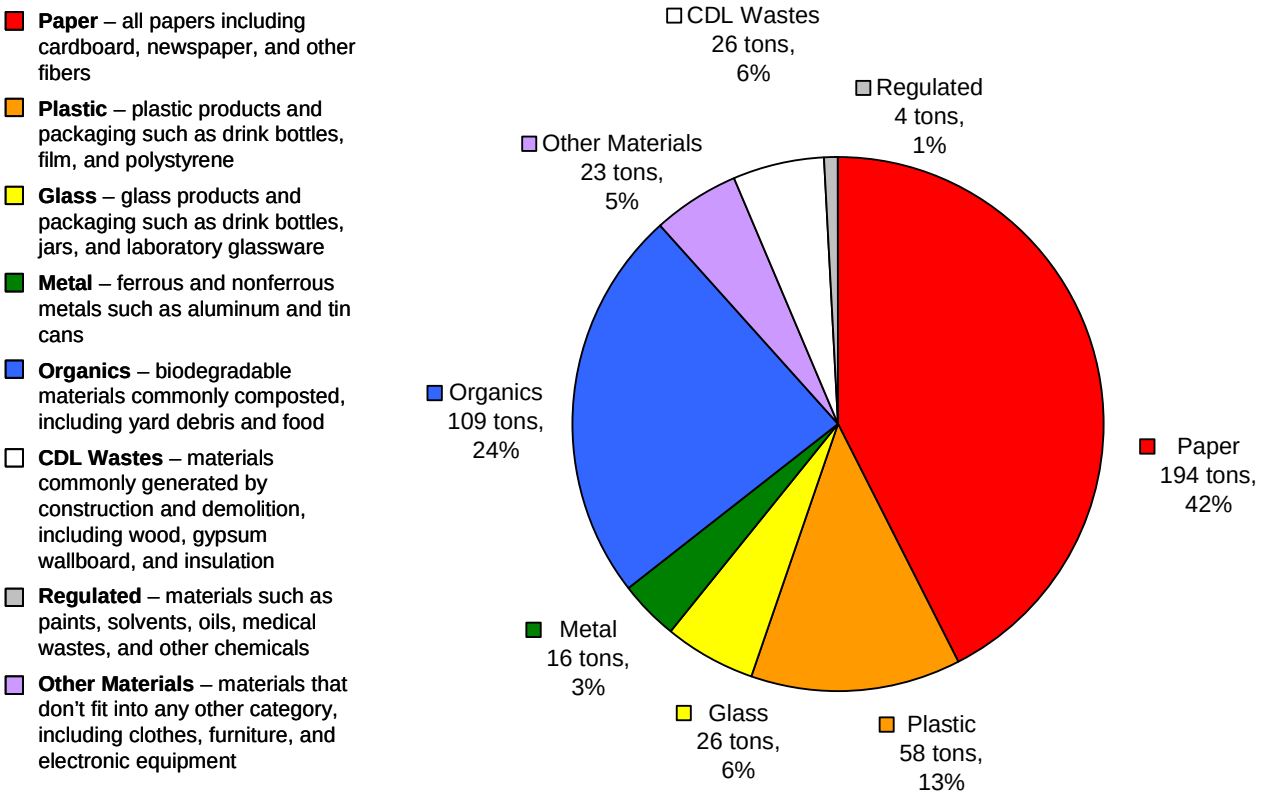
Composition by Material Class

Figure 6-1 depicts the composition of the upper campus classroom waste by material class. There are eight material classes, which include: *paper, plastic, glass, metal, organics, other materials, CDL wastes*, and *regulated materials*. Each of these material classes is composed of several material categories (e.g., the paper material class includes cardboard, newspaper, office paper, and other paper categories). Please see Appendix A for a complete listing of material class and category definitions.

Of the eight material classes, *paper*, *organics,* and *plastic* are the three largest by weight, accounting for approximately 42%, 24%, and 13% of upper campus classroom waste, respectively. Of the 456 tons disposed, paper comprised 194 tons, organics comprised 109 tons, and plastic comprised 58 tons.

Figure 6-1. Composition by Material Class, Upper Campus Classroom Waste (n = 20)

(July 1, 2002 – June 30, 2003)



Appendix B presents a detailed composition of upper campus classroom waste.

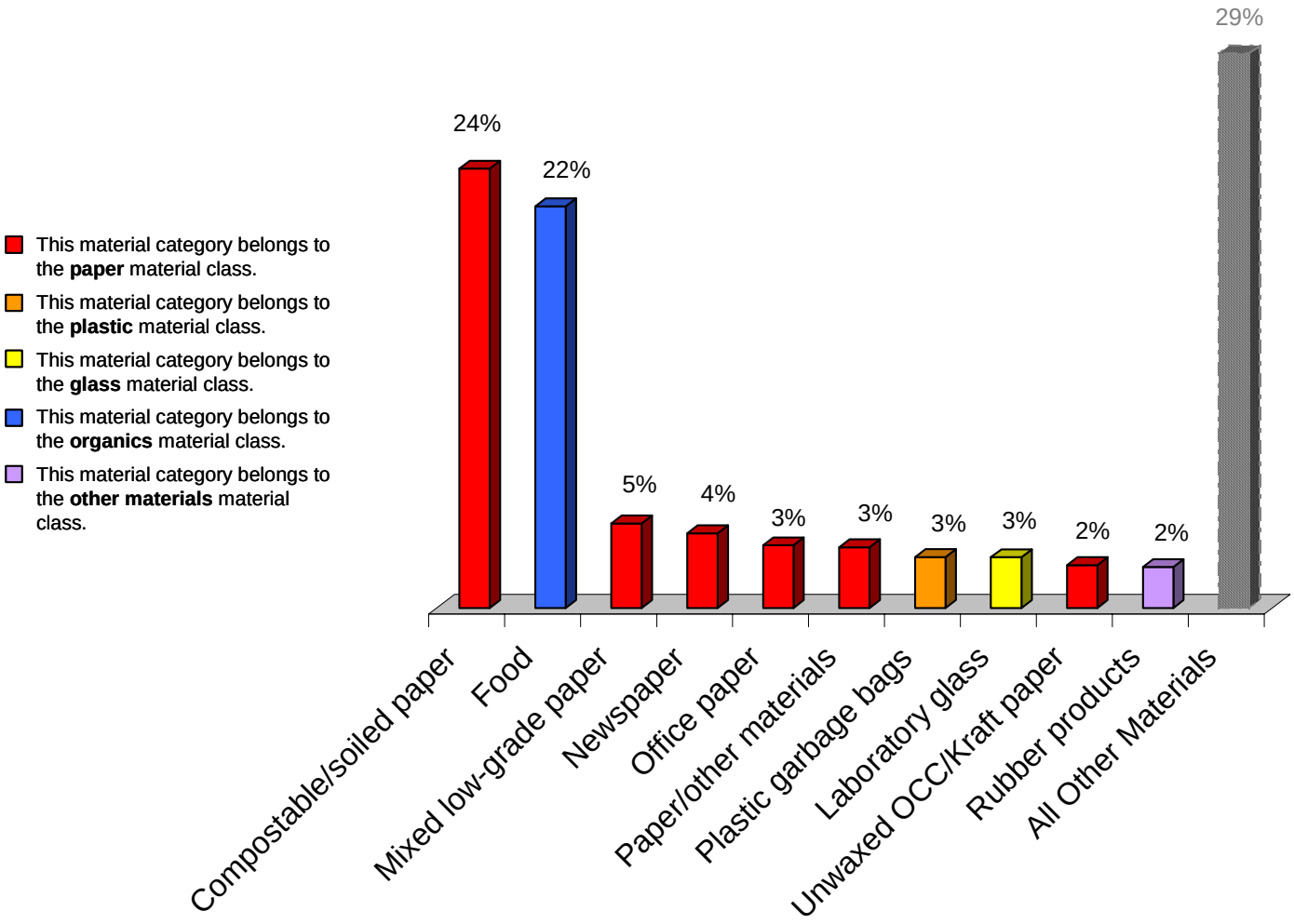
Top 10 Material Categories

For this study, each waste sample was sorted into 91 material categories. Figure 6-2 lists the 10 most predominant categories by weight. The remaining 81 categories are grouped into the *all other materials* column. The three single largest material categories of upper campus classroom waste are *compostable/soiled paper* (24%), *food* (22%), and *mixed low-grade paper* (5%). Appendix A provides definitions for all 91 categories.

The 10 largest material categories of upper campus classroom waste account for about 71% of the total, by weight.

Figure 6-2. Top 10 Material Categories, Upper Campus Classroom Waste (n = 20)

(July 1, 2002 – June 30, 2003)



6.3. Progress and Opportunities

Upper campus classroom waste reduction and recycling progress as well as near and long-term opportunities are considered here.

15 Years of Progress

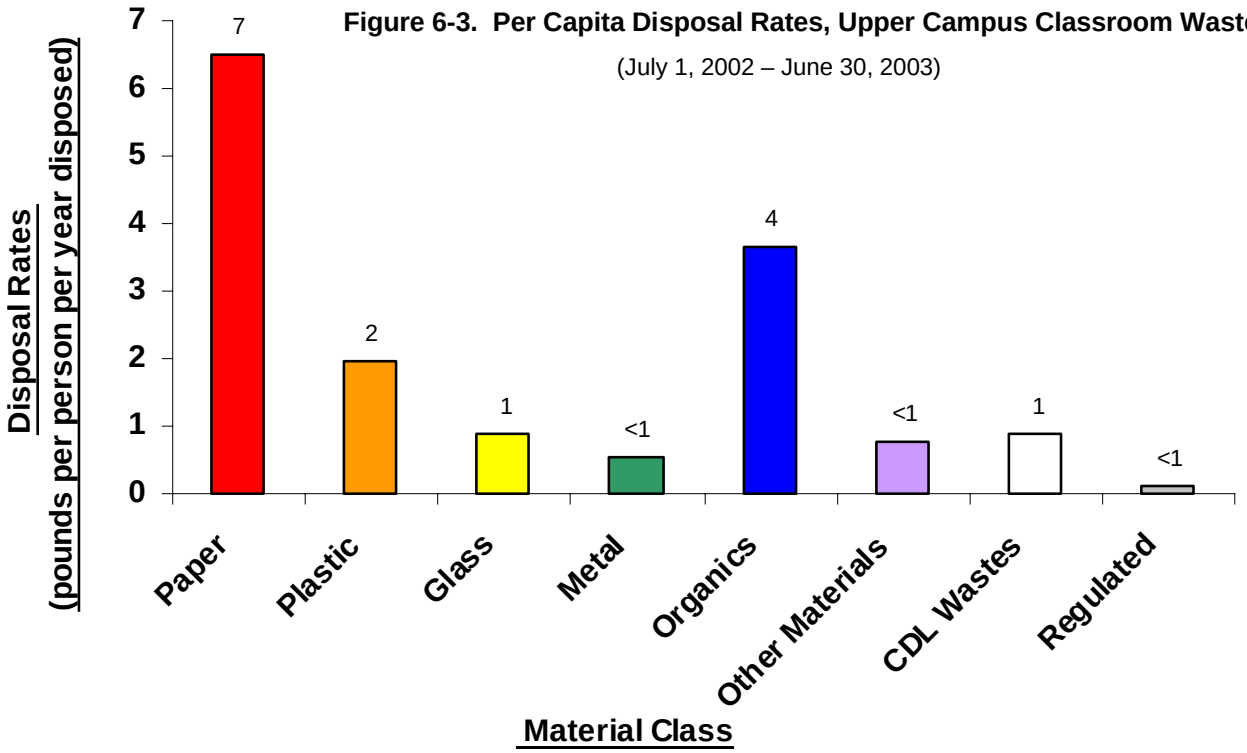
A common metric for measuring waste disposal and recycling is the amount of waste disposed per capita. Figure 6-3 presents 2003 per capita disposal rates by material class. Per capita refers to quarterly faculty, staff, and student enrollment, which totaled to 59,516 in 2003. There is no comparable data available from the 1989 study to compare per capita disposal for upper campus classrooms. However, the following statements indicate changes in the composition of upper campus classroom waste.

Per capita disposal at upper campus classrooms was 15 pounds per person per year in 2003.

- The paper material class made up about 72% of upper campus classroom waste in 1989. This percentage fell to 42% in 2003. (Please see Appendix F, page F-3, for additional material class disposal rate information.)
- The organics material class accounted for about 5% of upper campus classroom waste in 1989. In 2003, this percentage increased to 24%. (Please see Appendix F, page F-3, for additional material class disposal rate information.)

Figure 6-3. Per Capita Disposal Rates, Upper Campus Classroom Waste

(July 1, 2002 – June 30, 2003)

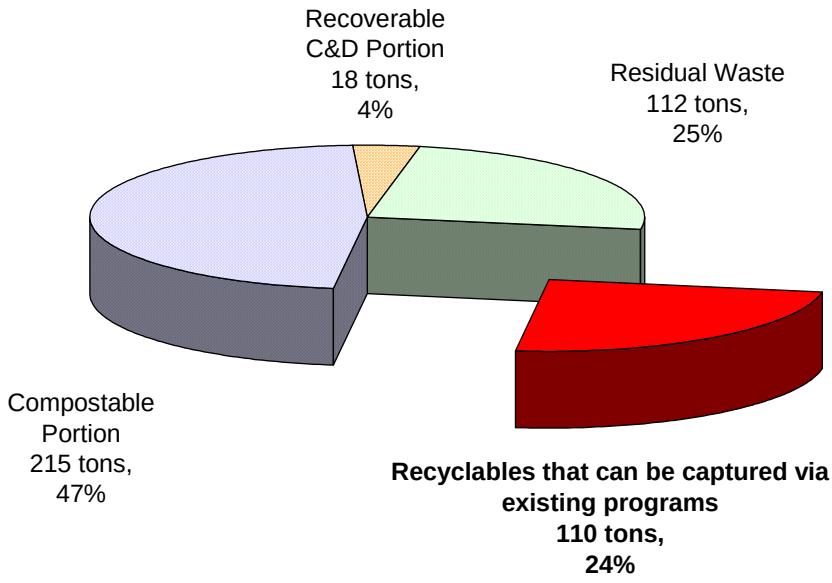


Existing Recycling Opportunities

The relative amount of paper in upper campus classroom waste – a material targeted by University recycling programs – has declined over the past 15 years. However, there are recycling opportunities that can be realized through more effective use of existing programs. As Figure 6-4 shows, 24% of all upper campus classroom disposed waste, or 110 tons of material, are available for recovery through existing recycling programs. Between 50% to 60% of the 110 tons (or 55 tons to 66 tons) could be captured for recovery from upper campus classrooms.

Figure 6-4. Recyclable Portion, Upper Campus Classroom Waste

(July 1, 2002 – June 30, 2003)



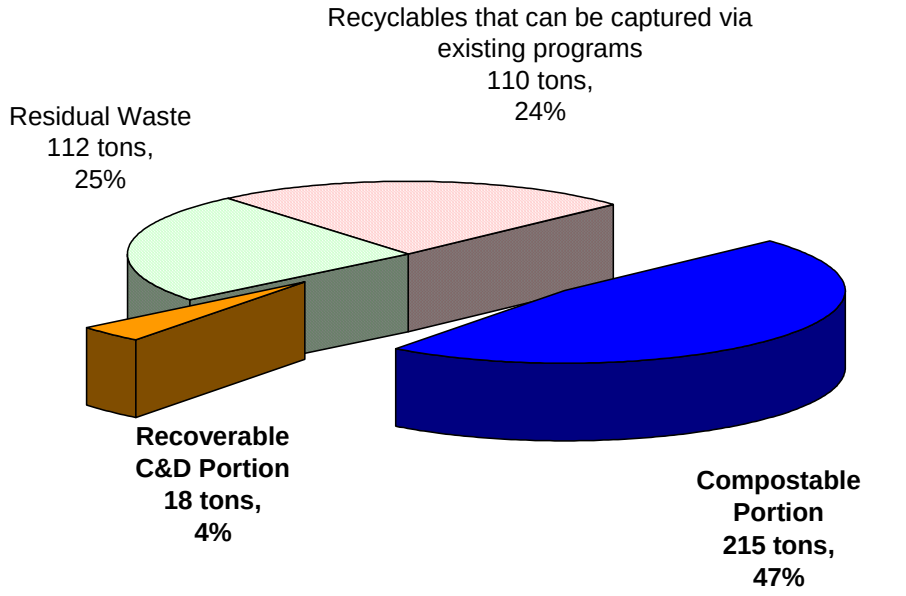
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For upper campus classroom waste this is predominantly paper, cans and bottles, and plastic film.
- **Compostable Portion** – These materials are potentially compostable. For upper campus classroom waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For upper campus classroom waste this is predominantly clean wood and gypsum.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.

Future Recycling Opportunities

Figure 6-5 illustrates future recycling opportunities for furthering waste reduction and recycling in upper campus classrooms. Collecting and composting organic materials represents an opportunity for recovering new materials. There are a total of 215 tons of organic materials currently disposed by upper campus classrooms (about 47% of upper campus classroom waste). Between 25% to 50% of this organic material could be captured for recovery from upper campus classrooms, provided that an adequate collection system is initiated. However, to realize these future recycling opportunities, new programs must be developed.

Figure 6-5. Compostable and Recoverable Construction & Demolition Portions, Upper Campus Classroom Waste[4]

(July 1, 2002 – June 30, 2003)



- **Compostable Portion** – These materials are potentially compostable. For upper campus classroom waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For upper campus classroom waste this is predominantly clean wood and gypsum.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For upper campus classroom waste this is predominantly paper, cans and bottles, and plastic film.

[4] Material categories were categorized as *compostable* and r*ecoverable C&D* according to their best and highest use. For example, lumber was categorized as a *C&D recoverable* material because it has a higher associated market value when recycled through C&D recovery programs than when it is composted. Please see Appendix A for more information on material categories classified as *recyclable*, *compostable,* or *recoverable C&D*.

7. Lower Campus Laboratory Disposed Waste

This section examines the waste disposed by lower campus laboratories. The section is organized in three parts:

1. a definition of lower campus laboratory disposed waste;
2. composition of lower campus laboratory disposed waste; and
3. an assessment of recycling accomplishments and future opportunities.

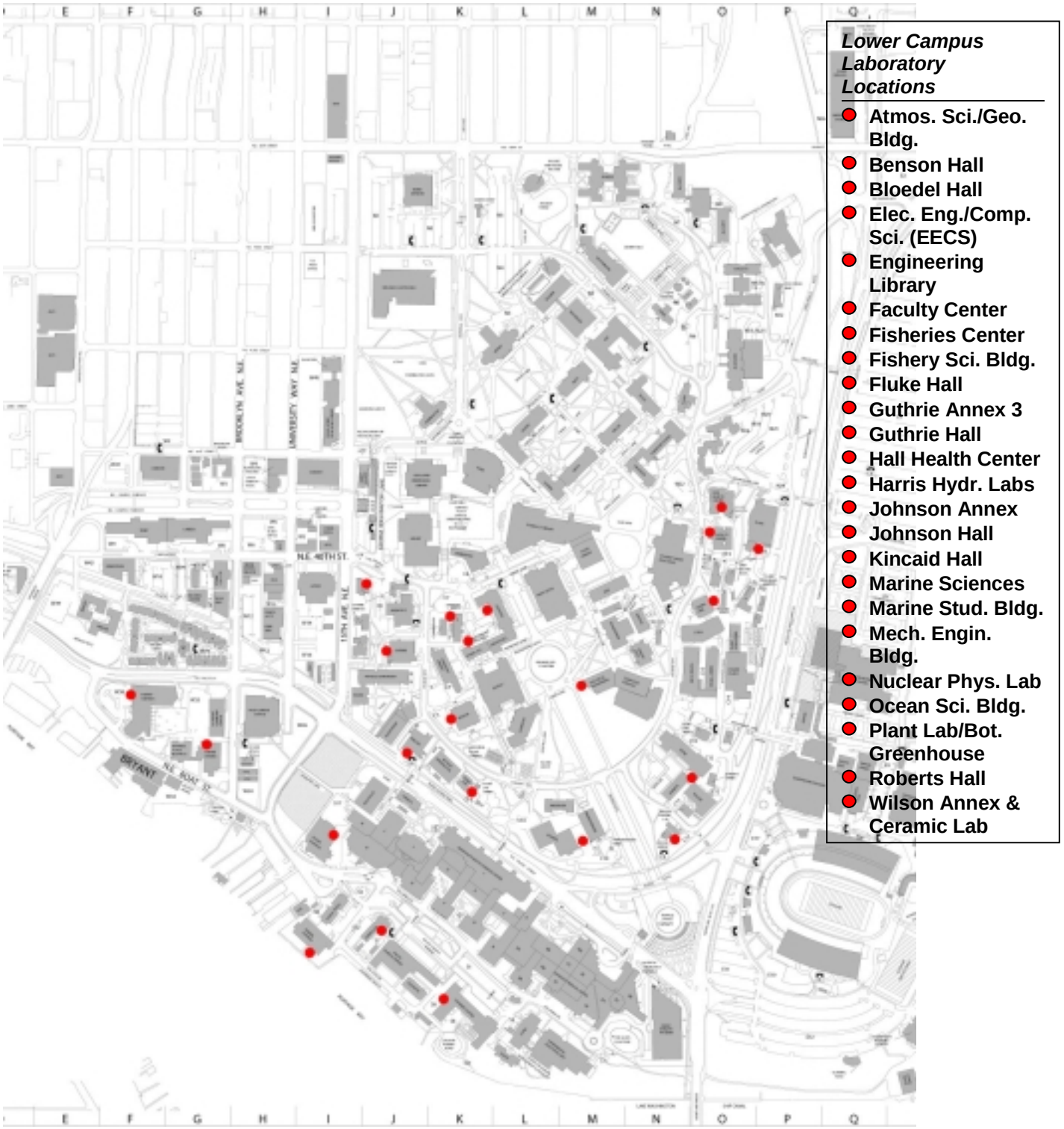
7.1. Definition of Lower Campus Laboratory Disposed Waste

Lower campus laboratory disposed waste comes from lower campus buildings, typically containing laboratories or other special use facilities. Lower campus laboratories disposed a total of 448 tons of waste during the 2002-2003 fiscal year. After being collected, this waste is taken to local transfer stations and then sent to regional landfills for disposal.

Map 7-1, on page 37, indicates all dumpsters that were included in lower campus laboratory waste. Each dot represents a lower campus laboratory dumpster location (please see legend for details).

Map 7-1. Dumpster Locations, Lower Campus Laboratory Waste

(July 1, 2002 – June 30, 2003)



7.2. Composition of Lower Campus Laboratory Disposed Waste

The makeup of lower campus laboratory waste is presented in two ways. First, a summary of waste composition is presented in a pie chart. Then, the 10 most predominant materials of lower campus laboratory waste appear in a bar graph.

Composition by Material Class

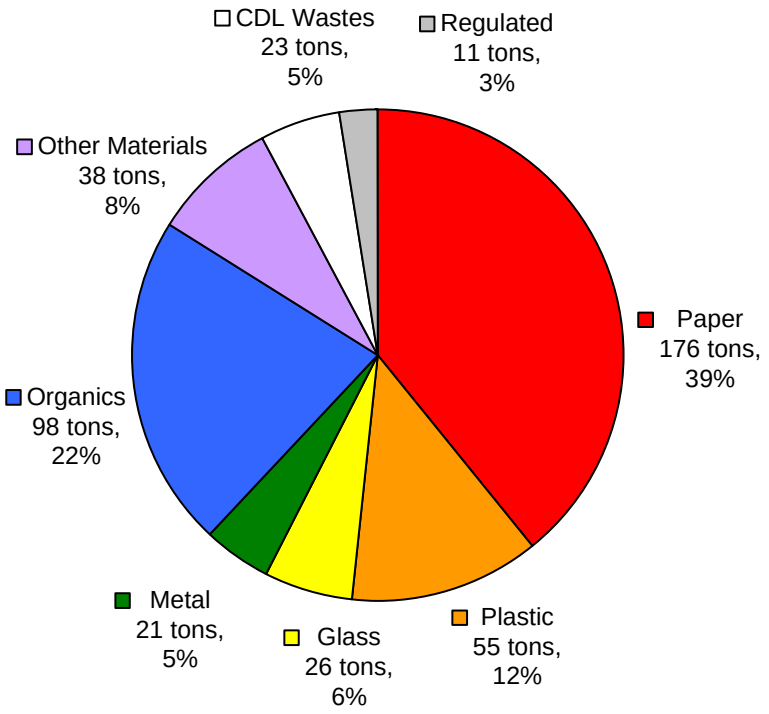
Figure 7-1 depicts the composition of the lower campus laboratory waste by material class. There are eight material classes, which include: *paper, plastic, glass, metal, organics, other materials, CDL wastes*, and *regulated materials*. Each of these material classes is composed of several material categories (e.g., the paper material class includes cardboard, newspaper, office paper, and other paper categories). Please see Appendix A for a complete listing of material class and category definitions.

Of the eight material classes, *paper*, *organics,* and *plastic* are the three largest by weight, accounting for approximately 39%, 22%, and 12% of lower campus laboratory waste, respectively. Of the 448 tons disposed, paper comprised 176 tons, organics comprised 98 tons, and plastic comprised 55 tons.

Figure 7-1. Composition by Material Class, Lower Campus Laboratory Waste (n = 21)

(July 1, 2002 – June 30, 2003)

- **Paper** – all papers including cardboard, newspaper, and other fibers
- **Plastic** – plastic products and packaging such as drink bottles, film, and polystyrene
- **Glass** – glass products and packaging such as drink bottles, jars, and laboratory glassware
- **Metal** – ferrous and nonferrous metals such as aluminum and tin cans
- **Organics** – biodegradable materials commonly composted, including yard debris and food
- **CDL Wastes** – materials commonly generated by construction and demolition, including wood, gypsum wallboard, and insulation
- **Regulated** – materials such as paints, solvents, oils, medical wastes, and other chemicals
- **Other Materials** – materials that don't fit into any other category, including clothes, furniture, and electronic equipment



Appendix B presents a detailed composition of lower campus laboratory waste.

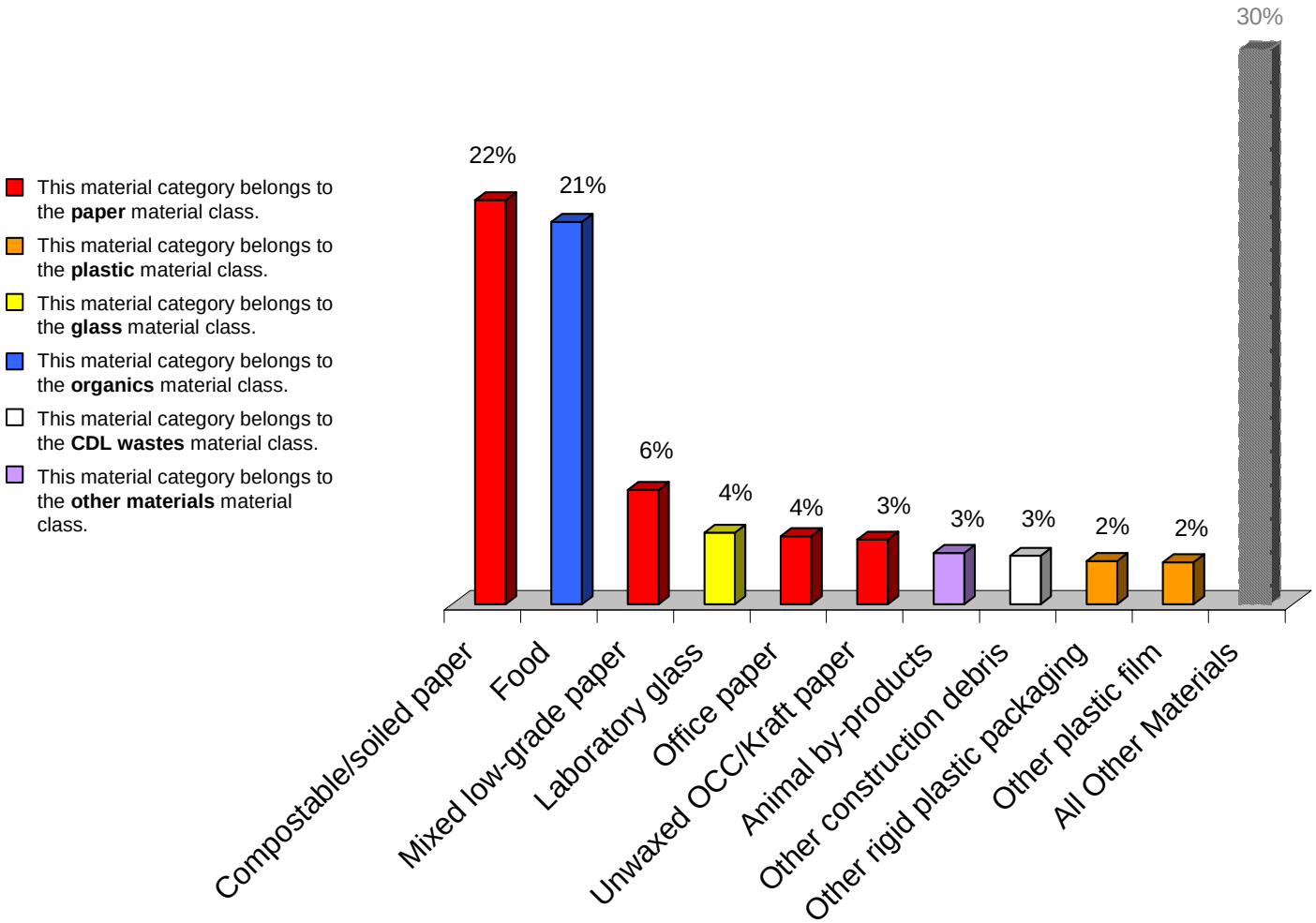
Top 10 Material Categories

For this study, each waste sample was sorted into 91 material categories. Figure 7-2 lists the 10 most predominant categories by weight. The remaining 81 categories are grouped into the *all other materials* column. The three single largest material categories of lower campus laboratory waste are *compostable/soiled paper* (22%), *food* (21%), and *mixed low-grade paper* (6%). Appendix A provides definitions for all 91 categories.

The 10 largest material categories of lower campus laboratory waste account for about 70% of the total, by weight.

Figure 7-2. Top 10 Material Categories, Lower Campus Laboratory Waste (n = 21)

(July 1, 2002 – June 30, 2003)



7.3. Progress and Opportunities

Lower campus laboratory waste reduction and recycling progress as well as near and long-term opportunities are considered here.

Per capita disposal at lower campus laboratories was 15 pounds per person per year in 2003.

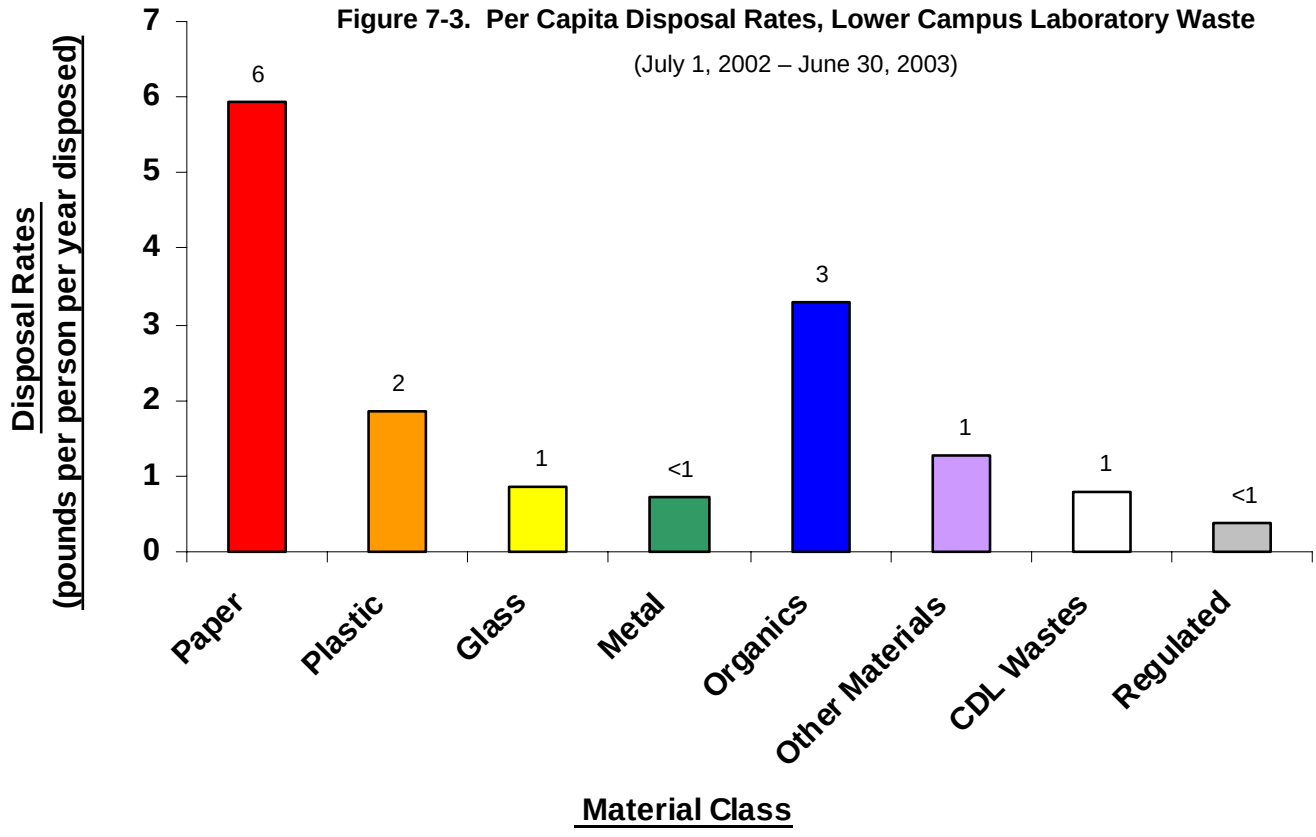
15 Years of Progress

A common metric for measuring waste disposal and recycling is the amount of waste disposed per capita. Figure 7-3 presents 2003 per capita disposal rates by material class. Per capita refers to quarterly faculty, staff, and student enrollment, which totaled to 59,516 in 2003. There is no comparable data available from the 1989 study to compare per capita disposal for lower campus laboratories. However, the following statements indicate changes in the composition of lower campus laboratory waste.

- The paper material class made up about 62% of lower campus laboratory waste in 1989. This percentage fell to 39% in 2003. (Please see Appendix F, page F-4, for additional material class disposal rate information.)
- The organics material class accounted for about 14% of lower campus laboratory waste in 1989. In 2003, this percentage increased to 22%. (Please see Appendix F, page F-4, for additional material class disposal rate information.)

Figure 7-3. Per Capita Disposal Rates, Lower Campus Laboratory Waste

(July 1, 2002 – June 30, 2003)

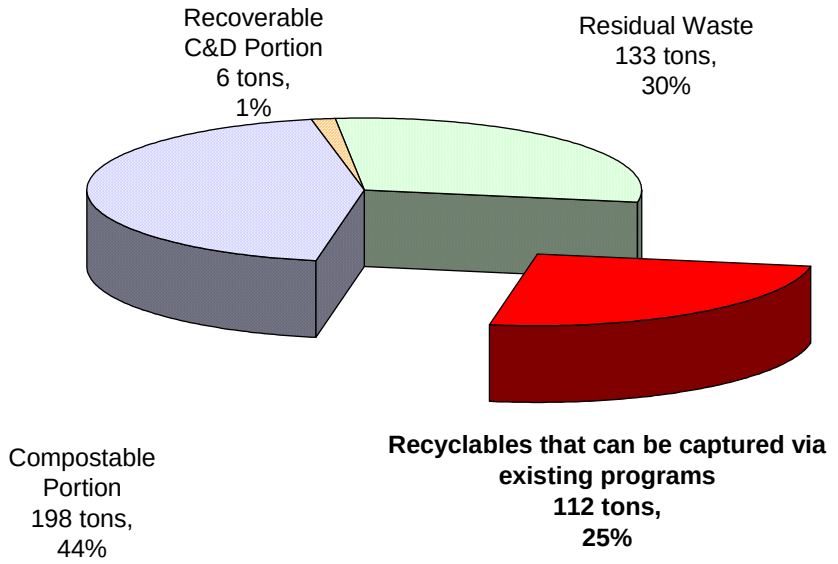


Existing Recycling Opportunities

The relative amount of paper in lower campus laboratory waste – a material targeted by University recycling programs – has declined over the last 15 years. However, there are recycling opportunities that can be realized through more effective use of existing programs. As Figure 7-4 shows, 25% of all disposed waste, or 112 tons of material, are available for recovery through existing recycling programs. Between 50% to 60% of the 112 tons (or 56 tons to 67 tons) could be captured for recycling.

Figure 7-4. Recyclable Portion, Lower Campus Laboratory Waste

(July 1, 2002 – June 30, 2003)



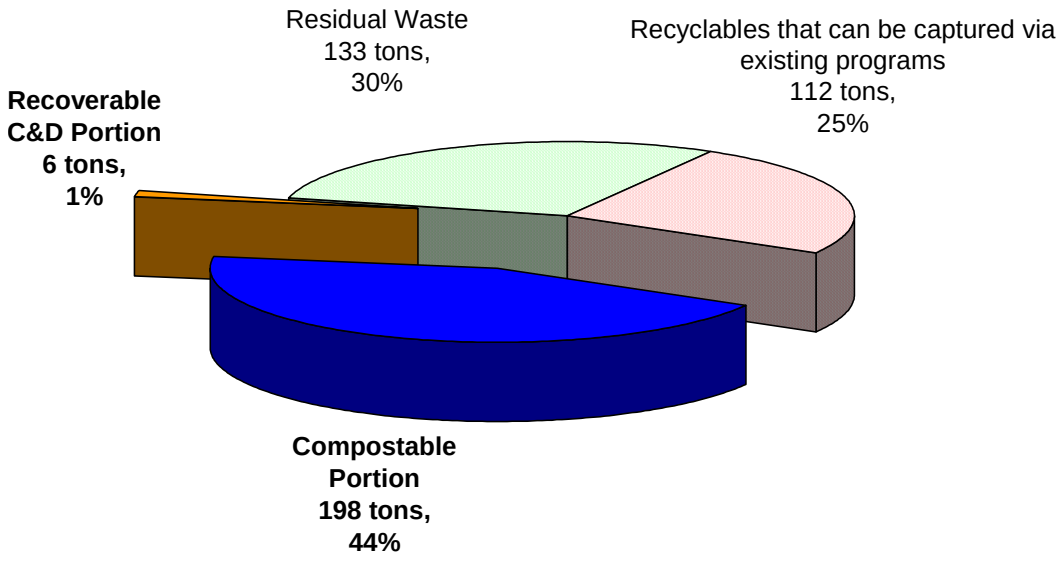
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For lower campus laboratory waste this is predominantly paper, cans and bottles, and plastic film.
- **Compostable Portion** – These materials are potentially compostable. For lower campus laboratory classroom waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For lower campus laboratory waste this is predominantly clean wood and gypsum.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.

Future Recycling Opportunities

Figure 7-5 illustrates future recycling opportunities for furthering waste reduction and recycling in lower campus laboratories. Collecting and composting organic materials represents an opportunity for recovering new materials. There are a total of 198 tons of organic materials currently disposed by lower campus labs (about 44% of lower campus laboratory waste). Between 25% to 50% of this organic material could be captured for recycling. However, to realize these future recycling opportunities new programs must be developed.

Figure 7-5. Compostable and Recoverable Construction & Demolition Portions, Lower Campus Laboratory Waste[5]

(July 1, 2002 – June 30, 2003)



- **Compostable Portion** – These materials are potentially compostable. For lower campus laboratory waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For lower campus laboratory waste this is predominantly clean wood and gypsum.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For lower campus laboratory waste this is predominantly paper, cans and bottles, and plastic film.

[5] Material categories were categorized as *compostable* and r*ecoverable C&D* according to their best and highest use. For example, lumber was categorized as a *C&D recoverable* material because it has a higher associated market value when recycled through C&D recovery programs than when it is composted. Please see Appendix A for more information on material categories classified as *recyclable*, *compostable,* or *recoverable C&D*.

8. Residence Hall Disposed Waste

This chapter examines the waste disposed by residence halls. The chapter is organized into three sections:

1. a definition of residence hall (and associated food service facilities) disposed waste;
2. composition of residence hall disposed waste; and
3. an assessment of recycling accomplishments and future opportunities.

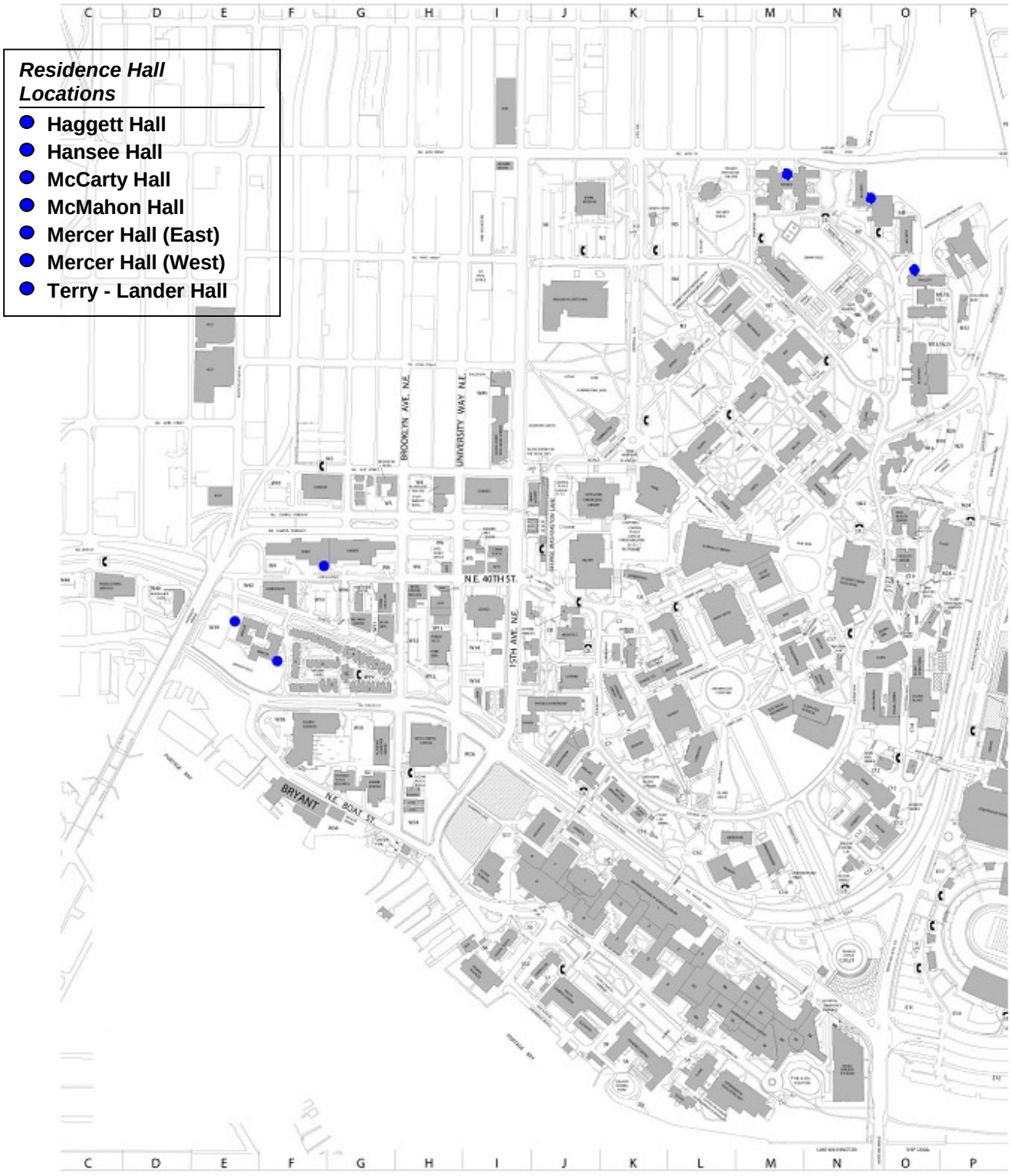
8.1. Definition of Residence Hall Disposed Waste

Residence hall disposed waste comes from student dormitories and associated food service facilities, such as cafeterias housed within selected dormitories. Residence halls (and associated food service facilities) disposed a total of 2,127 tons of waste during the 2002-2003 fiscal year. After being collected, this waste is taken to local transfer stations and then sent to regional landfills for disposal.

Map 8-1, on page 45, indicates all dumpsters that were included in residence hall (and associated food service facilities) waste. Each dot represents a residence hall dumpster location (please see legend for details).

Map 8-1. Dumpster Locations, Residence Hall Waste

(July 1, 2002 – June 30, 2003)



8.2. Composition of Residence Hall Disposed Waste

The makeup of residence hall (and associated food service facilities) waste is presented in two ways. First, a summary of waste composition is presented in a pie chart. Then, the 10 most predominant materials of residence hall waste appear in a bar graph.

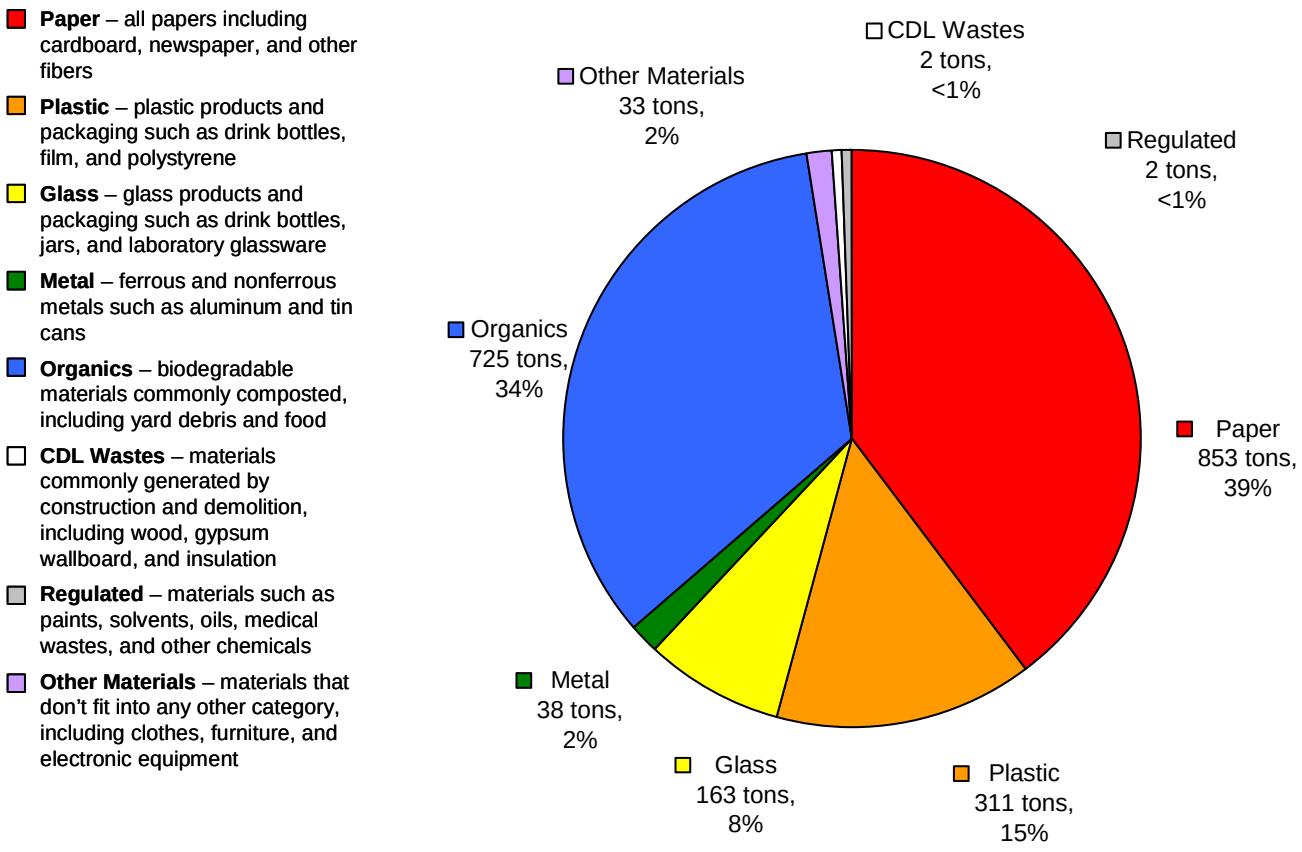
Composition by Material Class

Figure 8-1 depicts the composition of the residence hall (and associated food service facilities) waste by material class. There are eight material classes, which include: *paper, plastic, glass, metal, organics, other materials, CDL wastes*, and *regulated materials*. Each of these material classes is composed of several material categories (e.g., the paper material class includes cardboard, newspaper, office paper, and other paper categories). Please see Appendix A for a complete listing of material class and category definitions.

Of the eight material classes, *paper*, *organics,* and *plastic* are the three largest by weight, accounting for approximately 39%, 34%, and 15% of residence hall (and associated food service facilities) waste, respectively. Of the 2,127 tons disposed, paper comprised 853 tons, organics comprised 725 tons, and plastic comprised 311 tons.

Figure 8-1. Composition by Material Class, Residence Hall Waste (n =20)

(July 1, 2002 – June 30, 2003)



Appendix B presents a detailed composition of residence hall (and associated food service facilities) waste.

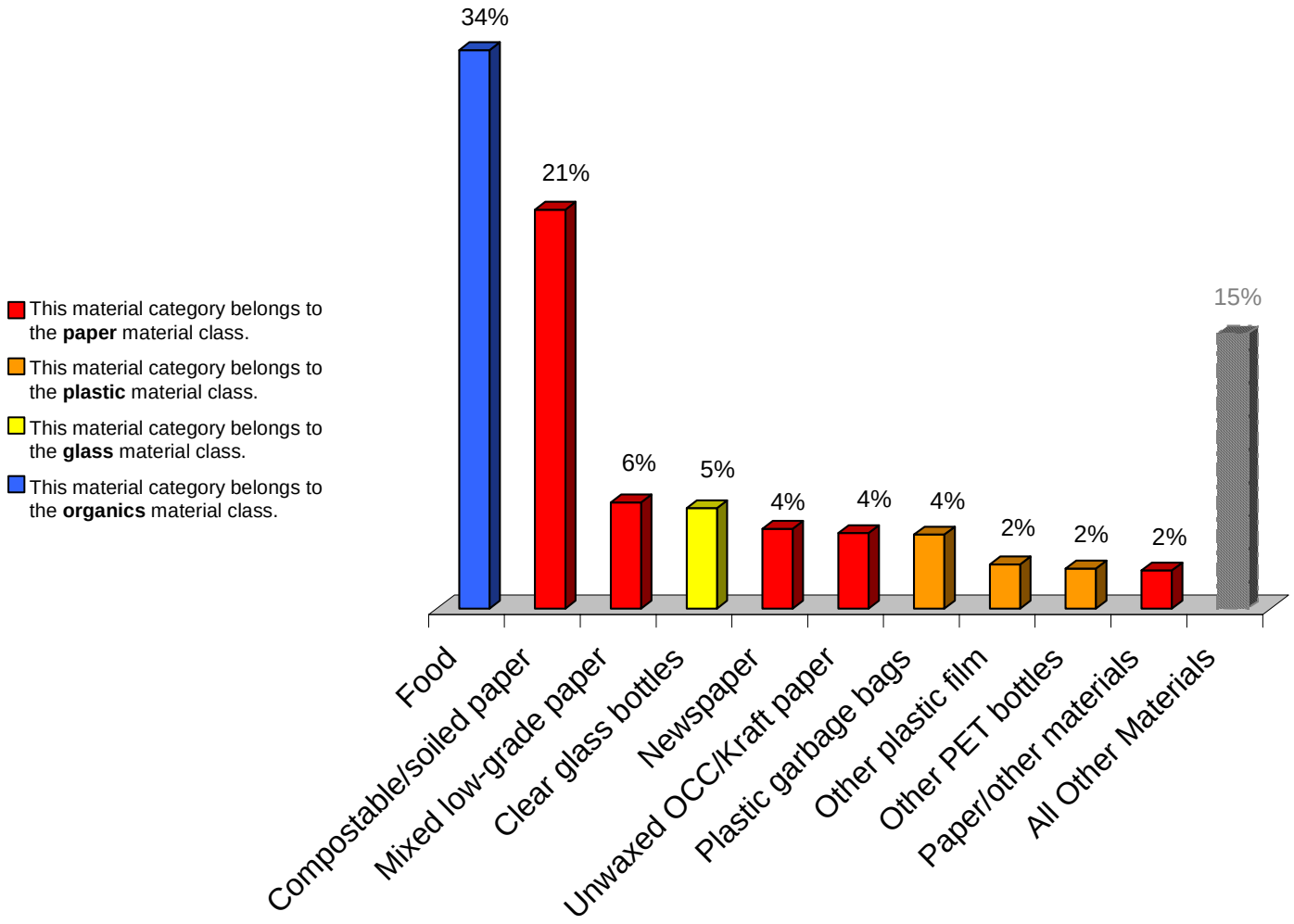
Top 10 Material Categories

For this study, each waste sample was sorted into 91 material categories. Figure 8-2 lists the 10 most predominant categories by weight. The remaining 81 categories are grouped into the *all other materials* column. The three single largest material categories of residence hall (and associated food service facilities) waste are *food* (34%), *compostable/soiled paper* (21%), and *mixed low-grade paper* (6%). Appendix A provides definitions for all 91 categories.

The 10 largest material categories of residence hall (and associated food service facilities) waste account for about 84% of the total, by weight.

Figure 8-2. Top 10 Material Categories, Residence Hall Waste (n = 20)

(July 1, 2002 – June 30, 2003)



8.3. Progress and Opportunities

Residence hall (and associated food service facilities) waste reduction and recycling progress as well as near and long-term opportunities are considered here.

Residence hall per capita disposal was 48 pounds per person per year in 1989. In 2003, this rate increased to 72 pounds per person.

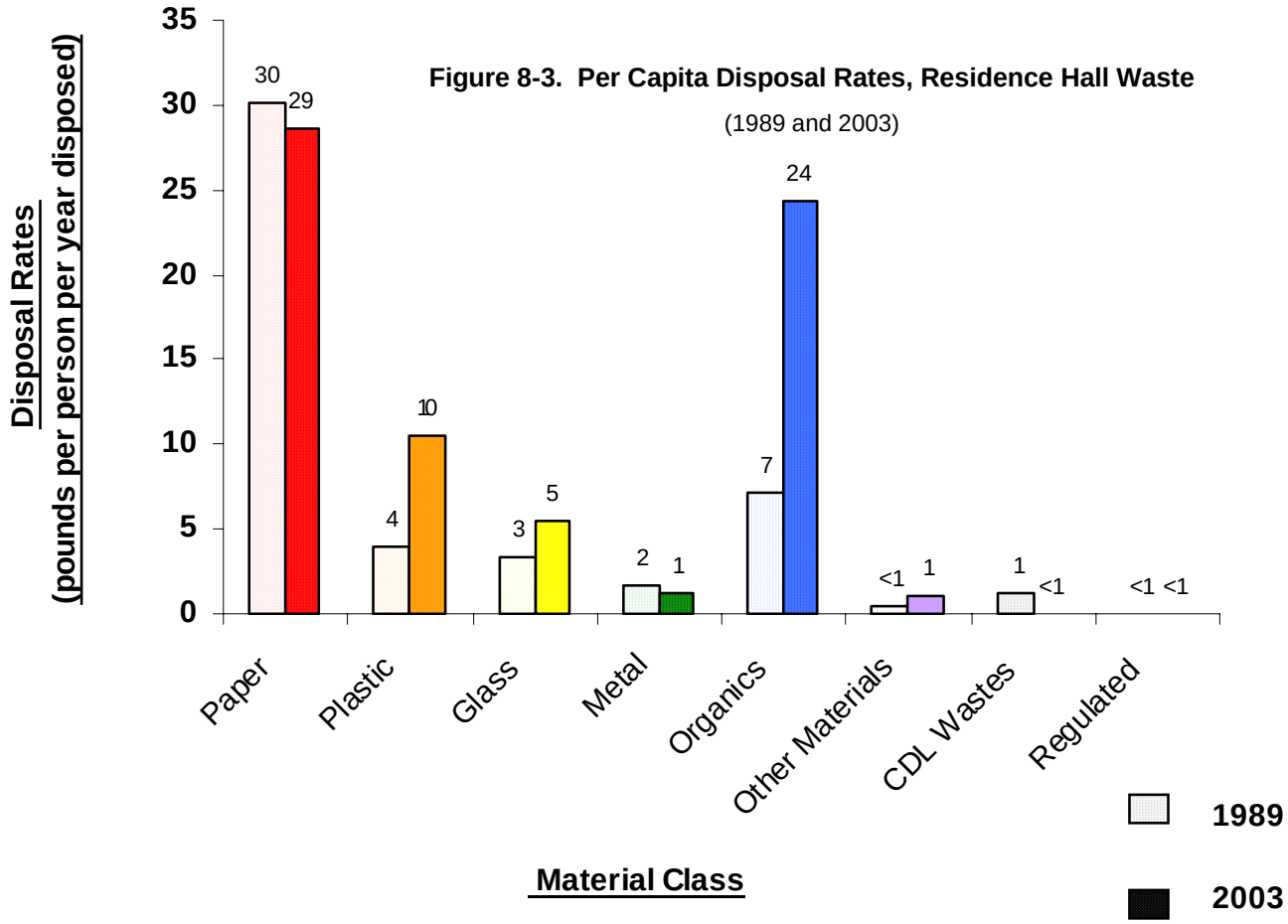
15 Years of Progress

A common metric for measuring waste disposal and recycling is the amount of waste disposed per capita. Figure 8-3 compares 1989 and 2003 per capita disposal rates by material class. Per capita refers to quarterly faculty, staff, and student enrollment, which totaled to 46,166 in 1989. In 2003, the population rose 29% to 59,516 (please see Appendix E, page E-13 for detailed population and square footage data). Two key changes in disposal are summarized in the text and bar chart below.

- Residence hall per capita disposal has increased by 49% since 1989. In other words, each person at the University disposed a total of 48 pounds of waste at residence halls in 1989. In 2003, this rate increased by 49% to 72 pounds per person. This data indicates that the average person at the University is disposing 24 pounds more waste at residence halls in 2003 than in 1989.
- At residence halls the University is disposing 5% less paper and 169% more plastic per capita than in 1989.

Figure 8-3. Per Capita Disposal Rates, Residence Hall Waste

(1989 and 2003)

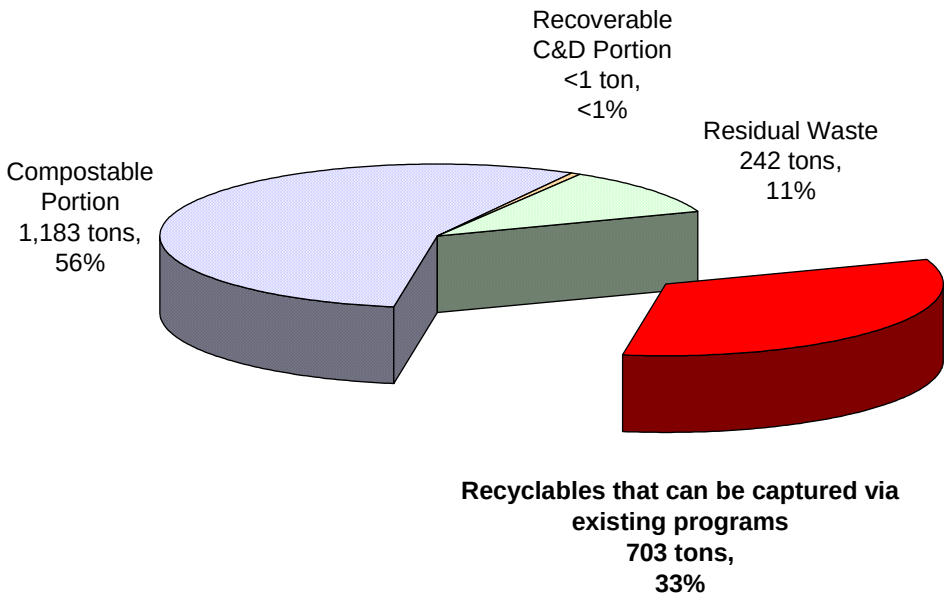


Existing Recycling Opportunities

In residence halls (and associated food service facilities), recycling opportunities can be realized through more effective use of existing programs. As Figure 8-4 shows, 33% of all residence hall (and associated food service facilities) disposed waste, or 703 tons of material, are available for recovery through existing recycling programs. Between 50% to 60% of the 703 tons (or 352 tons to 422 tons) could be captured for recycling.

Figure 8-4. Recyclable Portion, Residence Hall Waste

(July 1, 2002 – June 30, 2003)



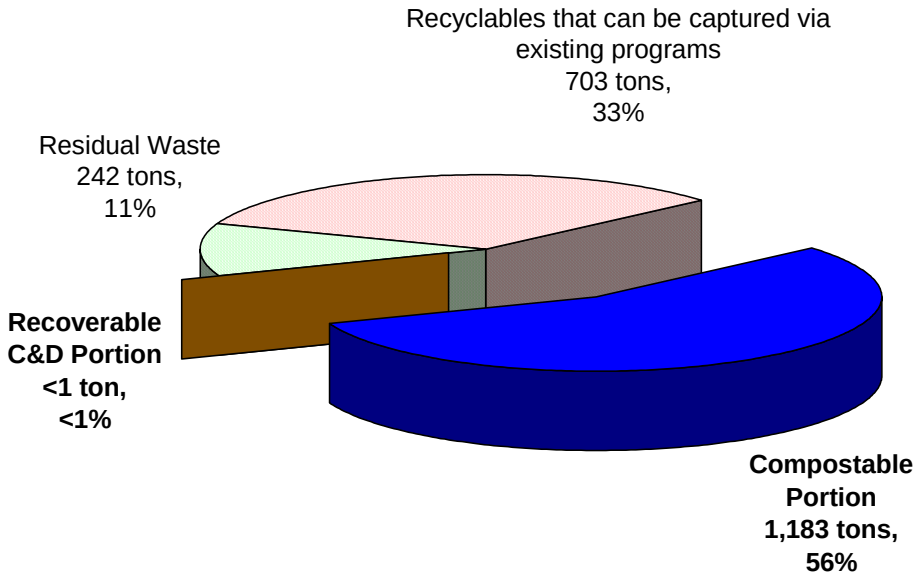
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For residence hall waste this is predominantly paper, cans and bottles, and plastic film.
- **Compostable Portion** – These materials are potentially compostable. For residence hall waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For residence hall waste this is predominantly clean wood.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.

Future Recycling Opportunities

Figure 8-5 illustrates the future recycling opportunities for furthering waste reduction and recycling in residence halls (and associated food services). Collecting and composting organic materials represents a significant opportunity for recovering new materials. There are a total of 1,183 tons of organic materials currently disposed by residence halls (about 56% of residence hall waste). Between 25% to 50% of this organic material could be captured for recovery, provided that an adequate collection system is initiated. However, to realize these future recycling opportunities, new programs must be developed.

Figure 8-5. Compostable and Recoverable Construction & Demolition Portions, Residence Hall Waste[6]

(July 1, 2002 – June 30, 2003)



- **Compostable Portion** – These materials are potentially compostable. For residence hall waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For residence hall waste this is predominantly clean wood.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For residence hall waste this is predominantly paper, cans and bottles, and plastic film.

[6] Material categories were categorized as *compostable* and r*ecoverable C&D* according to their best and highest use. For example, lumber was categorized as a *C&D recoverable* material because it has a higher associated market value when recycled through C&D recovery programs than when it is composted. Please see Appendix A for more information on material categories classified as *recyclable*, *compostable,* or *recoverable C&D*.

9. Food Services Disposed Waste

This chapter examines the waste disposed by food services. The chapter is organized into three sections:

1. a definition of food services disposed waste;
2. composition of food services disposed waste; and
3. an assessment of recycling accomplishments and future opportunities.

9.1. Definition of Food Services Disposed Waste

Food services disposed waste comes from food service facilities, such as the Husky Union Building. Food services disposed a total of 439 tons of waste during the 2002-2003 fiscal year. After being collected, this waste is taken to local transfer stations and then sent to regional landfills for disposal.

Map 9-1, on page 53, indicates all dumpsters that were included in food services waste. Each dot represents a food services dumpster location (please see legend for details).

Map 9-1. Dumpster Locations, Food Services Waste

(July 1, 2002 – June 30, 2003)

9.2. Composition of Food Services Disposed Waste

The makeup of food services waste is presented in two ways. First, a summary of waste composition is presented in a pie chart. Then, the 10 most predominant materials of food services waste appear in a bar graph.

Composition by Material Class

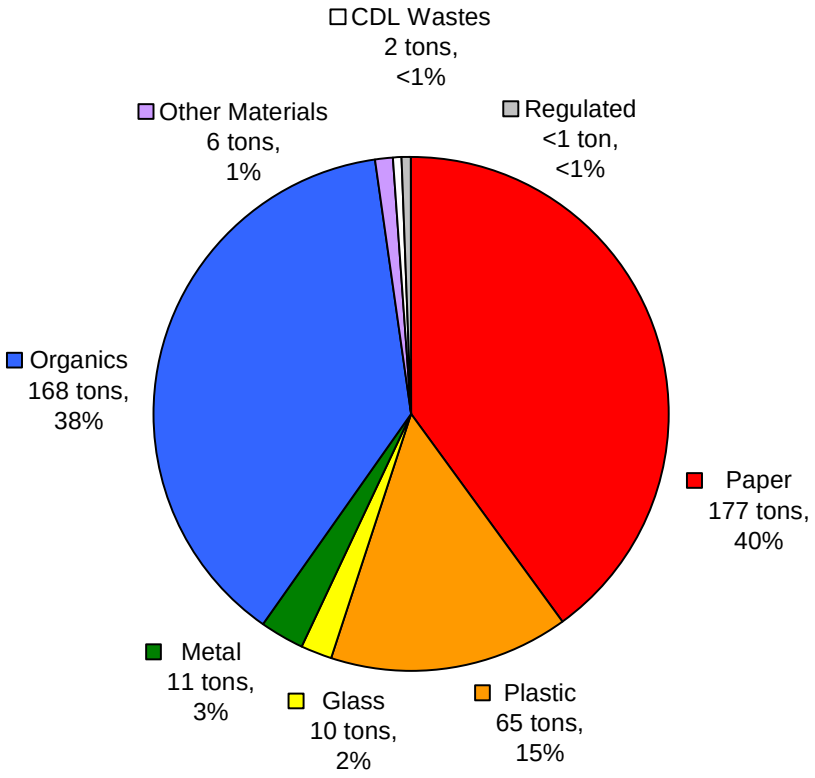
Figure 9-1 depicts the composition of the food services waste by material class. There are eight material classes, which include: *paper, plastic, glass, metal, organics, other materials, CDL wastes*, and *regulated materials*. Each of these material classes is composed of several material categories (e.g., the paper material class includes cardboard, newspaper, office paper, and other paper categories). Please see Appendix A for a complete listing of material class and category definitions.

Of the eight material classes, *paper*, *organics,* and *plastic* are the three largest by weight, accounting for approximately 40%, 38%, and 15% of food services waste, respectively. Of the 439 tons disposed, paper comprised 177 tons, organics comprised 168 tons, and plastic comprised 65 tons.

Figure 9-1. Composition by Material Class, Food Services Waste (n = 18)

(July 1, 2002 – June 30, 2003)

- **Paper** – all papers including cardboard, newspaper, and other fibers
- **Plastic** – plastic products and packaging such as drink bottles, film, and polystyrene
- **Glass** – glass products and packaging such as drink bottles, jars, and laboratory glassware
- **Metal** – ferrous and nonferrous metals such as aluminum and tin cans
- **Organics** – biodegradable materials commonly composted, including yard debris and food
- **CDL Wastes** – materials commonly generated by construction and demolition, including wood, gypsum wallboard, and insulation
- **Regulated** – materials such as paints, solvents, oils, medical wastes, and other chemicals
- **Other Materials** – materials that don't fit into any other category, including clothes, furniture, and electronic equipment



Appendix B presents a detailed composition of food services waste.

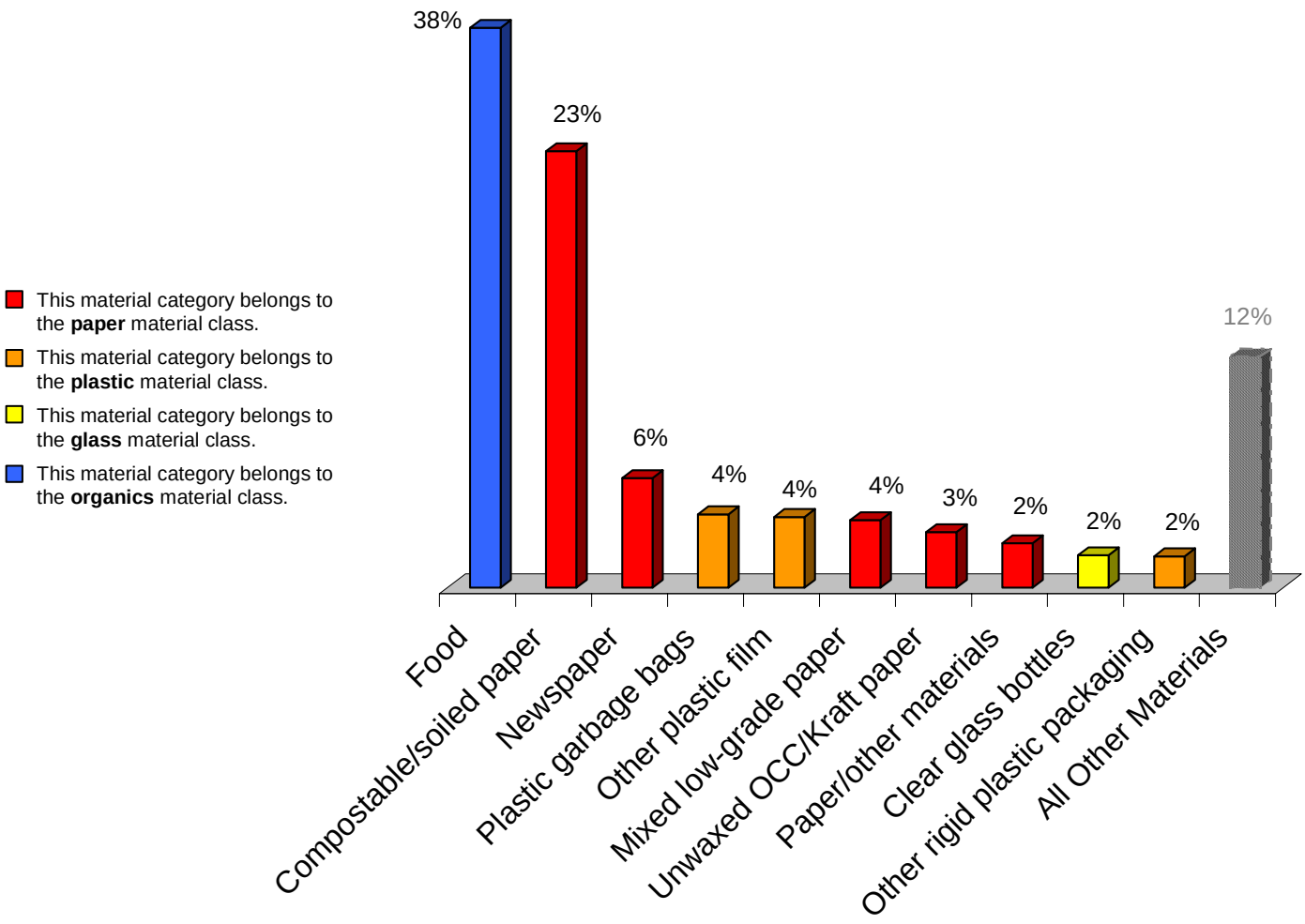
Top 10 Material Categories

For this study, each waste sample was sorted into 91 material categories. Figure 9-2 lists the 10 most predominant categories by weight. The remaining 81 categories are grouped into the *all other materials* column. The three single largest material categories of food services waste are *food* (38%), *compostable/soiled paper* (23%), and *newspaper* (6%). Appendix A provides definitions for all 91 categories.

The 10 largest material categories of food services waste account for about 88% of the total, by weight.

Figure 9-2. Top 10 Material Categories, Food Services Waste (n = 18)

(July 1, 2002 – June 30, 2003)



9.3. Progress and Opportunities

Food services waste reduction and recycling progress as well as near and long-term opportunities are considered here.

Food services per capita disposal was 24 pounds per person per year in 1989. In 2003, this rate decreased to 15 pounds per person.

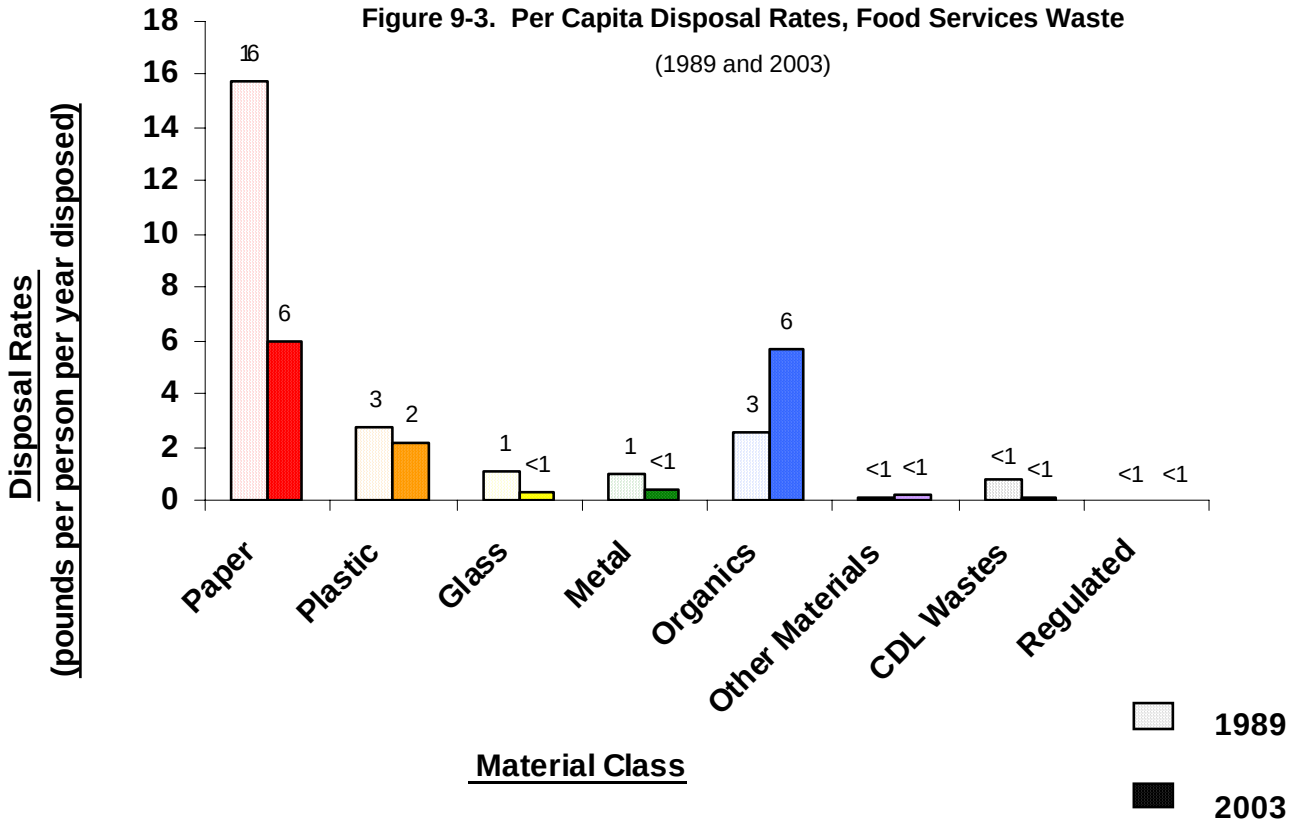
15 Years of Progress

A common metric for measuring waste disposal and recycling is the amount of waste disposed per capita. Figure 9-3 compares 1989 and 2003 per capita disposal rates by material class. Per capita refers to quarterly faculty, staff, and student enrollment, which totaled to 46,166 in 1989. In 2003, the population rose 29% to 59,516 (please see Appendix E, page E-13 for detailed population and square footage data). Two key changes in disposal are summarized in the text and bar chart below.

- Food services per capita disposal has decreased by 39% since 1989. In other words, each person at the University disposed a total of 24 pounds of waste at food services locations in 1989. In 2003, this rate decreased by 39% to 15 pounds per person. This data indicates that the average person at the University is disposing nine pounds less waste at food services locations in 2003 than in 1989.
- At food services locations, the University is disposing 62% less paper and 19% less plastic per capita than in 1989.

Figure 9-3. Per Capita Disposal Rates, Food Services Waste

(1989 and 2003)

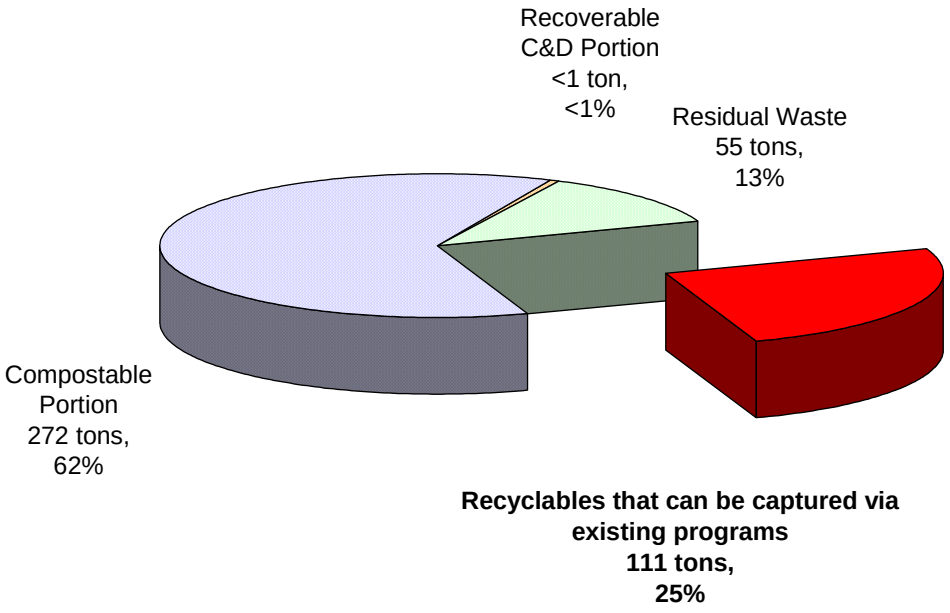


Existing Recycling Opportunities

The relative amounts of paper and plastic in food services waste – materials targeted by University recycling programs – have declined over the past 15 years. However, there are recycling opportunities that can be realized through more effective use of existing programs. As Figure 9-4 shows, 25% of all food services disposed waste, or 111 tons of material, are available for recovery through existing recycling programs. Between 50% to 60% of the 111 tons (or 56 tons to 67 tons) could be captured for recycling.

Figure 9-4. Recyclable Portion, Food Services Waste

(July 1, 2002 – June 30, 2003)



- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For food services waste this is predominantly paper, cans and bottles, and plastic film.
- **Compostable Portion** – These materials are potentially compostable. For food services waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For food services waste this is predominantly clean wood.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.

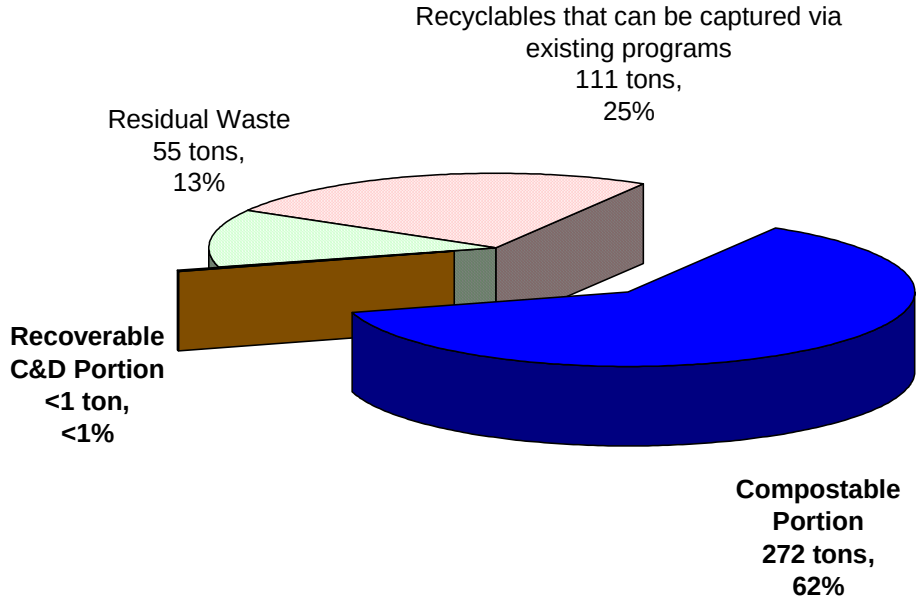
Food Services Disposed Waste

Future Recycling Opportunities

Figure 9-5 illustrates future recycling opportunities for furthering waste reduction and recycling at food services locations. Collecting and composting organic materials represents a significant opportunity for recovering new materials. There are a total of 272 tons of organic materials currently disposed by food services (about 62% of food services waste). Between 70% to 80% of this organic material could be captured for recovery.[7] However, to realize these future recycling opportunities, new programs must be developed.

Figure 9-5. Compostable and Recoverable Construction & Demolition Portions, Food Services Waste[8]

(July 1, 2002 – June 30, 2003)



- **Compostable Portion** – These materials are potentially compostable. For food services waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For food services waste this is predominantly clean wood.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For food services waste this is predominantly paper, cans and bottles, and plastic film.

[7] Based on recovery efficiencies from Seattle, King County, and City of Los Angeles institutional settings.
[8] Material categories were categorized as *compostable* and r*ecoverable C&D* according to their best and highest use. For example, lumber was categorized as a *C&D recoverable* material because it has a higher associated market value when recycled through C&D recovery programs than when it is composted. Please see Appendix A for more information on material categories classified as *recyclable*, *compostable,* or *recoverable C&D*.

10. Medical Center Disposed Waste

This chapter examines the waste disposed by medical center locations. The chapter is organized into three sections:

1. a definition of medical center disposed waste;
2. composition of medical center disposed waste; and
3. an assessment of recycling accomplishments and future opportunities.

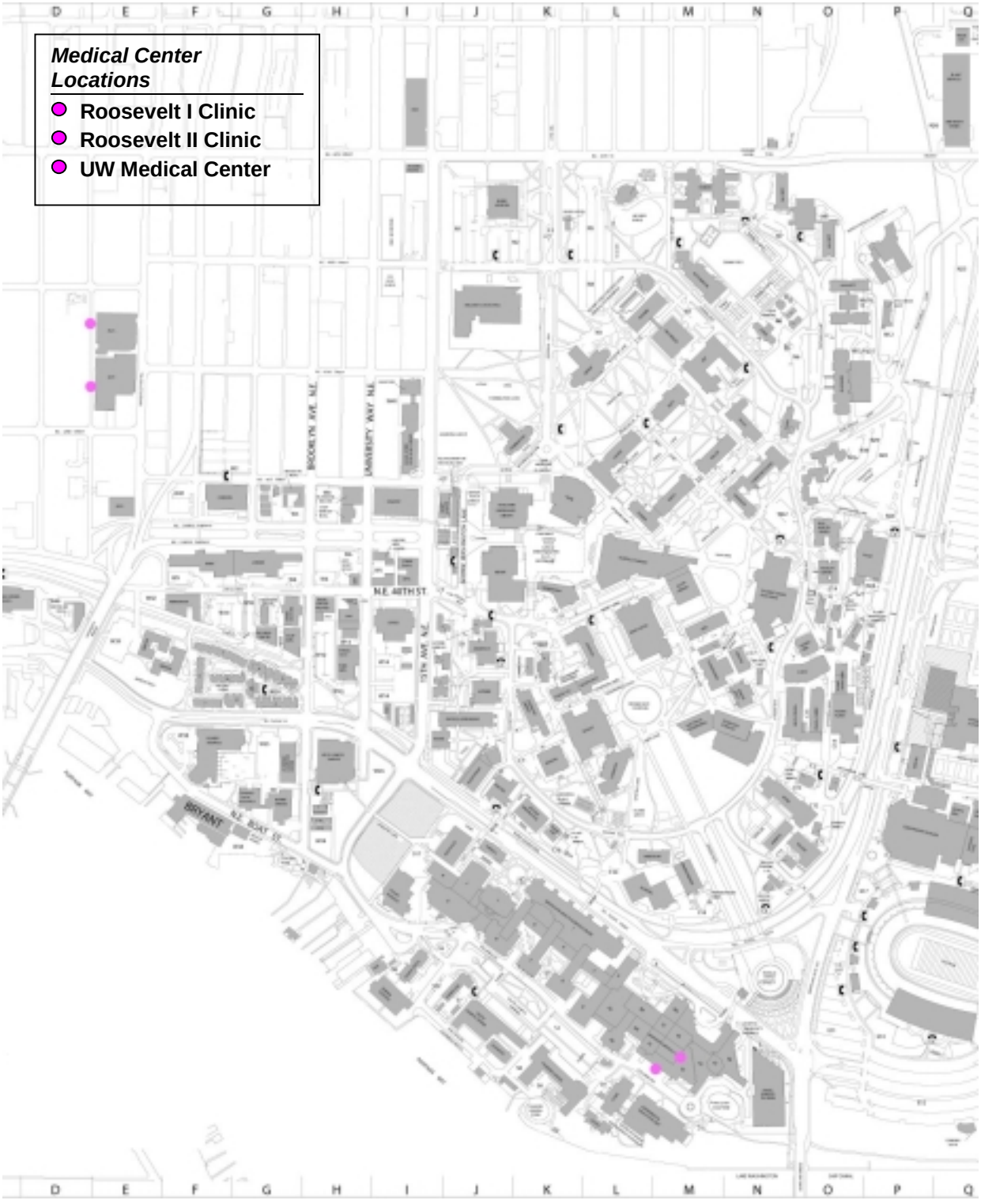
10.1. Definition of Medical Center Disposed Waste

Medical center disposed waste comes from the UW Medical Center and a few associated buildings, such as the Roosevelt Clinic. Medical center locations disposed 1,688 tons of waste during the 2002-2003 fiscal year. After being collected, this waste is taken to local transfer stations and then sent to regional landfills for disposal.

Map 10-1, on page 61, indicates all dumpsters that were included in medical center waste. Each dot represents a medical center dumpster location (please see legend for details).

Map 10-1. Dumpster Locations, Medical Center Waste

(July 1, 2002 – June 30, 2003)



10.2. Composition of Medical Center Disposed Waste

The makeup of medical center waste is presented in two ways. First, a summary of waste composition is presented in a pie chart. Then, the 10 most predominant materials of medical center waste appear in a bar graph.

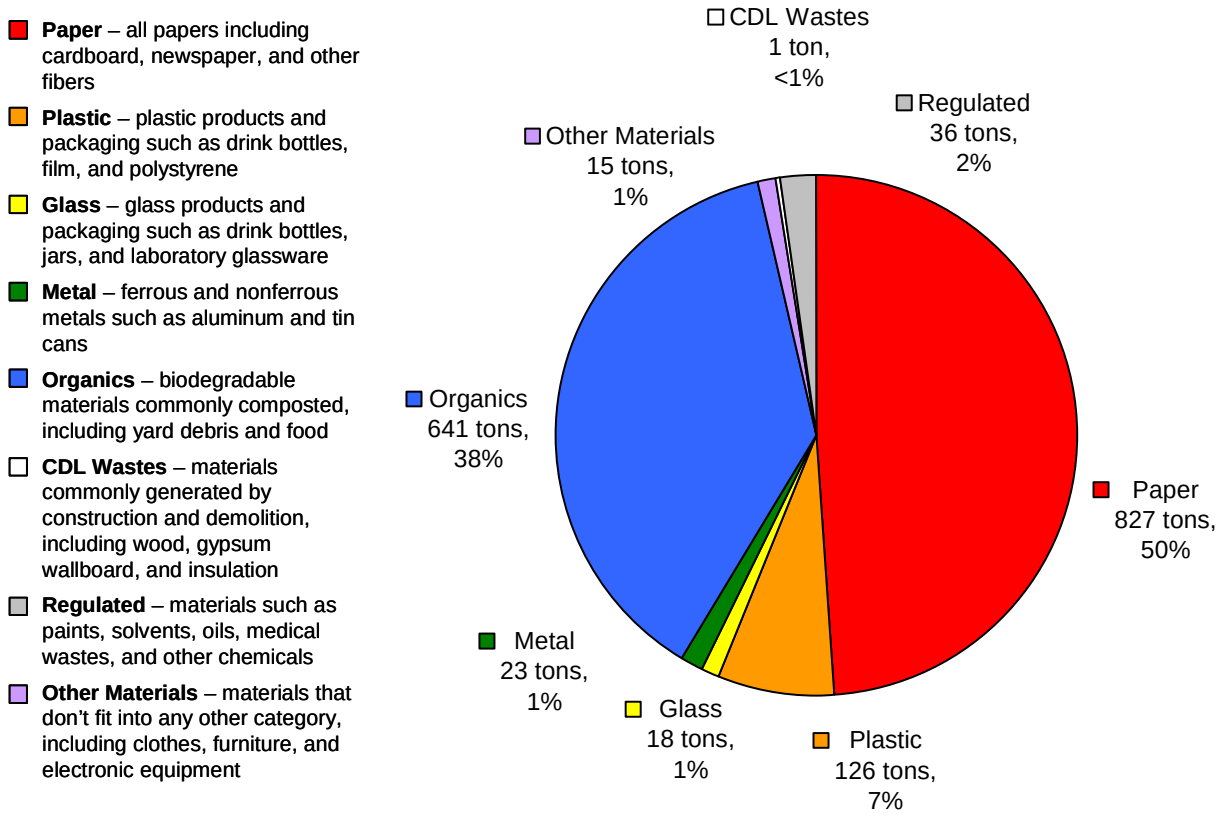
Composition by Material Class

Figure 10-1 depicts the composition of the medical center waste by material class. There are eight material classes, which include: *paper, plastic, glass, metal, organics, other materials, CDL wastes*, and *regulated materials*. Each of these material classes is composed of several material categories (e.g., the paper material class includes cardboard, newspaper, office paper, and other paper categories). Please see Appendix A for a complete listing of material class and category definitions.

Of the eight material classes, *paper*, *organics*, and *plastics* are the three largest by weight, accounting for approximately 50%, 38%, and 7% of medical center waste, respectively. Of the 1,688 tons disposed, paper comprised 827 tons, organics comprised 641 tons, and plastic comprised 126 tons.

Figure 10-1. Composition by Material Class, Medical Center Waste (n = 12)

(July 1, 2002 – June 30, 2003)



Appendix B presents a detailed composition of medical center waste.

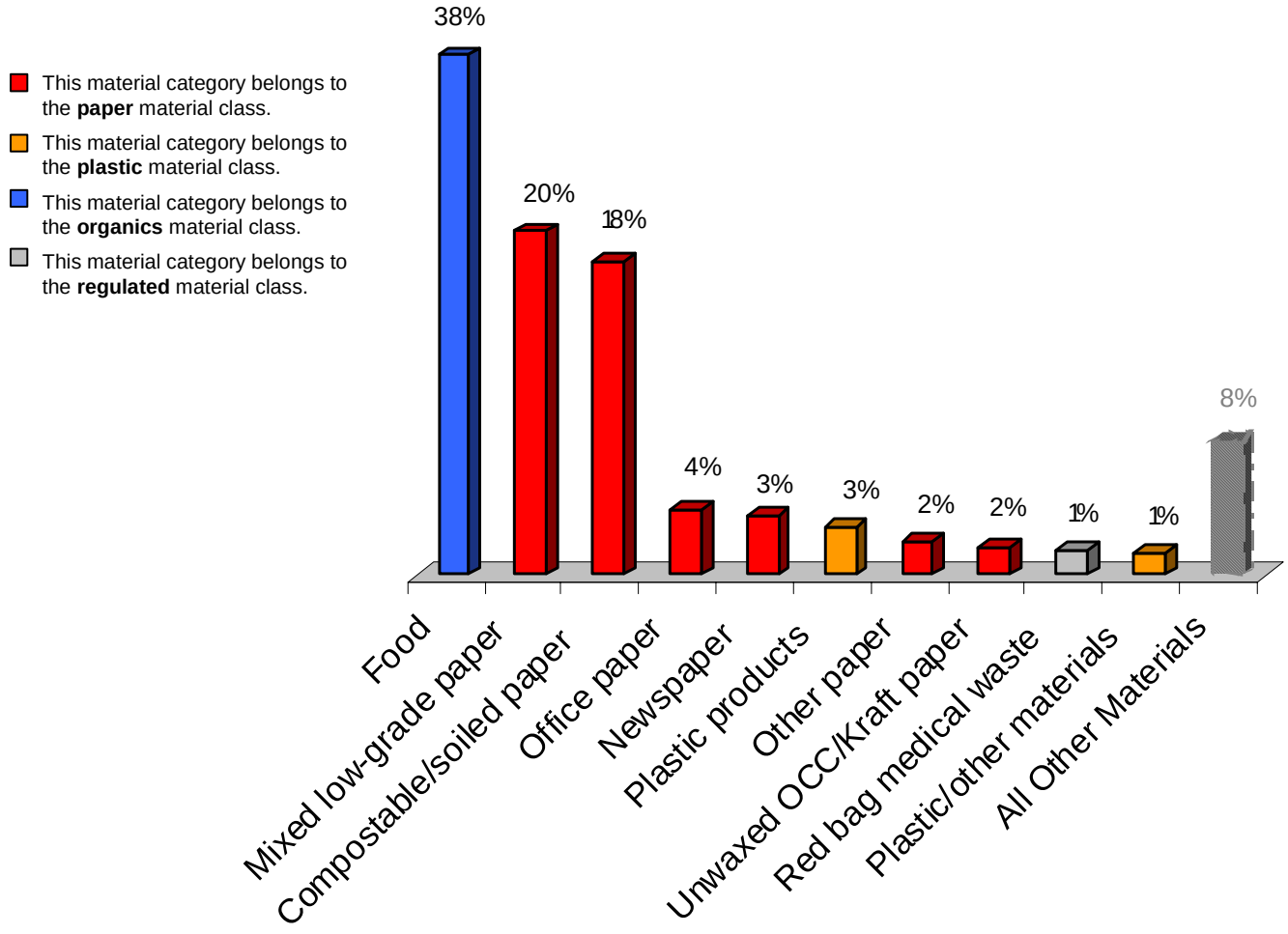
Top 10 Material Categories

For this study, each waste sample was sorted into 91 material categories. Figure 10-2 lists the 10 most predominant categories by weight. The remaining 81 categories are grouped into the *all other materials* column. The three single largest material categories of medical center waste are *food* (38%), *mixed low-grade paper* (20%), and *compostable/soiled paper* (18%). Appendix A provides definitions for all 91 categories.

The 10 largest material categories of medical center waste account for about 92% of the total, by weight.

Figure 10-2. Top 10 Material Categories, Medical Center Waste (n = 12)

(July 1, 2002 – June 30, 2003)



10.3. Progress and Opportunities

Medical center waste reduction and recycling progress as well as near and long-term opportunities are considered here.

15 Years of Progress

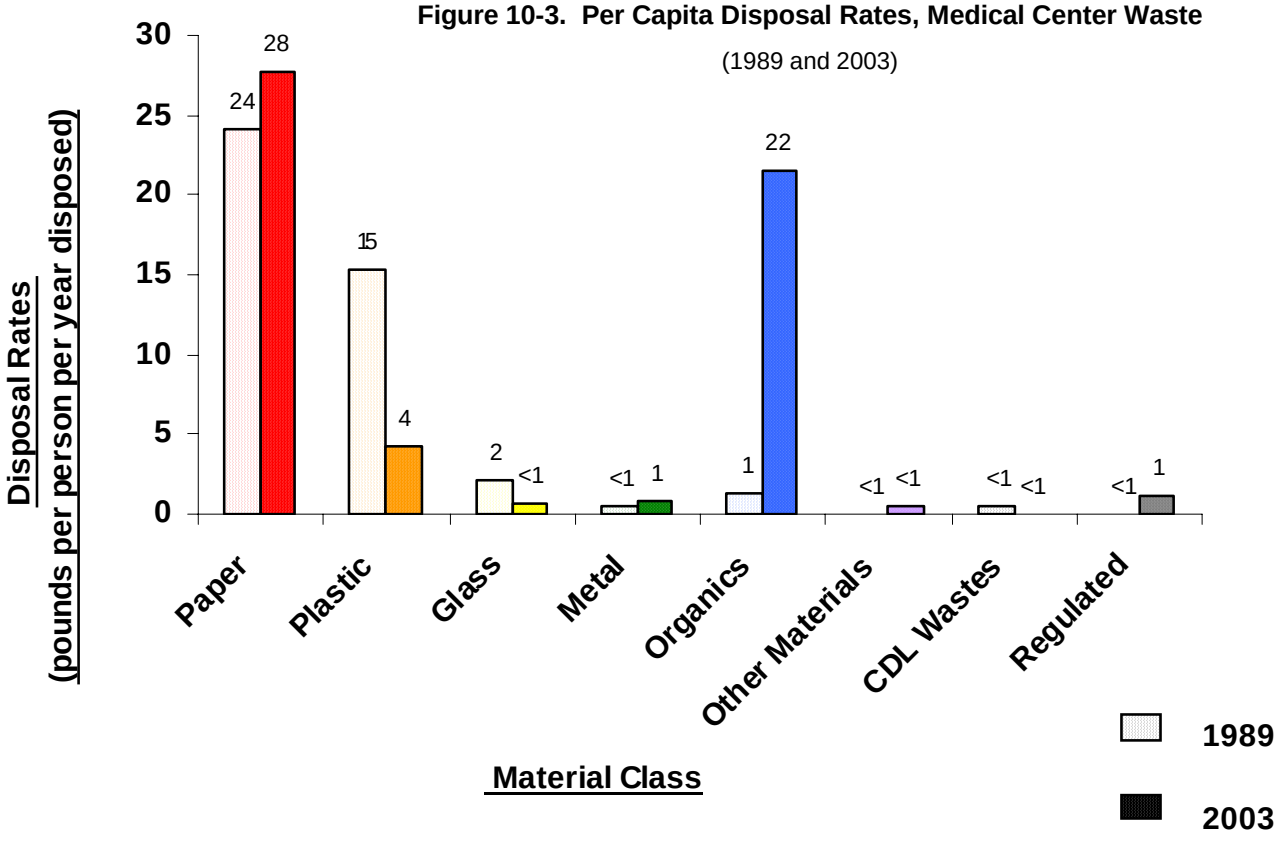
A common metric for measuring waste disposal and recycling is the amount of waste disposed per capita. Figure 10-3 compares 1989 and 2003 per capita disposal rates by material class. Per capita refers to quarterly faculty, staff, and student enrollment, which totaled to 46,166 in 1989. In 2003, the population rose 29% to 59,516 (please see Appendix E, page E-13 for detailed population and square footage data). Two key changes in disposal are summarized in the text and bar chart below.

Medical center per capita disposal was 44 pounds per person per year in 1989. In 2003, this rate increased to 57 pounds per person.

- Medical center per capita disposal has increased by 30% since 1989. In other words, each person at the University disposed a total of 44 pounds of waste at the medical center in 1989. In 2003, this rate increased by 30% to 57 pounds per person. This data indicates that the average person at the University is disposing 13 pounds more waste at the medical center in 2003 than in 1989.
- At the medical center, the University is disposing 15% more paper and 17% less plastic per capita than in 1989.

Figure 10-3. Per Capita Disposal Rates, Medical Center Waste

(1989 and 2003)

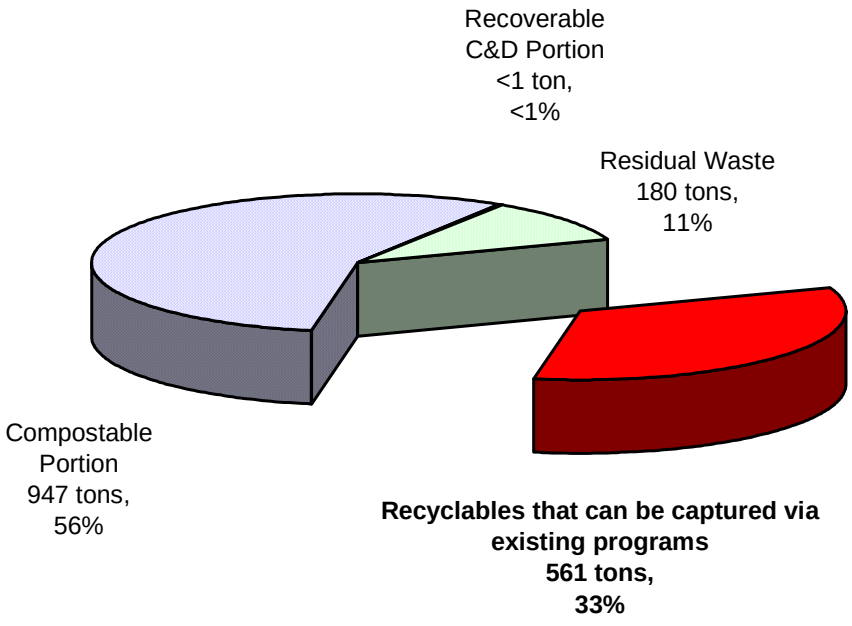


Existing Recycling Opportunities

The relative amount of plastic in medical center waste – one of the materials targeted by University recycling programs – has declined over the past 15 years. However, there are recycling opportunities that can be realized through more effective use of existing programs. As Figure 10-4 shows, 33% of all disposed waste, or 561 tons of material, are available for recovery through existing recycling programs. Between 50% to 60% the 561 tons (or 281 tons to 337 tons) could be captured for recycling.

Figure 10-4. Recyclable Portion, Medical Center Waste

(July 1, 2002 – June 30, 2003)



- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For medical center waste this is predominantly paper.
- **Compostable Portion** – These materials are potentially compostable. For medical center waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For medical center waste this is predominantly other construction debris such as mixed fine building material scraps.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.

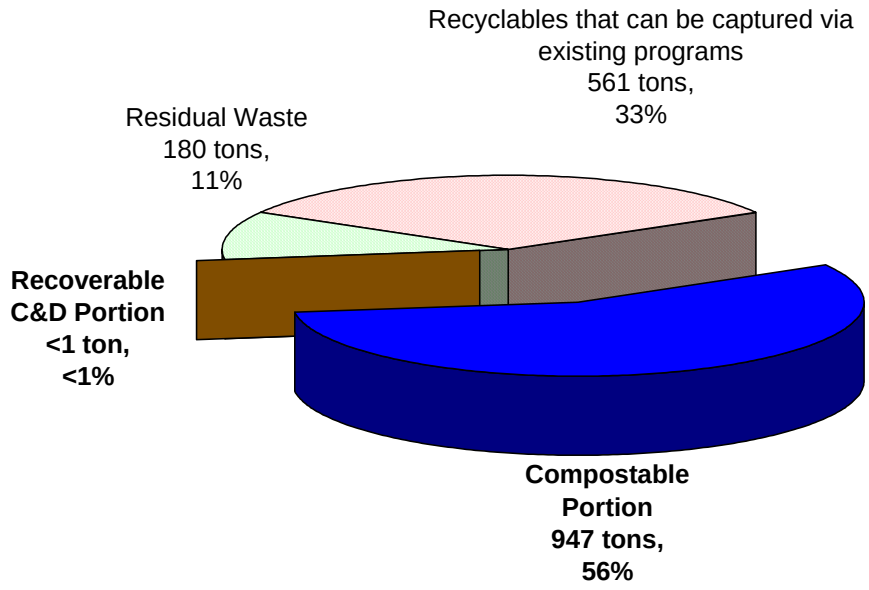
Medical Center Disposed Waste

Future Recycling Opportunities

Figure 10-5 illustrates the future recycling opportunities for furthering waste reduction and recycling at medical center locations. Collecting and composting organic materials represents a significant opportunity for recovering new materials. There are a total of 947 tons of organic materials currently disposed by food services (about 56% of medical center waste). Between 70% to 80% of this organic material could be captured for recovery.[9] However, to realize these future recycling opportunities new programs must be developed.

Figure 10-5. Compostable and Recoverable Construction & Demolition Portions, Medical Center Waste[10]

(July 1, 2002 – June 30, 2003)



- **Compostable Portion** – These materials are potentially compostable. For medical center waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For medical center waste this is predominantly other construction debris such as mixed fine building material scraps.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For medical center waste this is predominantly paper.

[9] Based on recovery efficiencies from Seattle, King County, and City of Los Angeles institutional settings.
[10] Material categories were categorized as *compostable* and r*ecoverable C&D* according to their best and highest use. For example, lumber was categorized as a *C&D recoverable* material because it has a higher associated market value when recycled through C&D recovery programs than when it is composted. Please see Appendix A for more information on material categories classified as *recyclable*, *compostable,* or *recoverable C&D*.

11. Health Sciences Disposed Waste

This chapter examines the waste disposed by health sciences locations. The chapter is organized into three sections:

1. a definition of health sciences disposed waste;
2. composition of health sciences disposed waste; and
3. an assessment of recycling accomplishments and future opportunities.

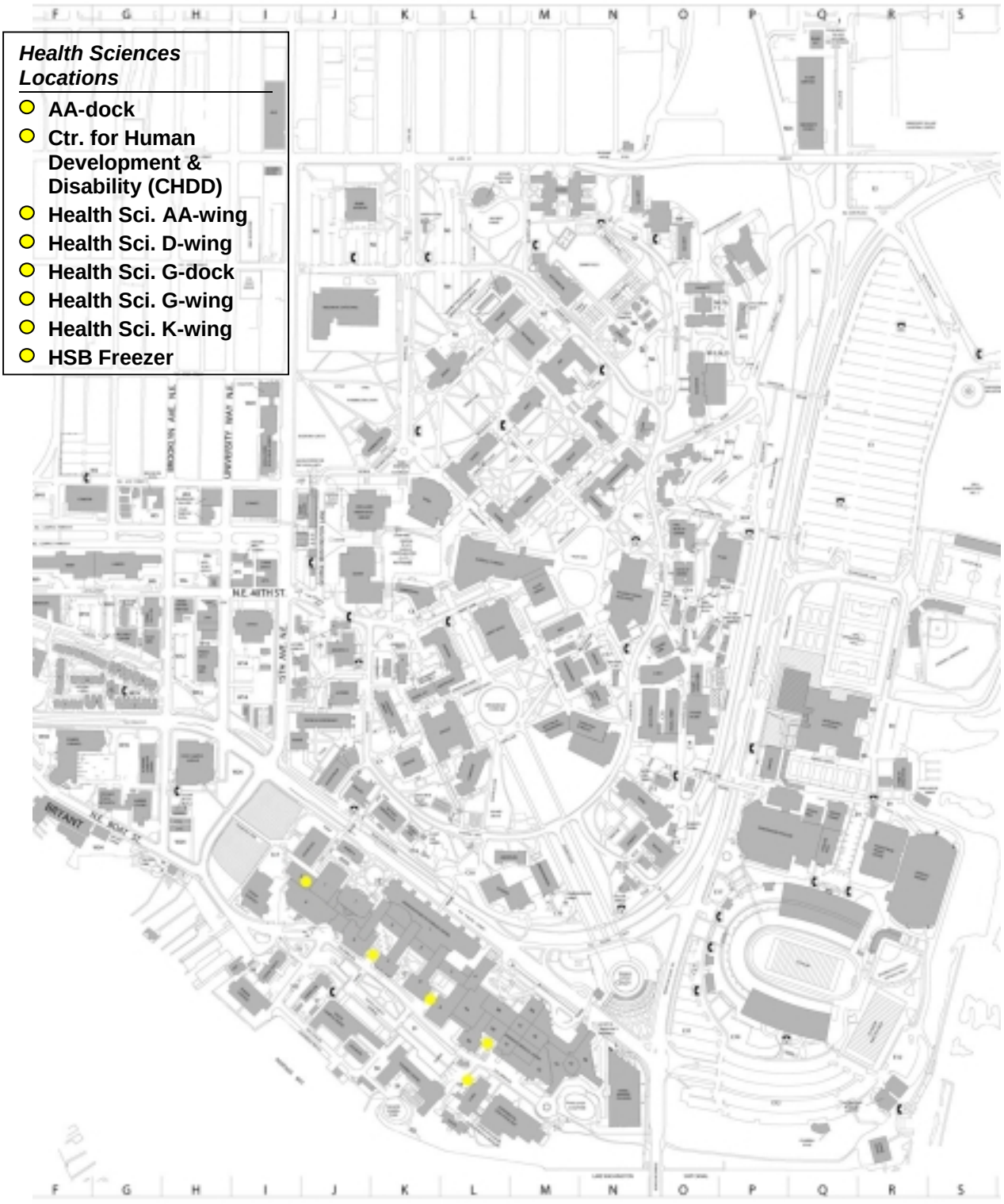
11.1. Definition of Health Sciences Disposed Waste

Health sciences disposed waste comes from the health sciences complexes, which contain a combination of laboratories, offices, and classrooms. Health sciences locations disposed a total of 1,148 tons of waste during the 2002-2003 fiscal year. After being collected, this waste is taken to local transfer stations and then sent to regional landfills for disposal.

Map 11-1, on page 69, indicates all dumpsters that were included in health sciences waste. Each dot represents a health sciences dumpster location (see legend for details).

Map 11-1. Dumpster Locations, Health Sciences Waste

(July 1, 2002 – June 30, 2003)



11.2. Composition of Health Sciences Disposed Waste

The makeup of health sciences waste is presented in two ways. First, a summary of waste composition is presented in a pie chart. Then, the 10 most predominant materials of health sciences waste appear in a bar graph.

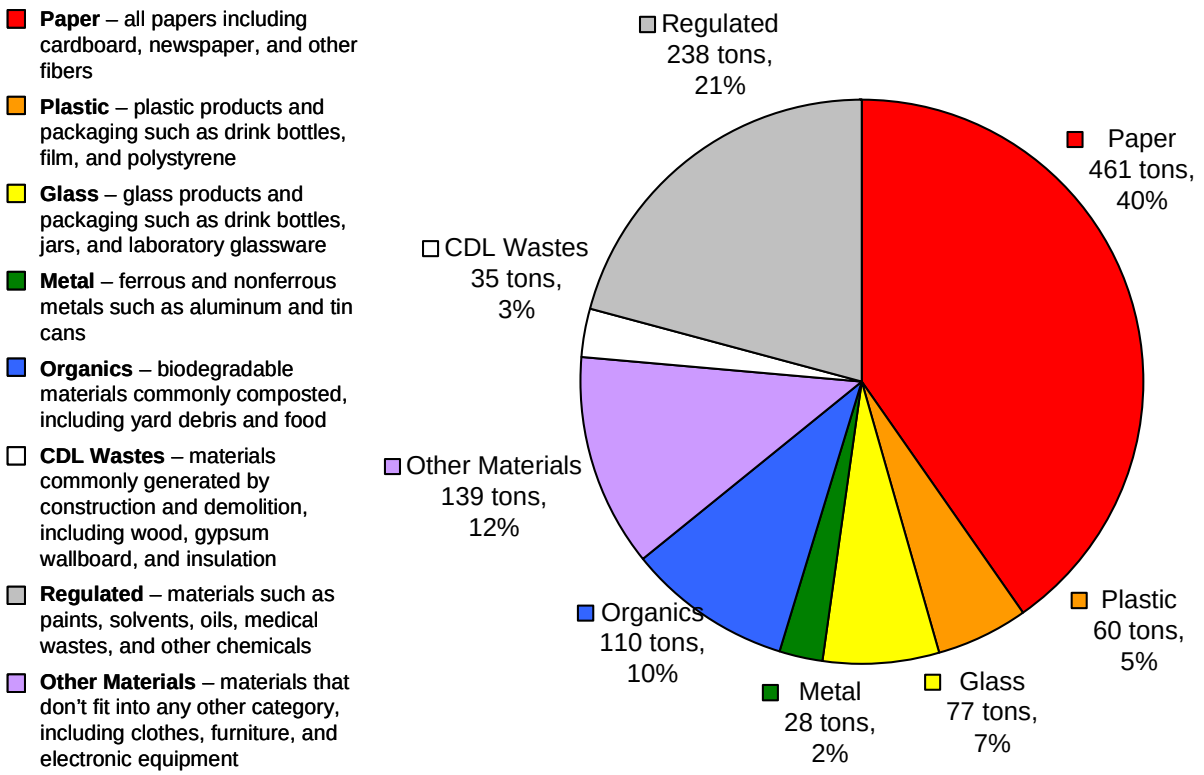
Composition by Material Class

Figure 11-1 depicts the composition of the health sciences waste by material class. There are eight material classes, which include: *paper, plastic, glass, metal, organics, other materials, CDL wastes*, and *regulated materials*. Each of these material classes is composed of several material categories (e.g., the paper material class includes cardboard, newspaper, office paper, and other paper categories). Please see Appendix A for a complete listing of material class and category definitions.

Of the eight material classes, *paper*, *regulated wastes,* and *other materials* are the three largest by weight, accounting for approximately 40%, 21%, and 12% of health sciences waste, respectively. Of the 1,148 tons disposed, *paper* comprised 461 tons, *regulated wastes* comprised 238 tons, and *other materials* comprised 139 tons.

Figure 11-1. Composition by Material Class, Health Sciences Waste (n = 17)

(July 1, 2002 – June 30, 2003)



Appendix B presents a detailed composition of health sciences waste.

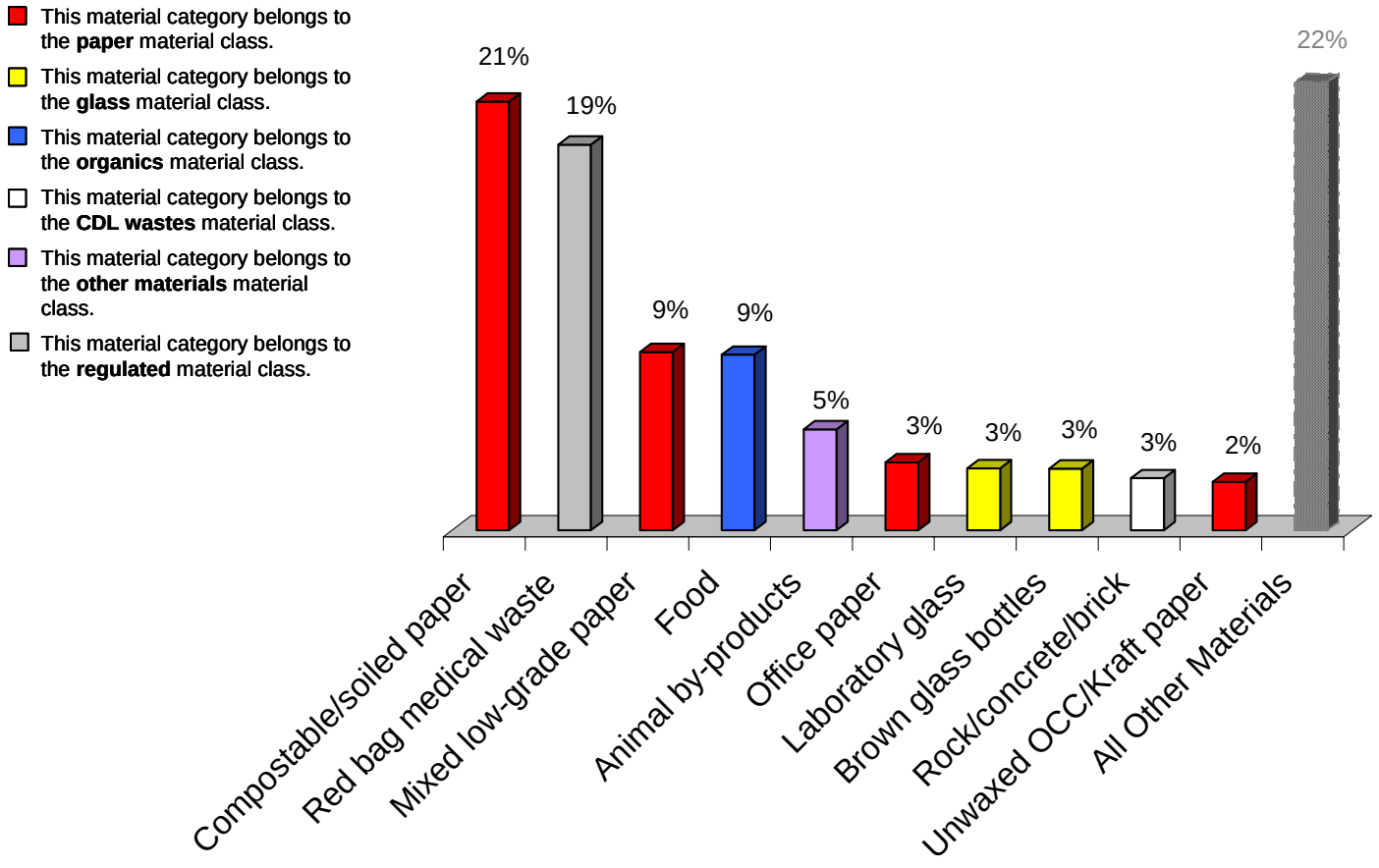
Top 10 Material Categories

For this study, each waste sample was sorted into 91 material categories. Figure 11-2 lists the 10 most predominant categories by weight. The remaining 81 categories are grouped into the *all other materials* column. The three single largest material categories of health sciences waste are *compostable/soiled paper* (21%), *red bag medical waste* (19%), and *mixed low-grade paper* (9%). Appendix A provides definitions for all 91 categories.

The 10 largest material categories of health sciences waste account for about 77% of the total, by weight.

Figure 11-2. Top 10 Material Categories, Health Sciences Waste (n = 17)

(July 1, 2002 – June 30, 2003)



11.3. Progress and Opportunities

Health sciences waste reduction and recycling progress as well as near and long-term opportunities are considered here.

15 Years of Progress

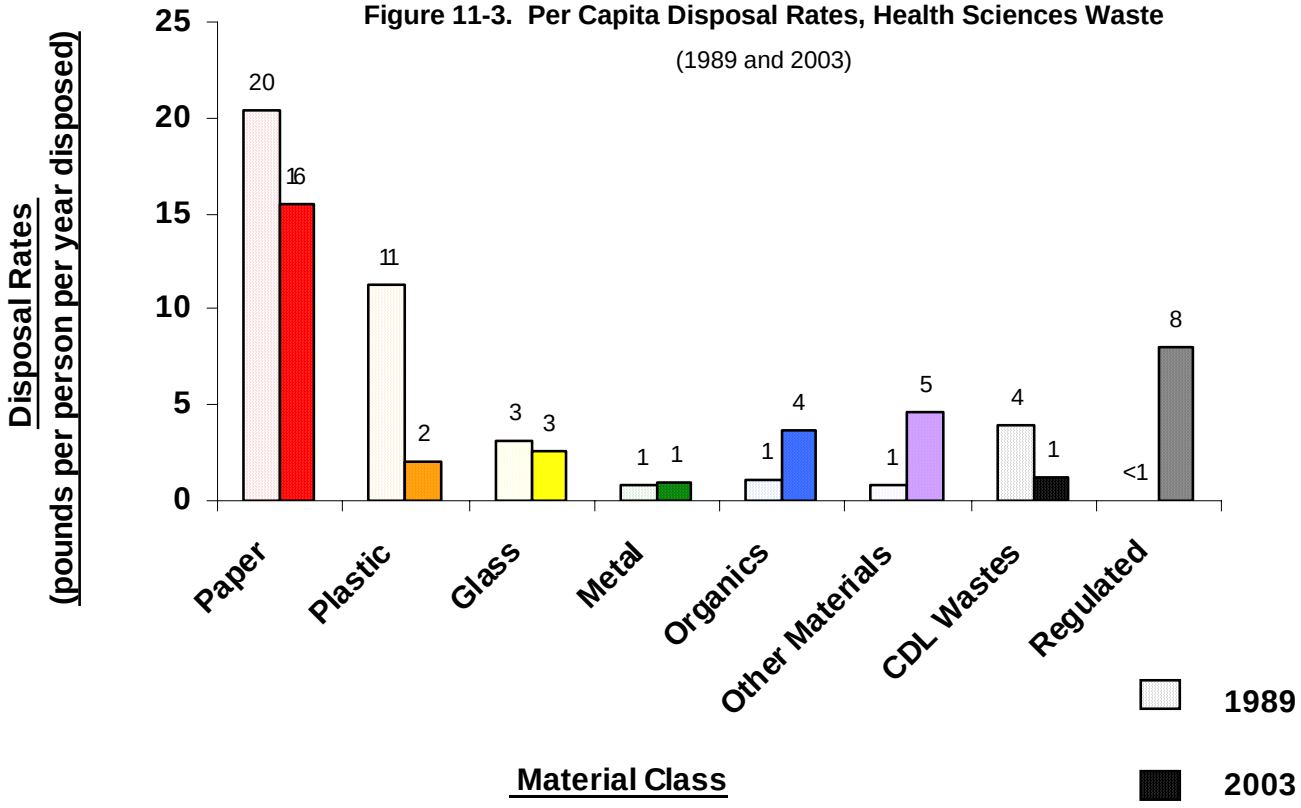
A common metric for measuring waste disposal and recycling is the amount of waste disposed per capita. Figure 11-3 compares 1989 and 2003 per capita disposal rates by material class. Per capita refers to quarterly faculty, staff, and student enrollment, which totaled to 46,166 in 1989. In 2003, the population rose 29% to 59,516 (please see Appendix E, page E-13 for detailed population and square footage data). Two key changes in disposal are summarized in the text and bar chart below.

On average, each person at health sciences disposed a total of 42 pounds of waste in 1989. In 2003, this rate decreased to 39 pounds per person.

- Health sciences per capita disposal has decreased by 7% since 1989. In other words, each person at the University disposed a total of 42 pounds of waste at health sciences locations in 1989. In 2003, this rate decreased by 7% to 39 pounds per person. This data indicates that the average person at the University is disposing three pounds less waste at health sciences locations in 2003 than in 1989.
- At health sciences locations, the University is disposing 24% less paper and 82% less plastic per capita than in 1989.

Figure 11-3. Per Capita Disposal Rates, Health Sciences Waste

(1989 and 2003)

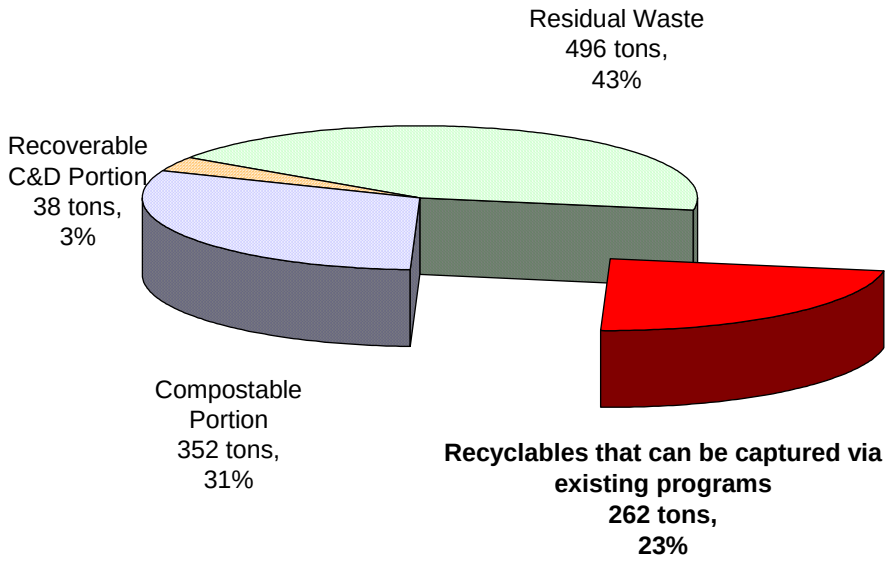


Existing Recycling Opportunities

The relative amounts of paper and plastic in health sciences waste – materials targeted by University recycling programs – have declined over the past 15 years. However, there are recycling opportunities that can be realized through more effective use of existing programs. As Figure 11-4 shows, 23% of all disposed waste, or 262 tons of material, are available for recovery through existing recycling programs. Between 50% to 60% of the 262 tons (or 131 tons to 157 tons) could be captured for recycling.

Figure 11-4. Recyclable Portion, Health Sciences Waste

(July 1, 2002 – June 30, 2003)



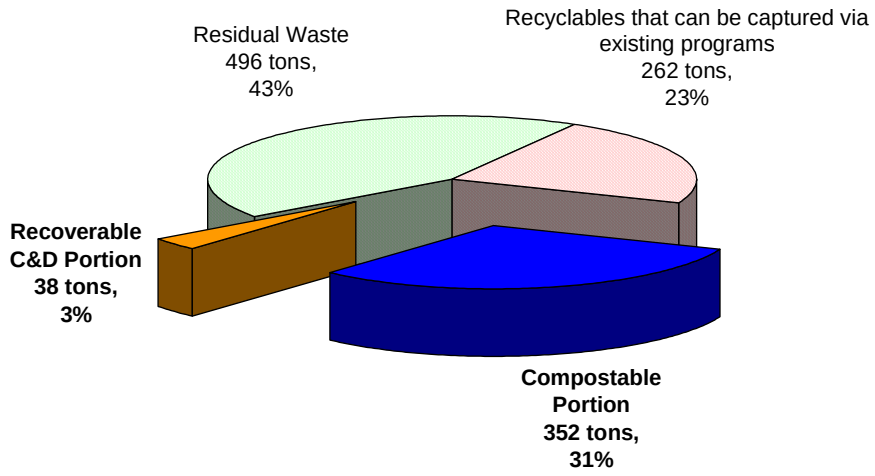
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For health sciences waste this is predominantly paper, bottles, and plastic film.
- **Compostable Portion** – These materials are potentially compostable. For health sciences waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For health sciences waste this is predominantly concrete and brick.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.

Future Recycling Opportunities

Figure 11-5 illustrates future recycling opportunities for furthering waste reduction and recycling at health sciences locations. Collecting and composting organic materials represents a significant opportunity for recovering new materials from health sciences waste. There are a total of 352 tons of organic materials currently disposed by health sciences (about 31% of health sciences waste). Between 70% to 80% of this organic material could be captured for recovery.[11] However, to realize these future recycling opportunities, new programs must be developed.

Figure 11-5. Compostable and Recoverable Construction & Demolition Portions, Health Sciences Waste[12]

(July 1, 2002 – June 30, 2003)



- **Compostable Portion** – These materials are potentially compostable. For health sciences waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For health sciences waste this is predominantly concrete and brick.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For health sciences waste this is predominantly paper, bottles, and plastic film.

[11] Based on recovery efficiencies from Seattle, King County, and City of Los Angeles institutional settings.
[12] Material categories were categorized as *compostable* and r*ecoverable C&D* according to their best and highest use. For example, lumber was categorized as a *C&D recoverable* material because it has a higher associated market value when recycled through C&D recovery programs than when it is composted. Please see Appendix A for more information on material categories classified as *recyclable*, *compostable,* or *recoverable C&D*.

12. Art Building Disposed Waste

This chapter examines the waste disposed by art buildings. The chapter is organized into three sections:

1. a definition of art building disposed waste;
2. composition of art building disposed waste; and
3. an assessment of recycling accomplishments and future opportunities.

12.1. Definition of Art Building Disposed Waste

Art building disposed waste comes from University galleries, theaters, and buildings housing art, architecture, and other small-scale construction projects (e.g., Ceramic and Metal Arts buildings). Art buildings disposed a total of 269 tons of waste during the 2002-2003 fiscal year. After being collected, this waste is taken to local transfer stations and then sent to regional landfills for disposal.

Map 12-1, on page 77, indicates all dumpsters that were included in art building waste. Each dot represents an art building dumpster location (please see legend for details).

Map 12-1. Dumpster Locations, Art Building Waste

(July 1, 2002 – June 30, 2003)

12.2. Composition of Art Buildings Disposed Waste

The makeup of art buildings waste is presented in two ways. First, a summary of waste composition is presented in a pie chart. Then, the 10 most predominant materials of art building waste appear in a bar graph.

Composition by Material Class

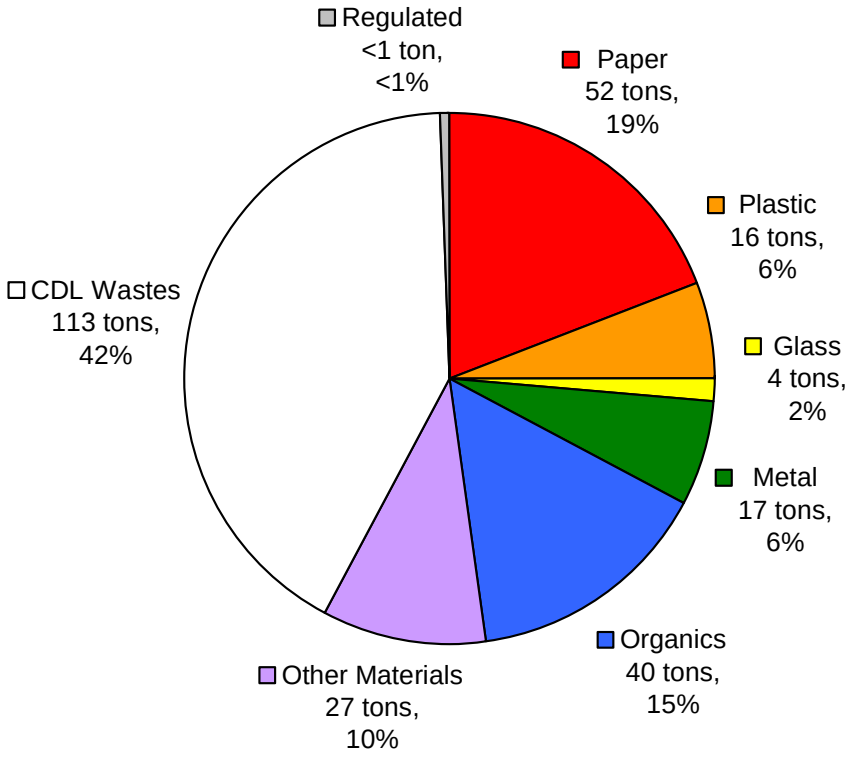
Figure 12-1 depicts the composition of the art building waste by material class. There are eight material classes, which include: *paper, plastic, glass, metal, organics, other materials, CDL wastes*, and *regulated materials*. Each of these material classes is composed of several material categories (e.g., the paper material class includes cardboard, newspaper, office paper, and other paper categories). Please see Appendix A for a complete listing of material class and category definitions.

Of the eight material classes, *CDL wastes*, *paper,* and *organics* are the three largest by weight, accounting for approximately 42%, 19%, and 15% of art buildings waste, respectively. Of the 269 tons disposed, *CDL wastes* comprised 113 tons, *paper* comprised 52 tons, and *organics* comprised 40 tons.

Figure 12-1. Composition by Material Class, Art Building Waste (n = 12)

(July 1, 2002 – June 30, 2003)

- **Paper** – all papers including cardboard, newspaper, and other fibers
- **Plastic** – plastic products and packaging such as drink bottles, film, and polystyrene
- **Glass** – glass products and packaging such as drink bottles, jars, and laboratory glassware
- **Metal** – ferrous and nonferrous metals such as aluminum and tin cans
- **Organics** – biodegradable materials commonly composted, including yard debris and food
- **CDL Wastes** – materials commonly generated by construction and demolition, including wood, gypsum wallboard, and insulation
- **Regulated** – materials such as paints, solvents, oils, medical wastes, and other chemicals
- **Other Materials** – materials that don't fit into any other category, including clothes, furniture, and electronic equipment



Appendix B presents a detailed composition of art building waste.

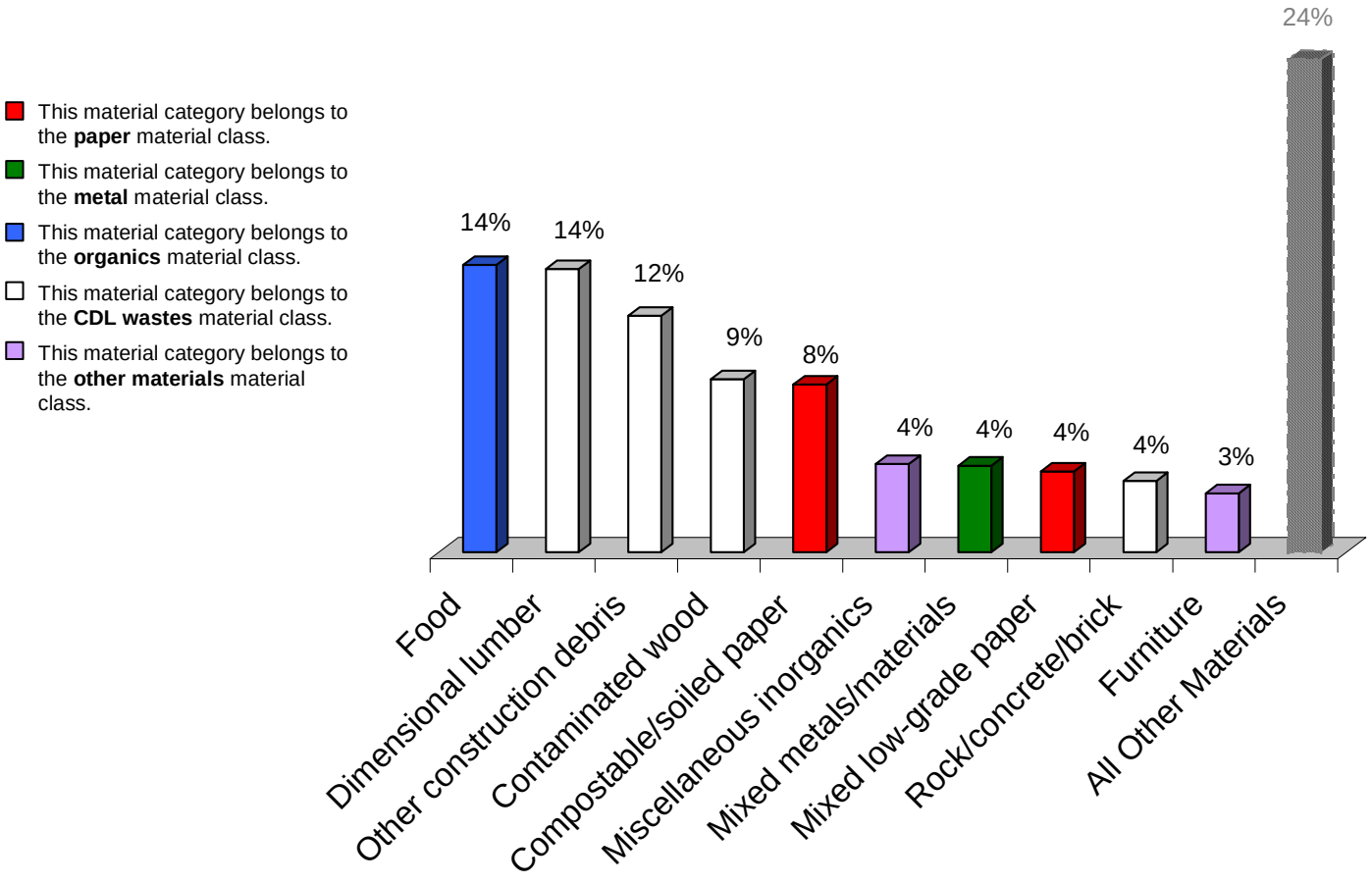
Top 10 Material Categories

For this study, each waste sample was sorted into 91 material categories. Figure 12-2 lists the 10 most predominant categories by weight. The remaining 81 categories are grouped into the *all other materials* column. The three single largest material categories of art building waste are *food* (14%), *dimensional lumber* (14%), and *other construction debris* (12%). Appendix A provides definitions for all 91 categories.

The 10 largest material categories of art building waste account for about 76% of the total, by weight.

Figure 12-2. Top 10 Material Categories, Art Building Waste (n = 12)

(July 1, 2002 – June 30, 2003)



12.3. Progress and Opportunities

Waste reduction and recycling progress at art buildings as well as near and long-term opportunities are considered here.

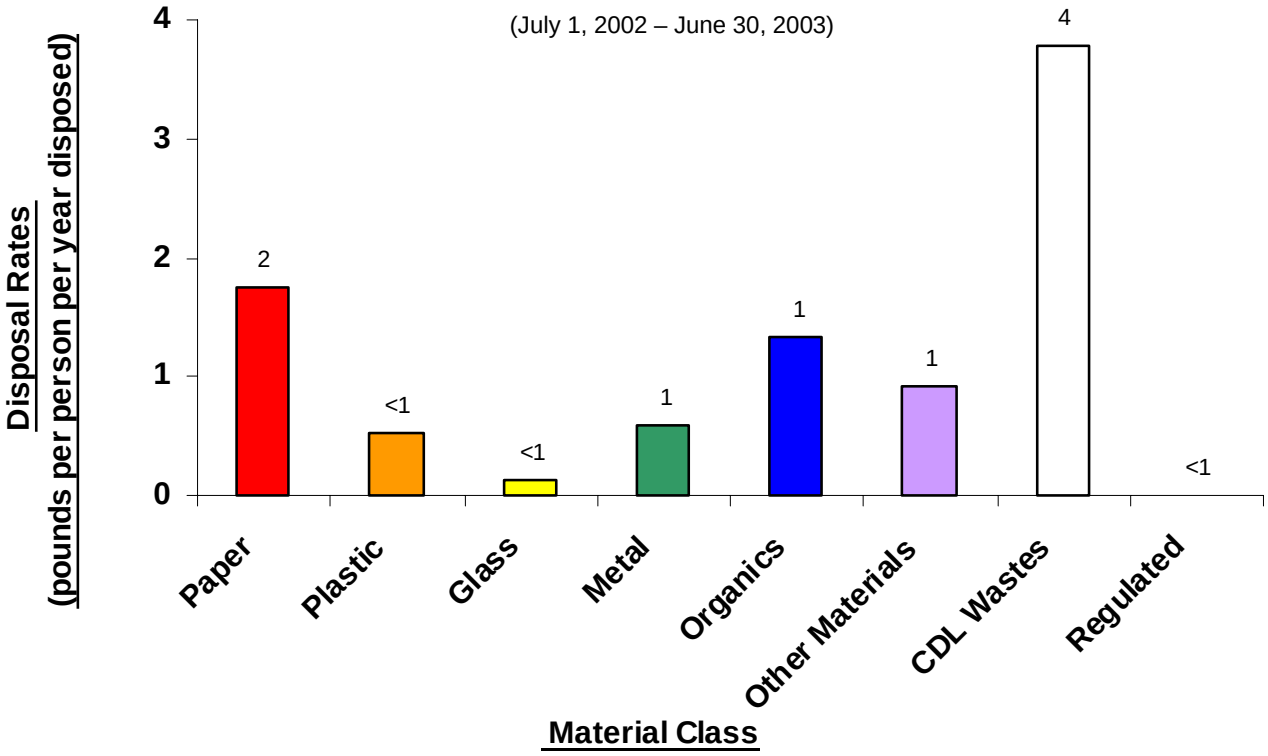
15 Years of Progress

A common metric for measuring waste disposal and recycling is the amount of waste disposed per capita. Figure 12-3 presents 2003 per capita disposal rates by material class. Per capita refers to quarterly faculty, staff, and student enrollment, which totaled to 59,516 in 2003. There is no comparable data available from the 1989 study to compare per capita disposal for art buildings.

Per capita disposal at art buildings was 9 pounds per person per year in 2003.

Figure 12-3. Per Capita Disposal Rates, Art Building Waste

(July 1, 2002 – June 30, 2003)

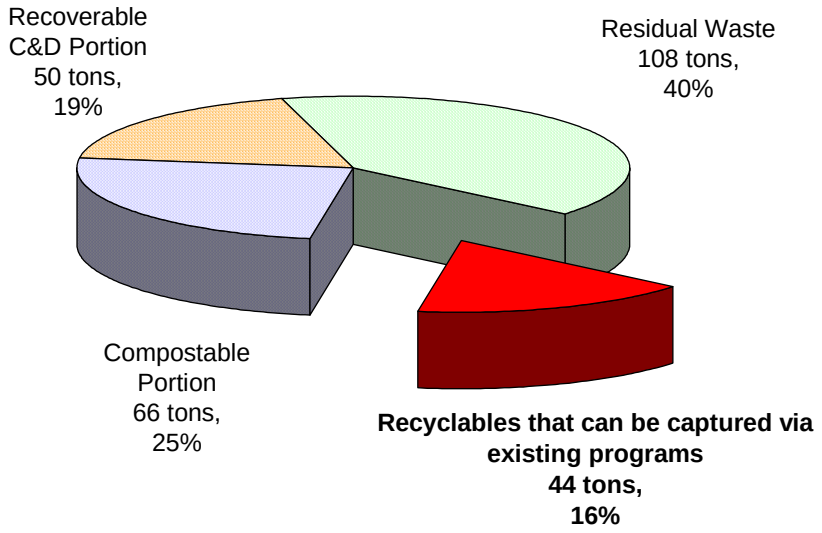


Existing Recycling Opportunities

In art buildings, recycling opportunities can be realized through more effective use of existing programs. As Figure 12-4 shows, 16% of all art building disposed waste, or 44 tons of material, are available for recovery through existing recycling programs. Between 50% to 60% of the 44 tons (or 22 tons to 26 tons) could be captured for recycling.

Figure 12-4. Recyclable Portion, Art Building Waste

(July 1, 2002 – June 30, 2003)



- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For art building waste this is predominantly paper, bottles, other ferrous metal, and plastic film.
- **Compostable Portion** – These materials are potentially compostable. For art building waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For art building waste this is predominantly clean wood.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.

Art Building Disposed Waste

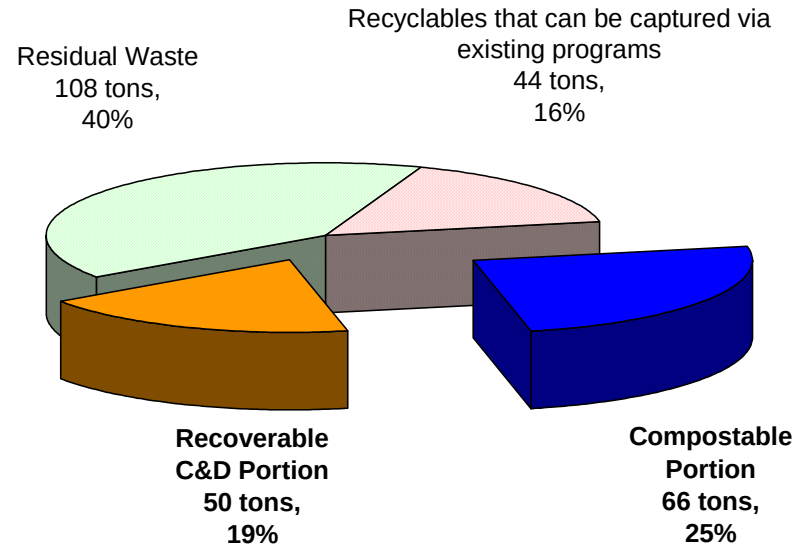
Future Recycling Opportunities

Figure 12-5 illustrates future recycling opportunities for furthering waste reduction and recycling in art buildings. These opportunities are primarily focused on recovering construction and demolition (C&D) materials for which viable markets exist and source separating organic materials for composting. To realize these future recycling opportunities, new programs must be developed.

Collecting and composting organic materials represents a significant art building opportunity for recovering new materials. There are a total of 66 tons of organic materials currently disposed by art buildings (about 25% of art building waste). Additionally, because recoverable C&D materials represent about 19% (or 50 tons) of art building waste, C&D recovery programs should be investigated. Between 25% to 50% of both the recoverable C&D and compostable materials could be captured for recovery.

Figure 12-5. Compostable and Recoverable Construction & Demolition Portions, Art Building Waste[13]

(July 1, 2002 – June 30, 2003)



- **Compostable Portion** – These materials are potentially compostable. For art building waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For art building waste this is predominantly clean wood.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For art building waste this is predominantly paper, bottles, other ferrous metal, and plastic film.

[13] Material categories were categorized as *compostable* and r*ecoverable C&D* according to their best and highest use. For example, lumber was categorized as a *C&D recoverable* material because it has a higher associated market value when recycled through C&D recovery programs than when it is composted. Please see Appendix A for more information on material categories classified as *recyclable*, *compostable,* or *recoverable C&D*.

13. ICA & IMA Facilities Disposed Waste

This chapter examines the waste disposed by ICA and IMA facilities. The chapter is organized into three sections:

1. a definition of ICA and IMA facilities disposed waste;
2. composition of ICA and IMA facilities disposed waste; and
3. an assessment of recycling accomplishments and future opportunities.

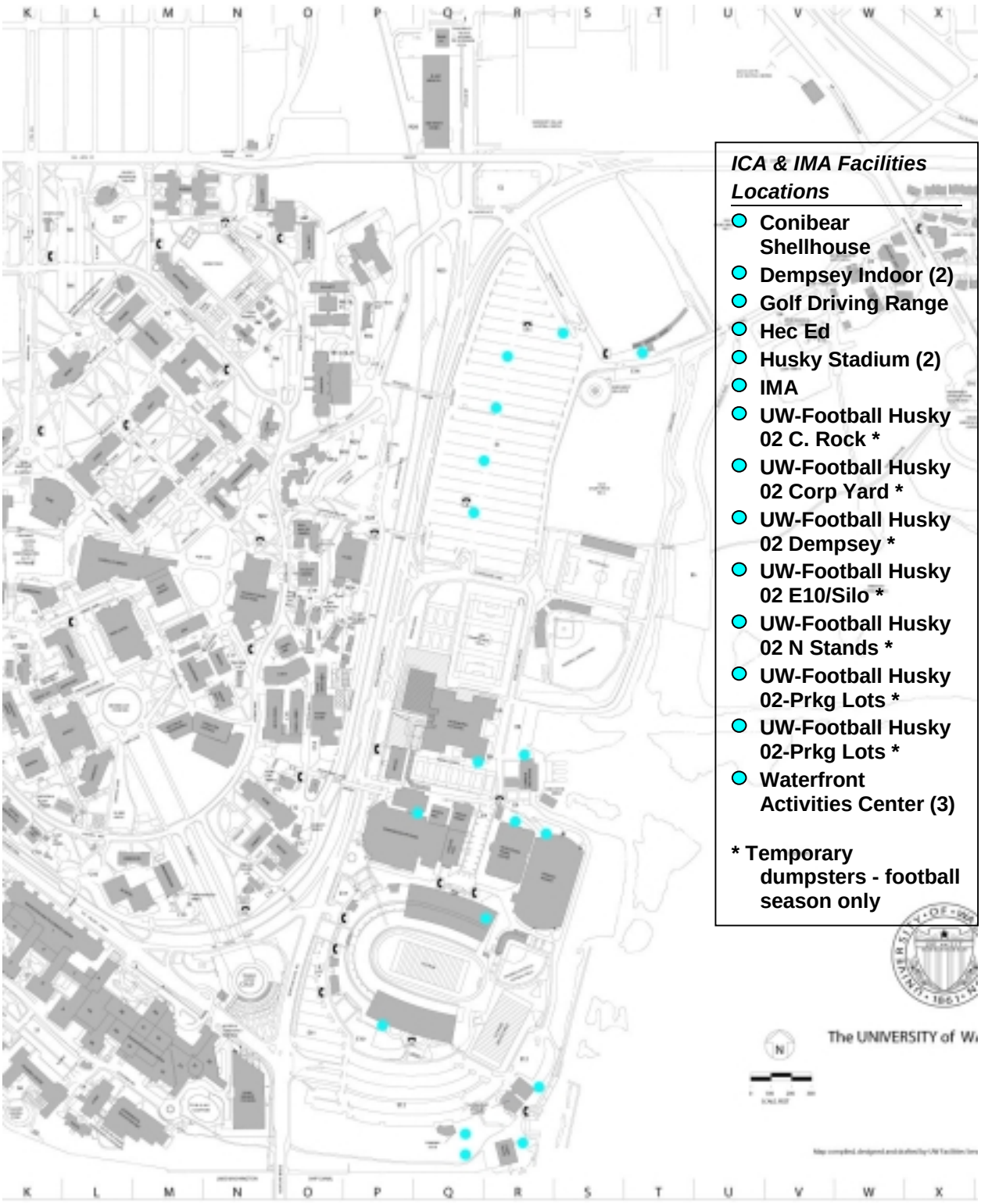
13.1. Definition of ICA & IMA Facilities Disposed Waste

ICA and IMA facilities disposed waste comes from indoor and outdoor athletic complexes such as the Husky Stadium and Conibear Shellhouse. ICA and IMA facilities disposed a total of 619 tons of waste during the 2002-2003 fiscal year; this did not take into consideration high volume seasonal events, such as basketball and football games. After being collected, this waste is taken to local transfer stations and then sent to regional landfills for disposal.

Map 13-1, on page 85, indicates all dumpsters that were included in ICA and IMA facilities waste. Each dot represents ICA and IMA facilities dumpster locations (please see legend for details).

Map 13-1. Dumpster Locations, ICA & IMA Facilities Waste

(July 1, 2002 – June 30, 2003)



13.2. Composition of ICA & IMA Facilities Disposed Waste

The makeup of ICA and IMA facilities waste is presented in two ways. First, a summary of waste composition is presented in a pie chart. Then, the 10 most predominant materials of ICA and IMA facilities waste appear in a bar graph.

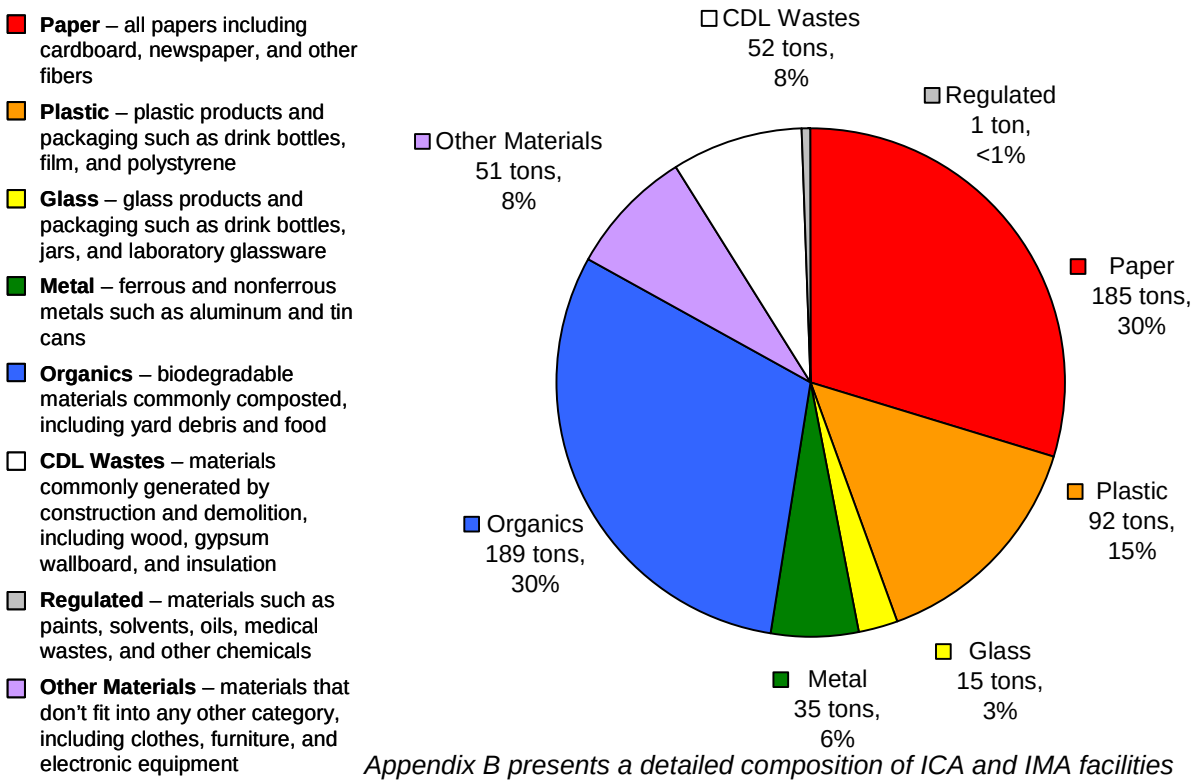
Composition by Material Class

Figure 13-1 depicts the composition of the ICA and IMA facilities waste by material class. There are eight material classes, which include: *paper, plastic, glass, metal, organics, other materials, CDL wastes*, and *regulated materials*. Each of these material classes is composed of several material categories (e.g., the paper material class includes cardboard, newspaper, office paper, and other paper categories). Please see Appendix A for a complete listing of material class and category definitions.

Of the eight material classes, *organics, paper*, and *plastic* are the three largest by weight, accounting for approximately 30%, 30%, and 15% of ICA and IMA facilities waste, respectively. Of the 619 tons disposed, organics comprised 189 tons, paper comprised 185 tons, and plastic comprised 92 tons.

Figure 13-1. Composition by Material Class, ICA & IMA Facilities Waste (n = 12)

(July 1, 2002 – June 30, 2003)



Appendix B presents a detailed composition of ICA and IMA facilities waste.

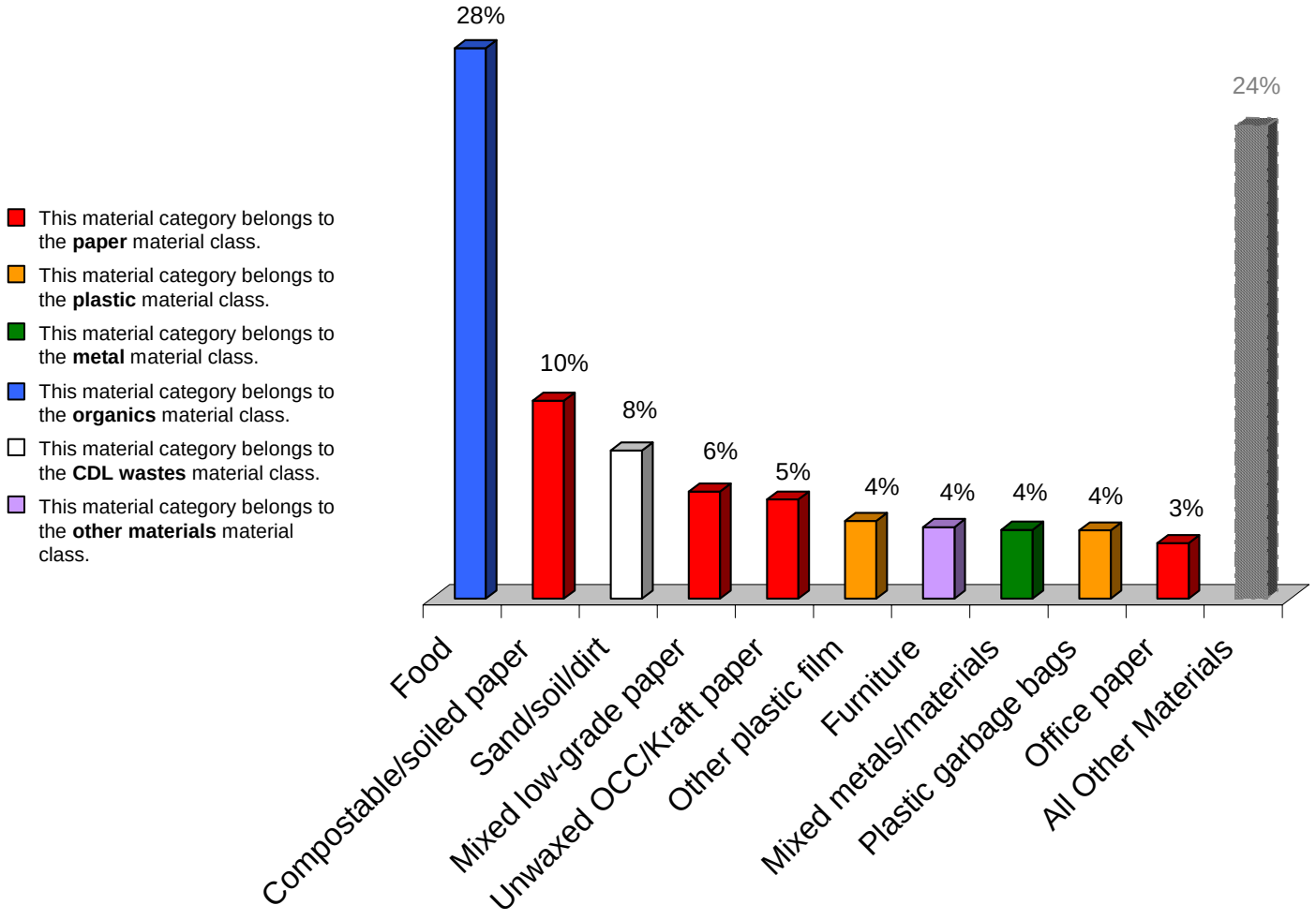
Top 10 Material Categories

For this study, each waste sample was sorted into 91 material categories. Figure 13-2 lists the 10 most predominant categories by weight. The remaining 81 categories are grouped into the *all other materials* column. The three single largest material categories of ICA and IMA facilities waste are *food* (28%), *compostable/soiled paper* (10%), and *sand/soil/dirt* (8%). Appendix A provides definitions for all 91 categories.

The 10 largest material categories of ICA and IMA facilities waste account for about 76% of the total, by weight.

Figure 13-2. Top 10 Material Categories, ICA & IMA Facilities Waste (n = 12)

(July 1, 2002 – June 30, 2003)



13.3. Progress and Opportunities

Waste reduction and recycling progress at ICA and IMA facilities as well as near and long-term opportunities are considered here.

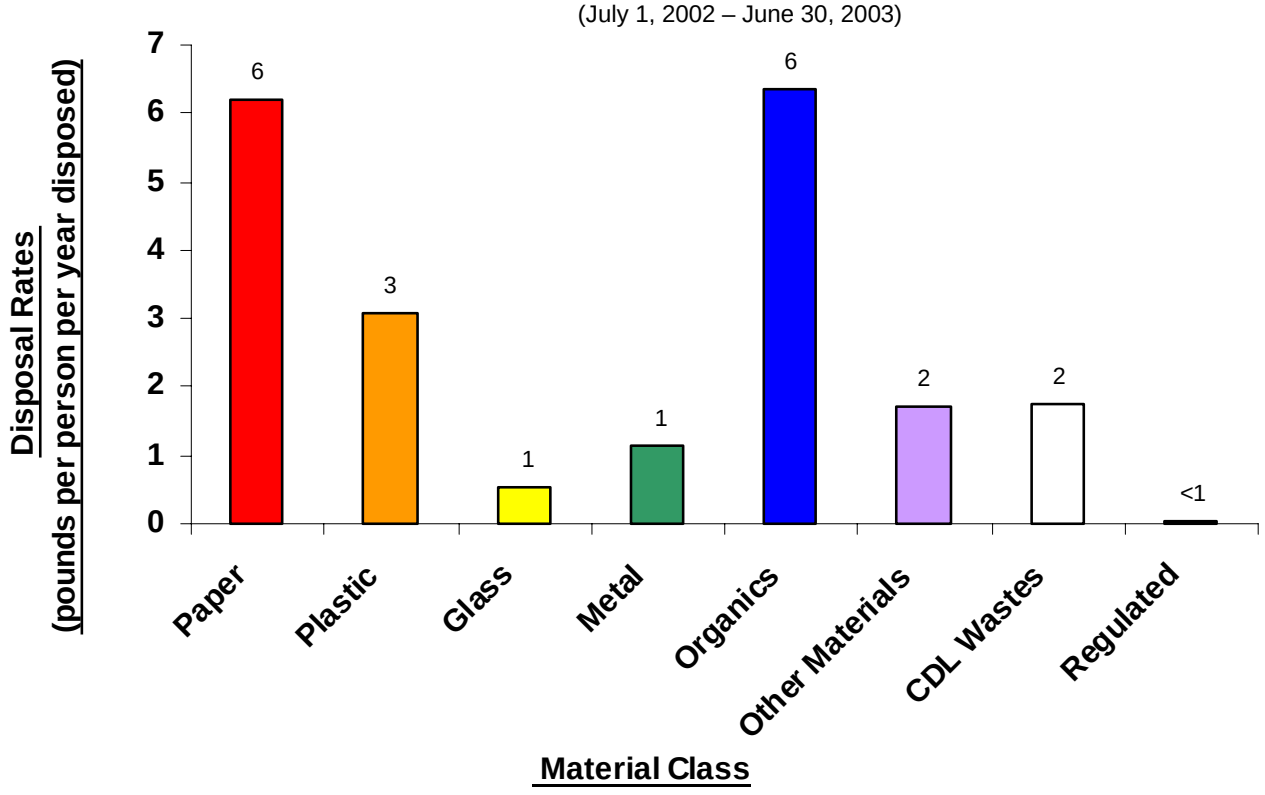
15 Years of Progress

A common metric for measuring waste disposal and recycling is the amount of waste disposed per capita. Figure 13-3 presents 2003 per capita disposal rates by material class. Per capita refers to quarterly faculty, staff, and student enrollment, which totaled to 59,516 in 2003. There is no comparable data available from the 1989 study to compare per capita disposal for ICA and IMA facilities.

Per capita disposal at ICA and IMA facilities was 21 pounds per person per year in 2003.

Figure 13-3. Per Capita Disposal Rates, ICA & IMA Facilities Waste

(July 1, 2002 – June 30, 2003)

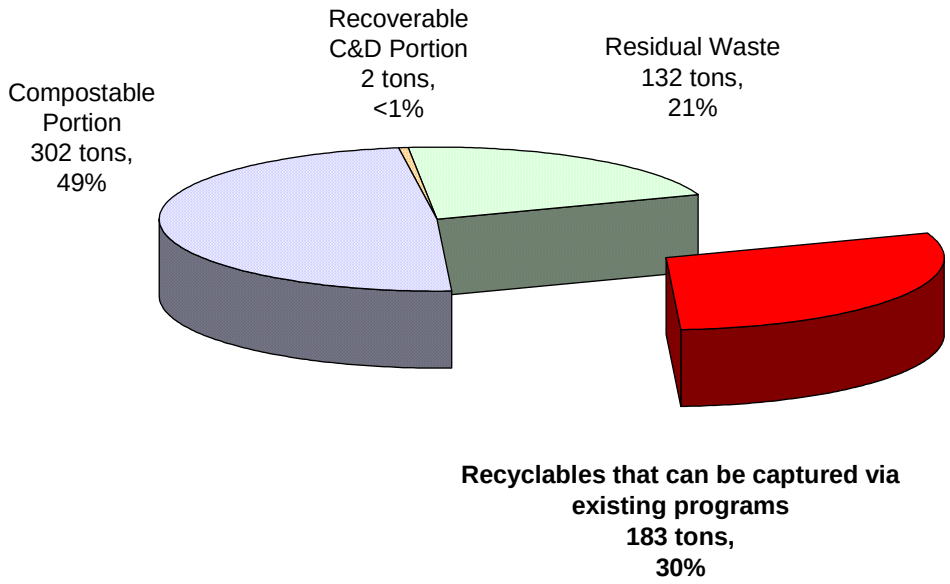


Existing Recycling Opportunities

In ICA and IMA facilities, recycling opportunities can be realized through more effective use of existing programs. As Figure 13-4 shows, 30% of all disposed waste, or 183 tons of material, are available for recovery through existing recycling programs. Between 50% to 60% of the 183 tons (or 92 tons to 110 tons) could be captured for recycling.

Figure 13-4. Recyclable Portion, ICA & IMA Facilities Waste

(July 1, 2002 – June 30, 2003)



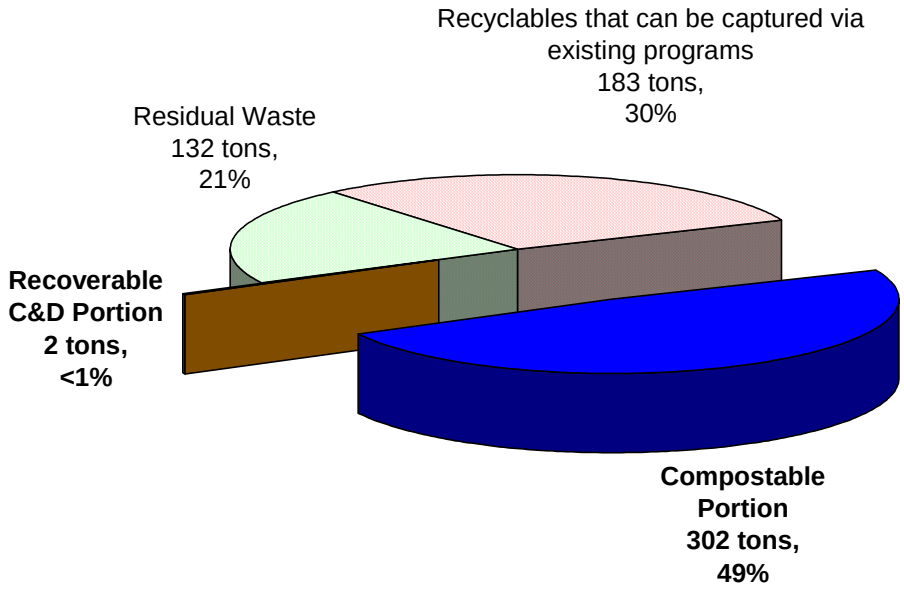
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For ICA and IMA facilities waste this is predominantly paper, cans and bottles, and plastic film.
- **Compostable Portion** – These materials are potentially compostable. For ICA and IMA facilities waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For ICA and IMA facilities waste this is predominantly clean wood, gypsum, and concrete.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.

Future Recycling Opportunities

Figure 13-5 illustrates future recycling opportunities for furthering waste reduction and recycling at ICA and IMA facilities. Collecting and composting organic materials represents an opportunity for recovering new materials. There are a total of 302 tons of organic materials currently disposed by ICA and IMA facilities (about 49% of ICA and IMA facilities waste). Between 25% to 50% of this organic material could be captured for recovery. However, to realize these future recycling opportunities, new programs must be developed.

Figure 13-5. Compostable and Recoverable Construction & Demolition Portions, ICA & IMA Facilities Waste[14]

(July 1, 2002 – June 30, 2003)



- **Compostable Portion** – These materials are potentially compostable. For ICA and IMA facilities waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For ICA and IMA facilities waste this is predominantly clean wood.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For ICA and IMA facilities waste this is predominantly paper, cans and bottles, and plastic film.

[14] Material categories were categorized as *compostable* and r*ecoverable C&D* according to their best and highest use. For example, lumber was categorized as a *C&D recoverable* material because it has a higher associated market value when recycled through C&D recovery programs than when it is composted. Please see Appendix A for more information on material categories classified as *recyclable*, *compostable,* or *recoverable C&D*.

14. Maintenance Building Disposed Waste

This chapter examines the waste disposed by maintenance buildings. The chapter is organized into three sections:

1. a definition of maintenance building disposed waste;
2. composition of maintenance building disposed waste; and
3. an assessment of recycling accomplishments and future opportunities.

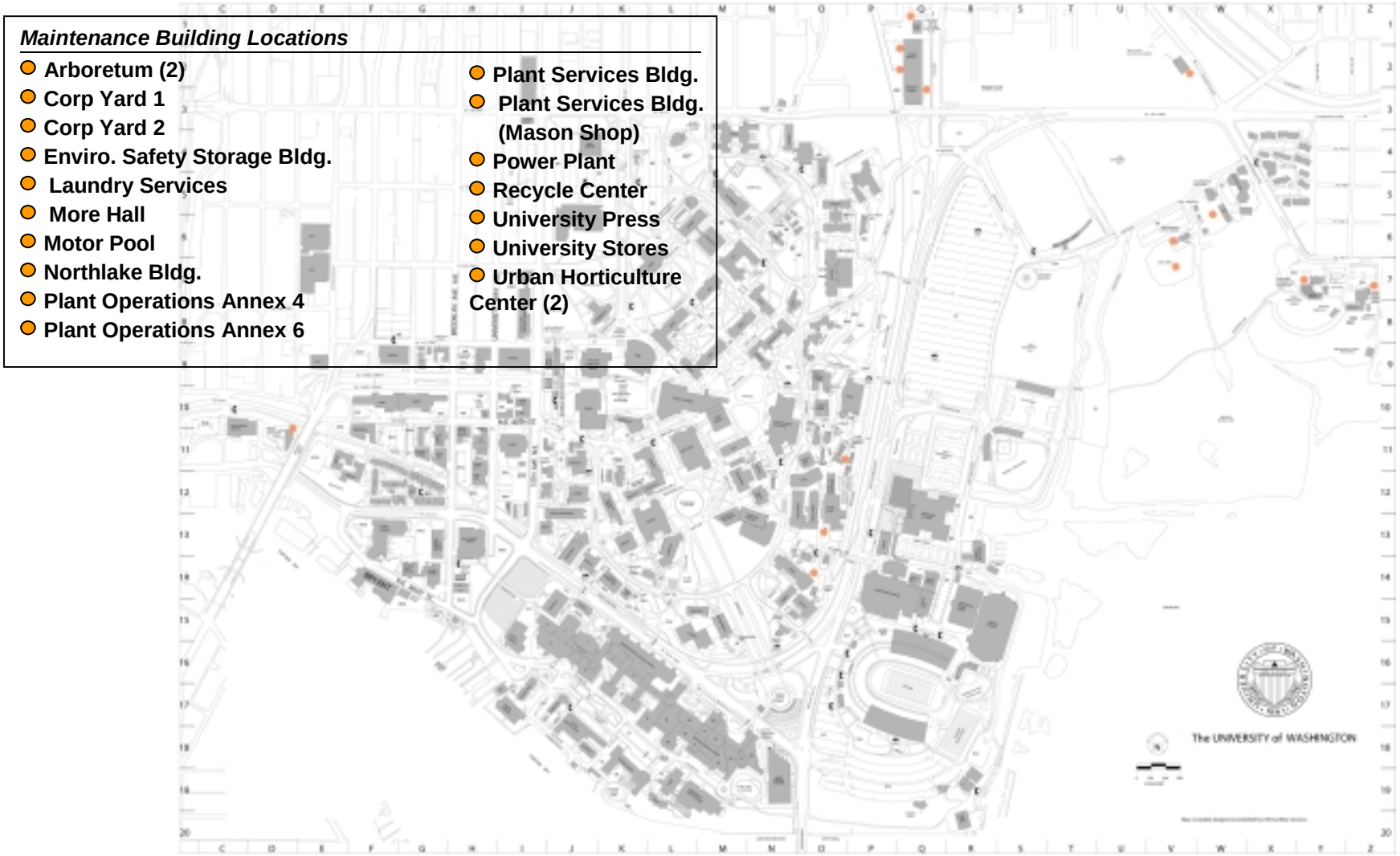
14.1. Definition of Maintenance Building Disposed Waste

Maintenance building disposed waste comes from buildings with a maintenance component such as the Urban Horticulture Center and the Plant Services Building. Maintenance buildings disposed a total of 770 tons of waste during the 2002-2003 fiscal year. After being collected, this waste is taken to local transfer stations and then sent to regional landfills for disposal.

Map 14-1, on page 93, indicates all dumpsters that were included in maintenance building waste. Each dot represents a maintenance building dumpster location (please see legend for details).

Map 14-1. Dumpster Locations, Maintenance Building Waste

(July 1, 2002 – June 30, 2003)



14.2. Composition of Maintenance Building Disposed Waste

The makeup of maintenance building waste is presented in two ways. First, a summary of waste composition is presented in a pie chart. Then, the 10 most predominant materials of maintenance building waste appear in a bar graph.

Composition by Material Class

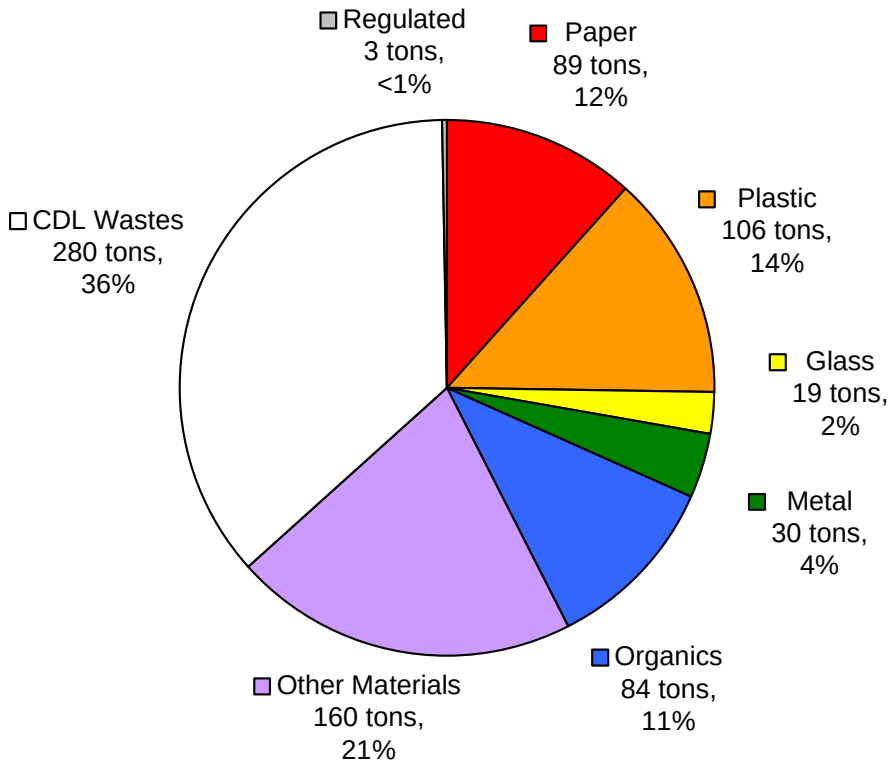
Figure 14-1 depicts the composition of the maintenance building waste by material class. There are eight material classes, which include: *paper, plastic, glass, metal, organics, other materials, CDL wastes*, and *regulated materials*. Each of these material classes is composed of several material categories (e.g., the paper material class includes cardboard, newspaper, office paper, and other paper categories). Please see Appendix A for a complete listing of material class and category definitions.

Of the eight material classes, *CDL wastes*, *other materials,* and *plastic* are the three largest by weight, accounting for approximately 36%, 21%, and 14% of maintenance building waste, respectively. Of the 770 tons disposed, *CDL wastes* comprised 280 tons, *other materials* comprised 160 tons, and *plastic* comprised 106 tons.

Figure 14-1. Composition by Material Class, Maintenance Building Waste (n = 16)

(July 1, 2002 – June 30, 2003)

- **Paper** – all papers including cardboard, newspaper, and other fibers
- **Plastic** – plastic products and packaging such as drink bottles, film, and polystyrene
- **Glass** – glass products and packaging such as drink bottles, jars, and laboratory glassware
- **Metal** – ferrous and nonferrous metals such as aluminum and tin cans
- **Organics** – biodegradable materials commonly composted, including yard debris and food
- **CDL Wastes** – materials commonly generated by construction and demolition, including wood, gypsum wallboard, and insulation
- **Regulated** – materials such as paints, solvents, oils, medical wastes, and other chemicals
- **Other Materials** – materials that don't fit into any other category, including clothes, furniture, and electronic equipment



Appendix B presents a detailed composition of maintenance building waste.

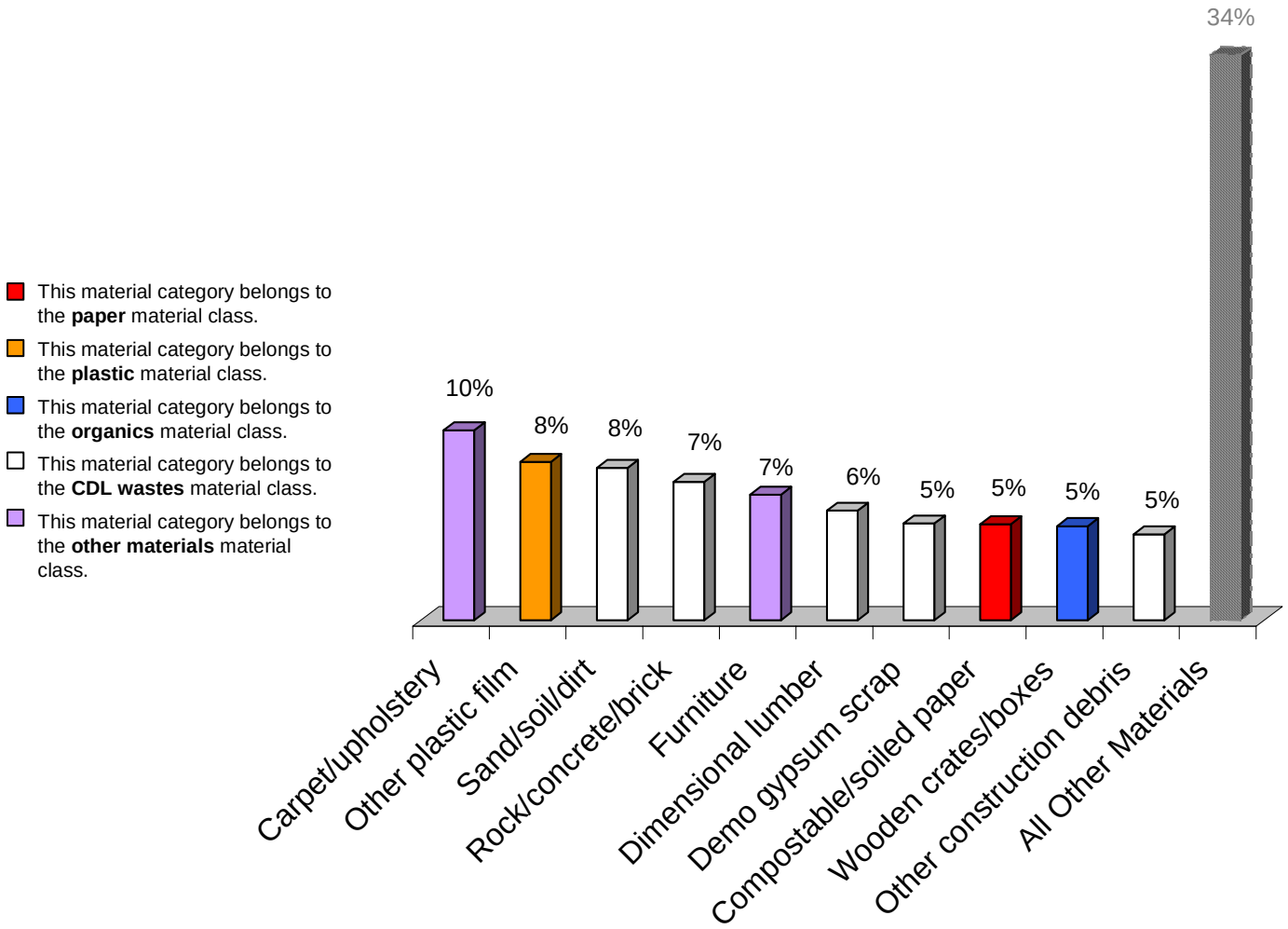
Top 10 Material Categories

For this study, each waste sample was sorted into 91 material categories. Figure 14-2 lists the 10 most predominant categories by weight. The remaining 81 categories are grouped into the *all other materials* column. The three single largest categories of maintenance building waste are *carpet/upholstery* (10%), *other plastic film* (8%), and *sand/soil/dirt* (8%). Appendix A provides definitions for all 91 categories.

The 10 largest material categories of maintenance building waste account for about 66% of the total, by weight.

Figure 14-2. Top 10 Material Categories, Maintenance Building Waste (n = 16)

(July 1, 2002 – June 30, 2003)



14.3. Progress and Opportunities

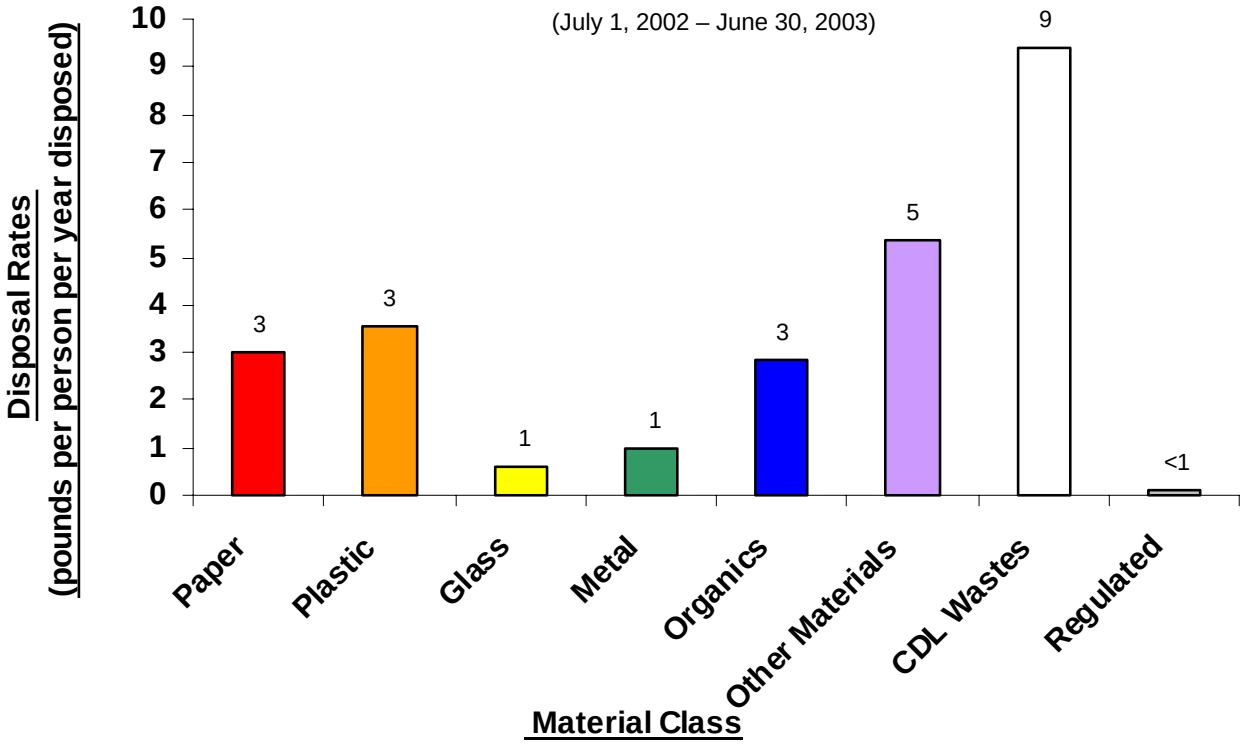
Waste reduction and recycling progress at maintenance buildings as well as near and long-term opportunities are considered here.

15 Years of Progress

A common metric for measuring waste disposal and recycling is the amount of waste disposed per capita. Figure 14-3 presents 2003 per capita disposal rates by material class. Per capita refers to quarterly faculty, staff, and student enrollment, which totaled to 59,516 in 2003. There is no comparable data available from the 1989 study to compare per capita disposal for maintenance buildings.

Per capita disposal at maintenance buildings was 26 pounds per person in 2003.

Figure 14-3. Per Capita Disposal Rates, Maintenance Building Waste

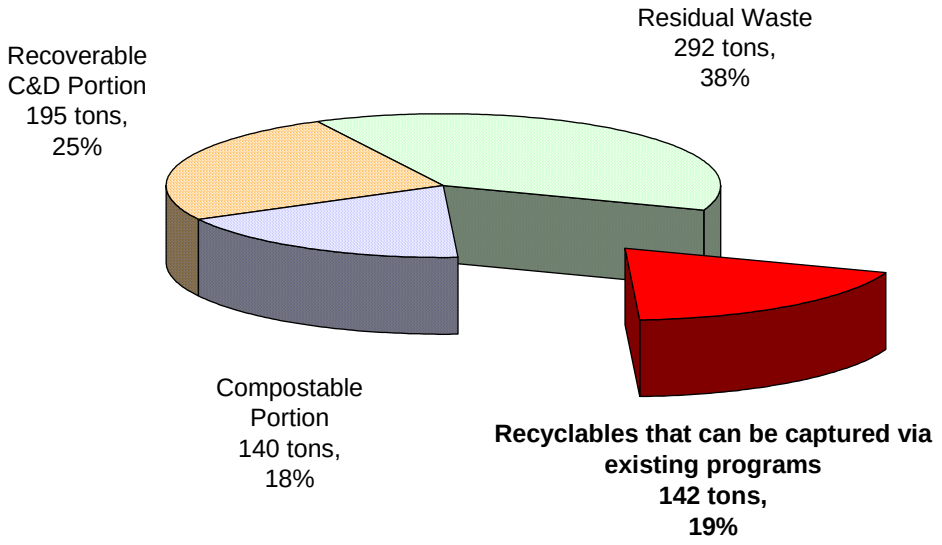


Existing Recycling Opportunities

In maintenance buildings, recycling opportunities can be realized through more effective use of existing programs. As Figure 14-4 shows, about 19% of all disposed waste, or 142 tons of material, are available for recovery through existing recycling programs. Between 50% to 60% of the 142 tons (or 71 tons to 85 tons) could be captured for recycling.

Figure 14-4. Recyclable Portion, Maintenance Building Waste

(July 1, 2002 – June 30, 2003)



- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For maintenance building waste this is predominantly paper and plastic film.
- **Compostable Portion** – These materials are potentially compostable. For maintenance building waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For maintenance building waste this is predominantly clean wood, gypsum, concrete, and brick.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.

Maintenance Building Disposed Waste

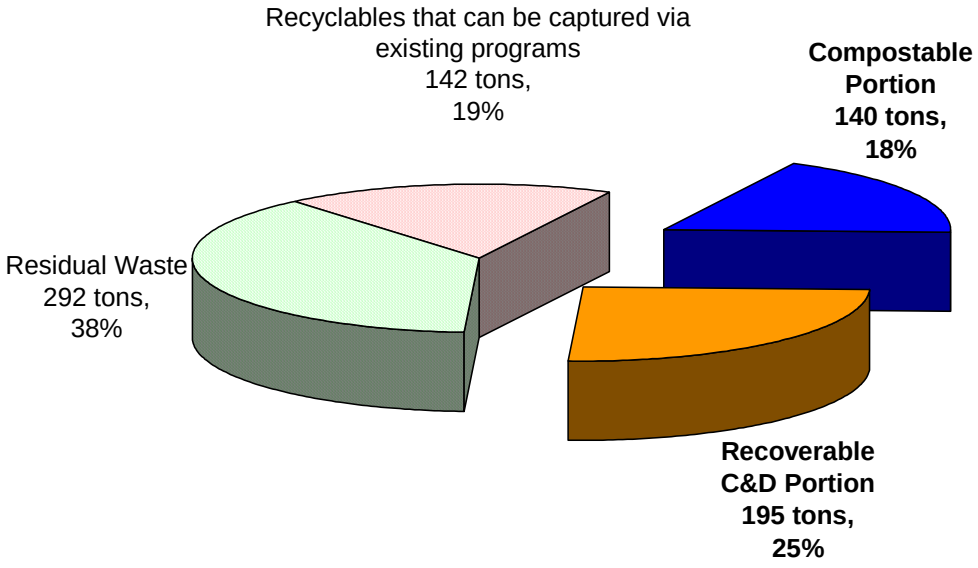
Future Recycling Opportunities

Figure 14-5 illustrates future recycling opportunities for furthering waste reduction and recycling at maintenance buildings. These opportunities are primarily focused on recovering construction and demolition (C&D) materials for which viable markets exist and source separating organic materials for composting. To realize these future recycling opportunities, new programs must be developed.

Because recoverable C&D materials represent about 25% (or 195 tons) of maintenance buildings waste, C&D recovery programs should be investigated. Additionally, collecting and composting organic materials represents an opportunity for recovering new materials. There are a total of 140 tons of organic materials currently disposed by maintenance buildings (about 18% of maintenance buildings waste). Between 25% to 50% of both the recoverable C&D and compostable materials could be captured for recovery.

Figure 14-5. Compostable and Recoverable Construction & Demolition Portions, Maintenance Building Waste[15]

(July 1, 2002 – June 30, 2003)



- **Compostable Portion** – These materials are potentially compostable. For maintenance building waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For maintenance building waste this is predominantly clean wood, gypsum, concrete, and brick.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For maintenance building waste this is predominantly paper and plastic film.

[15] Material categories were categorized as *compostable* and r*ecoverable C&D* according to their best and highest use. For example, lumber was categorized as a *C&D recoverable* material because it has a higher associated market value when recycled through C&D recovery programs than when it is composted. Please see Appendix A for more information on material categories classified as *recyclable*, *compostable,* or *recoverable C&D*.

15. West Campus Building Disposed Waste

This chapter examines the waste disposed by west campus buildings. The section is organized into three sections:

1. a definition of west campus building disposed waste;
2. composition of west campus building disposed waste; and
3. an assessment of recycling accomplishments and future opportunities.

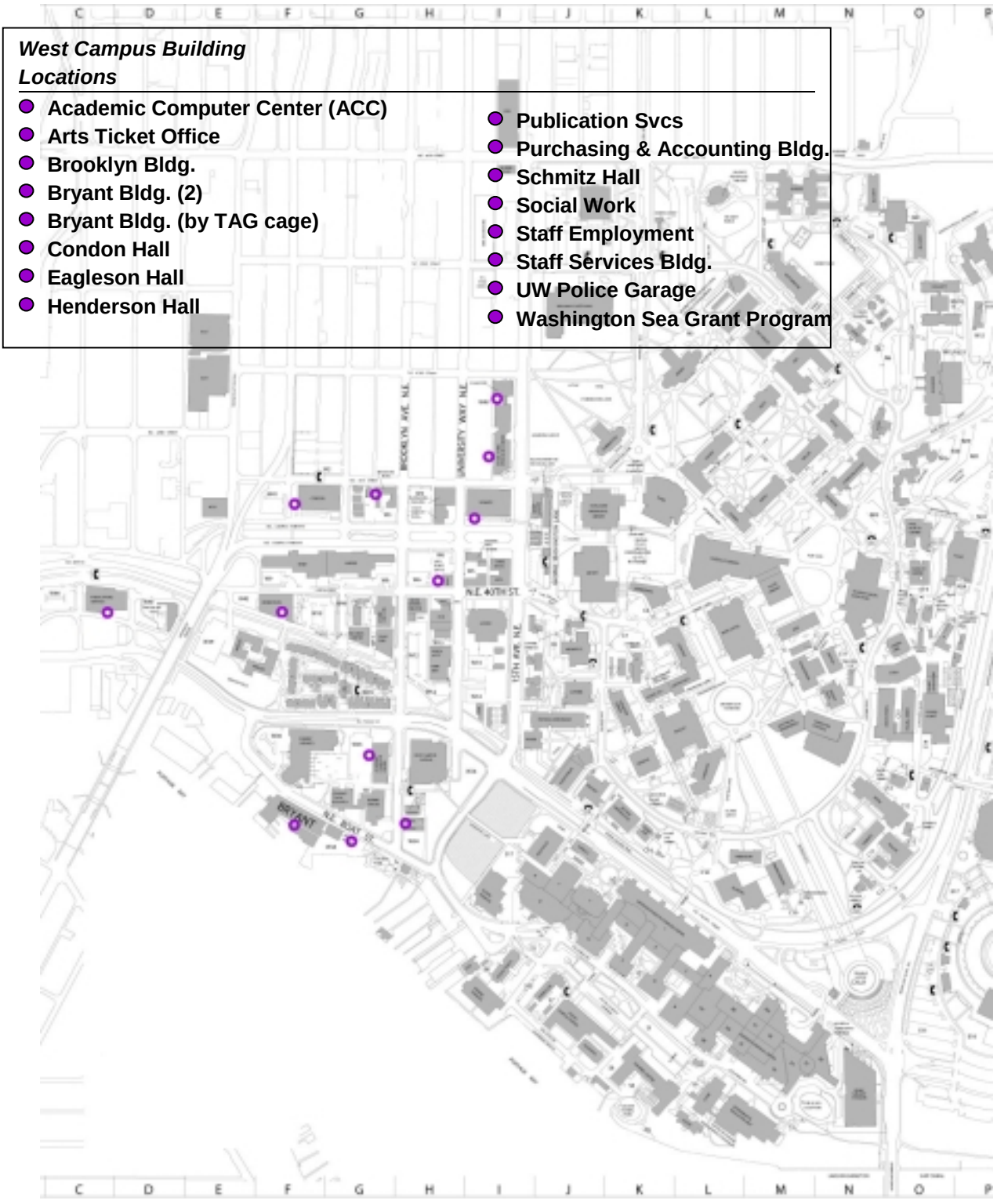
15.1. Definition of West Campus Buildings Disposed Waste

West campus building disposed waste comes from the various types of buildings located west of 15th Avenue. West campus buildings disposed a total of 364 tons of waste during the 2002-2003 fiscal year. After being collected, this waste is taken to local transfer stations and then sent to regional landfills for disposal.

Map 15-1, on page 101, indicates all dumpsters that were included in west campus building waste. Each dot represents a west campus dumpster location (please see legend for details).

Map 15-1. Dumpster Locations, West Campus Building Waste

(July 1, 2002 – June 30, 2003)



15.2. Composition of West Campus Building Disposed Waste

The makeup of west campus building waste is presented in two ways. First, a summary of waste composition is presented in a pie chart. Then, the 10 most predominant materials of west campus building waste appear in a bar graph.

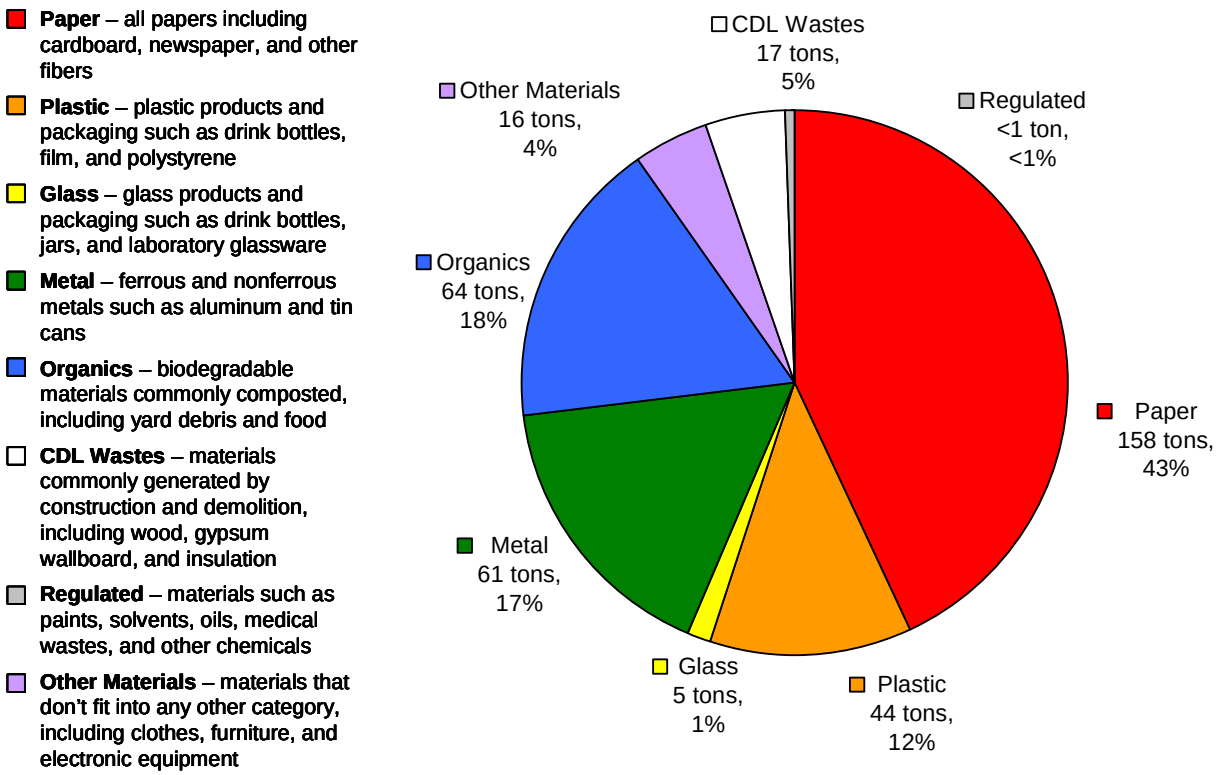
Composition by Material Class

Figure 15-1 depicts the composition of the west campus building waste by material class. There are eight material classes, which include: *paper, plastic, glass, metal, organics, other materials, CDL wastes*, and *regulated materials*. Each of these material classes is composed of several material categories (e.g., the paper material class includes cardboard, newspaper, office paper, and other paper categories). Please see Appendix A for a complete listing of material class and category definitions.

Of the eight material classes, *paper*, *organics,* and *metal* are the three largest by weight, accounting for approximately 43%, 18%, and 17% of west campus building waste, respectively. Of the 364 tons disposed, *paper* comprised 158 tons, *organics* comprised 64 tons, and *metal* comprised 61 tons.

Figure 15-1. Composition by Material Class, West Campus Building Waste (n = 12)

(July 1, 2002 – June 30, 2003)



Appendix B presents a detailed composition of west campus building waste.

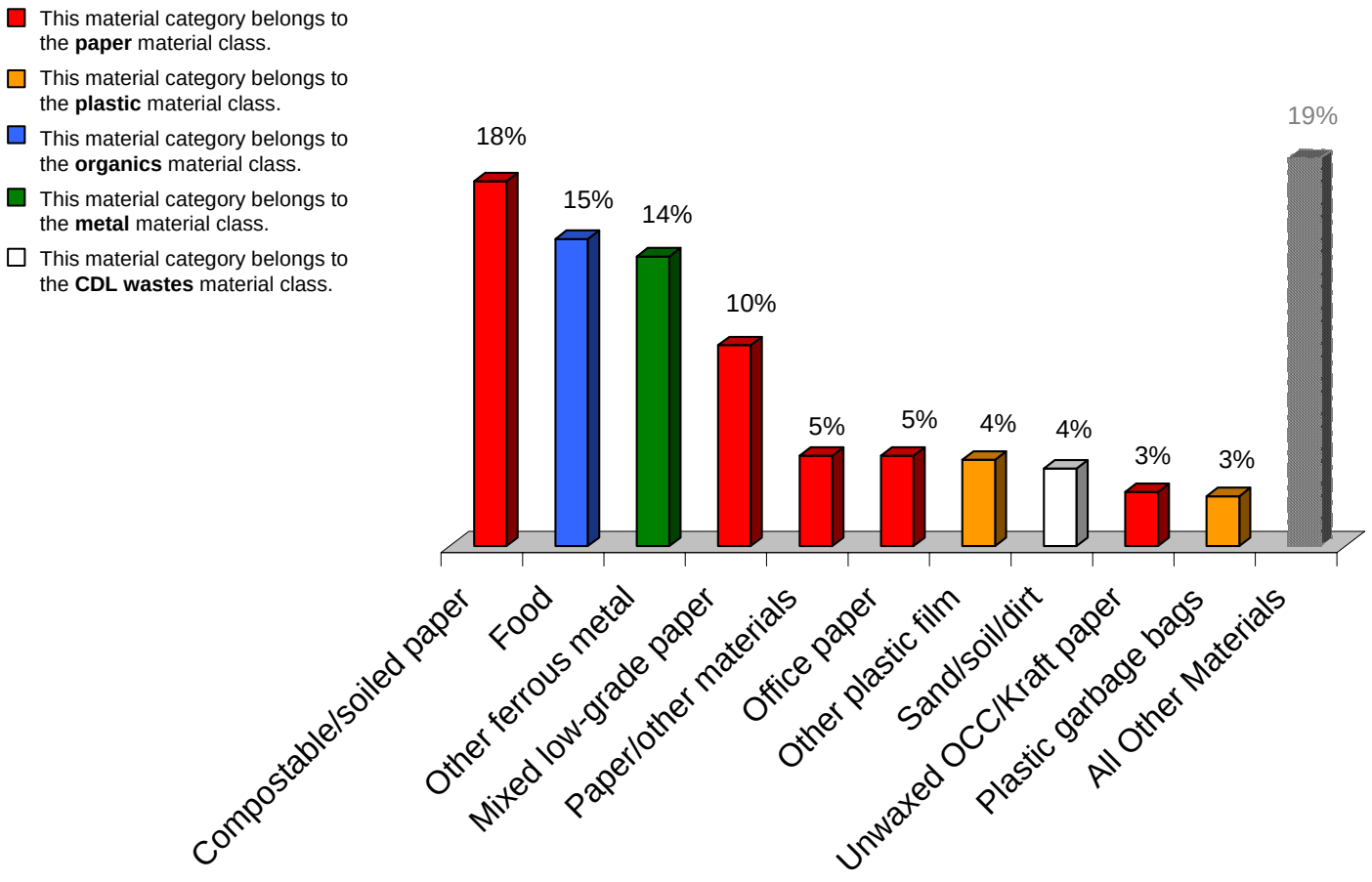
Top 10 Material Categories

For this study, each waste sample was sorted into 91 material categories. Figure 15-2 lists the 10 most predominant categories by weight. The remaining 81 categories are grouped into the *all other materials* column. The three single largest material categories of west campus building waste are *compostable/soiled paper* (18%), *food* (15%), and *other ferrous metal* (14%). Appendix A provides definitions for all 91 categories.

The 10 largest material categories of west campus building waste account for about 81% of the total, by weight.

Figure 15-2. Top 10 Material Categories, West Campus Building Waste (n = 12)

(July 1, 2002 – June 30, 2003)



15.3. Progress and Opportunities

Waste reduction and recycling progress at west campus buildings as well as near and long-term opportunities are considered here.

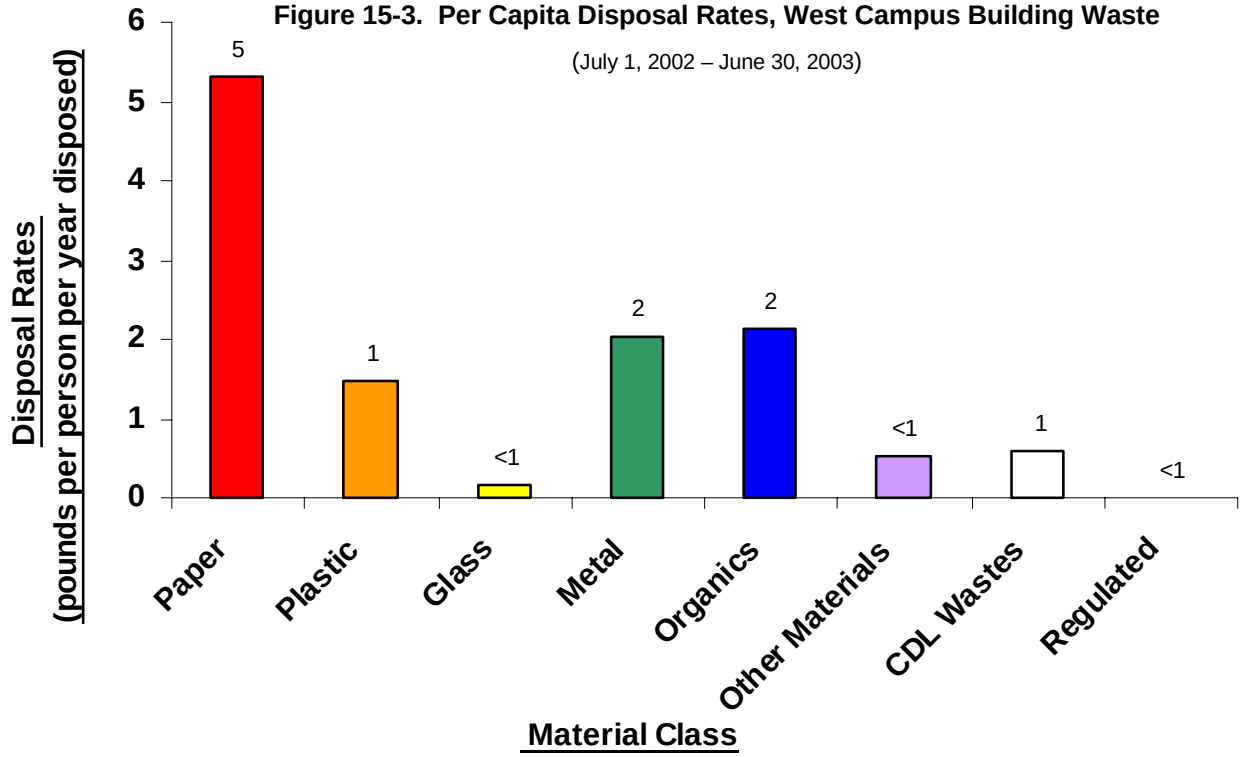
15 Years of Progress

A common metric for measuring waste disposal and recycling is the amount of waste disposed per capita. Figure 15-3 presents 2003 per capita disposal rates by material class. Per capita refers to quarterly faculty, staff, and student enrollment, which totaled to 59,516 in 2003. There is no comparable data available from the 1989 study to compare per capita disposal for west campus buildings.

Per capita disposal at west campus buildings was 12 pounds per person per year in 2003.

Figure 15-3. Per Capita Disposal Rates, West Campus Building Waste

(July 1, 2002 – June 30, 2003)

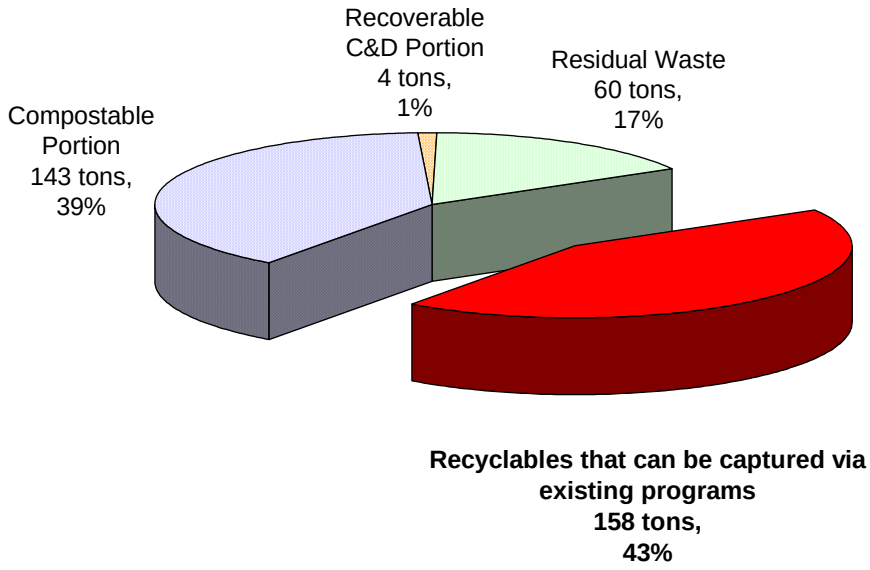


Existing Recycling Opportunities

In west campus buildings, recycling opportunities can be realized through more effective use of existing programs. As Figure 15-4 shows, 43% of all disposed waste, or 158 tons of material, are available for recovery through existing recycling programs. Between 50% to 60% of the 158 tons (or 79 tons to 95 tons) could be captured for recycling.

Figure 15-4. Recyclable Portion, West Campus Building Waste

(July 1, 2002 – June 30, 2003)



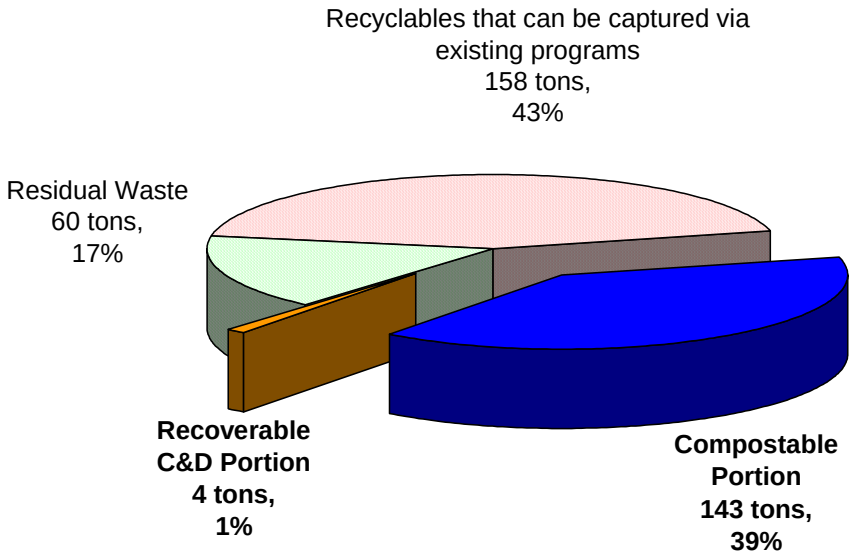
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For west campus building waste this is predominantly paper, other ferrous metal, and plastic film.
- **Compostable Portion** – These materials are potentially compostable. For west campus building waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For west campus building waste this is predominantly wooden crates and boxes, clean wood, concrete, and brick.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.

Future Recycling Opportunities

Figure 15-5 illustrates future recycling opportunities for furthering waste reduction and recycling in west campus buildings. Collecting and composting organic materials represents a significant opportunity for recovering new materials. There are a total of 143 tons of organic materials currently disposed by west campus buildings (about 39% of west campus building waste). Between 25% to 50% of this organic material could be captured for recovery. However, to realize these future recycling opportunities, new programs must be developed.

Figure 15-5. Compostable and Recoverable Construction & Demolition Portions, West Campus Building Waste[16]

(July 1, 2002 – June 30, 2003)



- **Compostable Portion** – These materials are potentially compostable. For west campus building waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program. For west campus building waste this is predominantly wooden crates and boxes, clean wood, concrete, and brick.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For west campus building waste this is predominantly paper, other ferrous metal, and plastic film.

[16] Material categories were categorized as *compostable* and r*ecoverable C&D* according to their best and highest use. For example, lumber was categorized as a *C&D recoverable* material because it has a higher associated market value when recycled through C&D recovery programs than when it is composted. Please see Appendix A for more information on material categories classified as *recyclable*, *compostable,* or *recoverable C&D*.

16. Outdoor Litter Receptacles: Smart Can Disposed Waste

This chapter examines the waste disposed in smart can outdoor litter receptacles (with recycling option). The chapter is organized into three sections:

1. a definition of smart can disposed waste;
2. composition of smart can disposed waste; and
3. an assessment of recycling accomplishments and future opportunities.

16.1. Definition of Smart Can Disposed Waste

Smart can disposed waste comes from approximately 300 small public-use bins located outside of buildings throughout campus. Smart cans have two compartments – one for garbage and one for beverage container recycling. Only waste from the garbage compartment was included in this study. A total of 199 tons of waste were disposed in smart cans during the 2002-2003 fiscal year. After being collected, this waste is taken to local transfer stations and then sent to regional landfills for disposal.

Photo 16-1 is a smart can located at the University's main campus.

Photo 16-1. Outdoor Litter Receptacle: Smart Can (with recycling option)

16.2. Composition of Smart Can Disposed Waste

The makeup of smart can waste is presented in two ways. First, a summary of waste composition is presented in a pie chart. Then, the 10 most predominant materials of smart can waste appear in a bar graph.

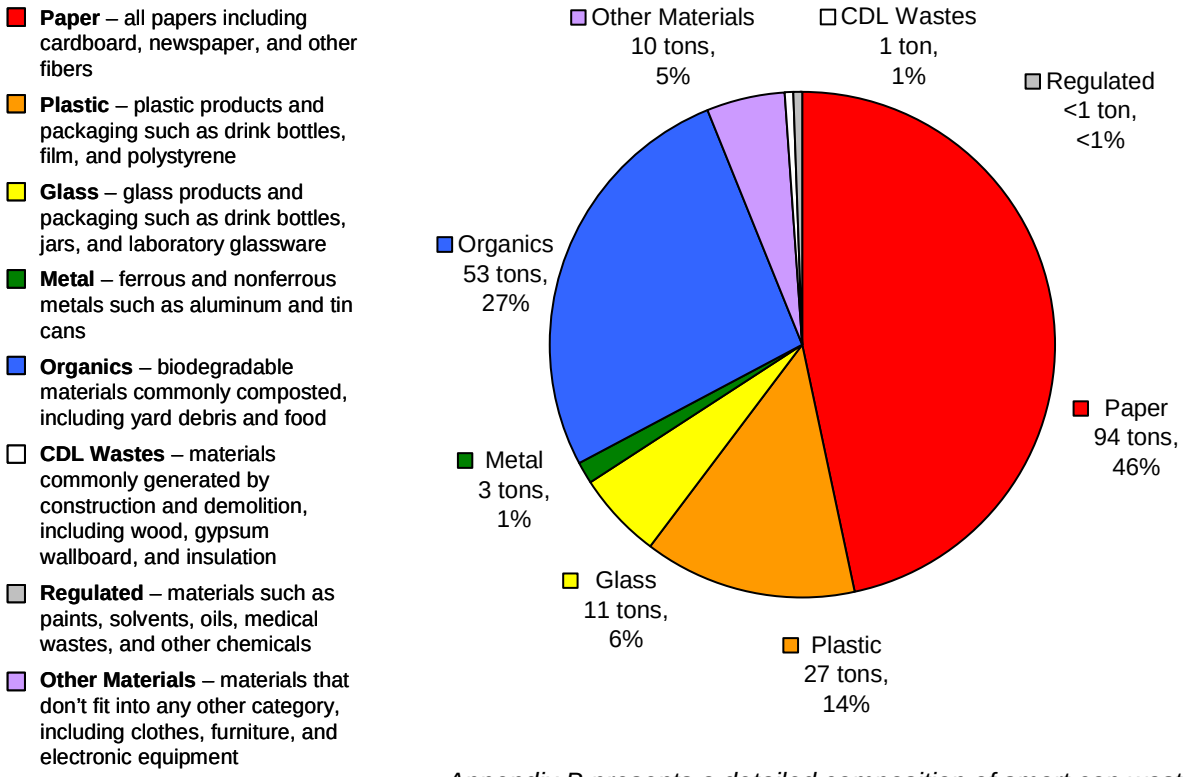
Composition by Material Class

Figure 16-1 depicts the composition of the smart can waste by material class. There are eight material classes, which include: *paper, plastic, glass, metal, organics, other materials, CDL wastes*, and *regulated materials*. Each of these material classes is composed of several material categories (e.g., the paper material class includes cardboard, newspaper, office paper, and other paper categories). Please see Appendix A for a complete listing of material class and category definitions.

Of the eight material classes, *paper*, *organics,* and *plastic* are the three largest by weight, accounting for approximately 46%, 27%, and 14% of smart can waste, respectively. Of the 199 tons disposed, *paper* comprised 94 tons, *organics* comprised 53 tons, and *plastic* comprised 27 tons.

Figure 16-1. Composition by Material Class, Smart Can Waste (n = 40)

(July 1, 2002 – June 30, 2003)



Appendix B presents a detailed composition of smart can waste.

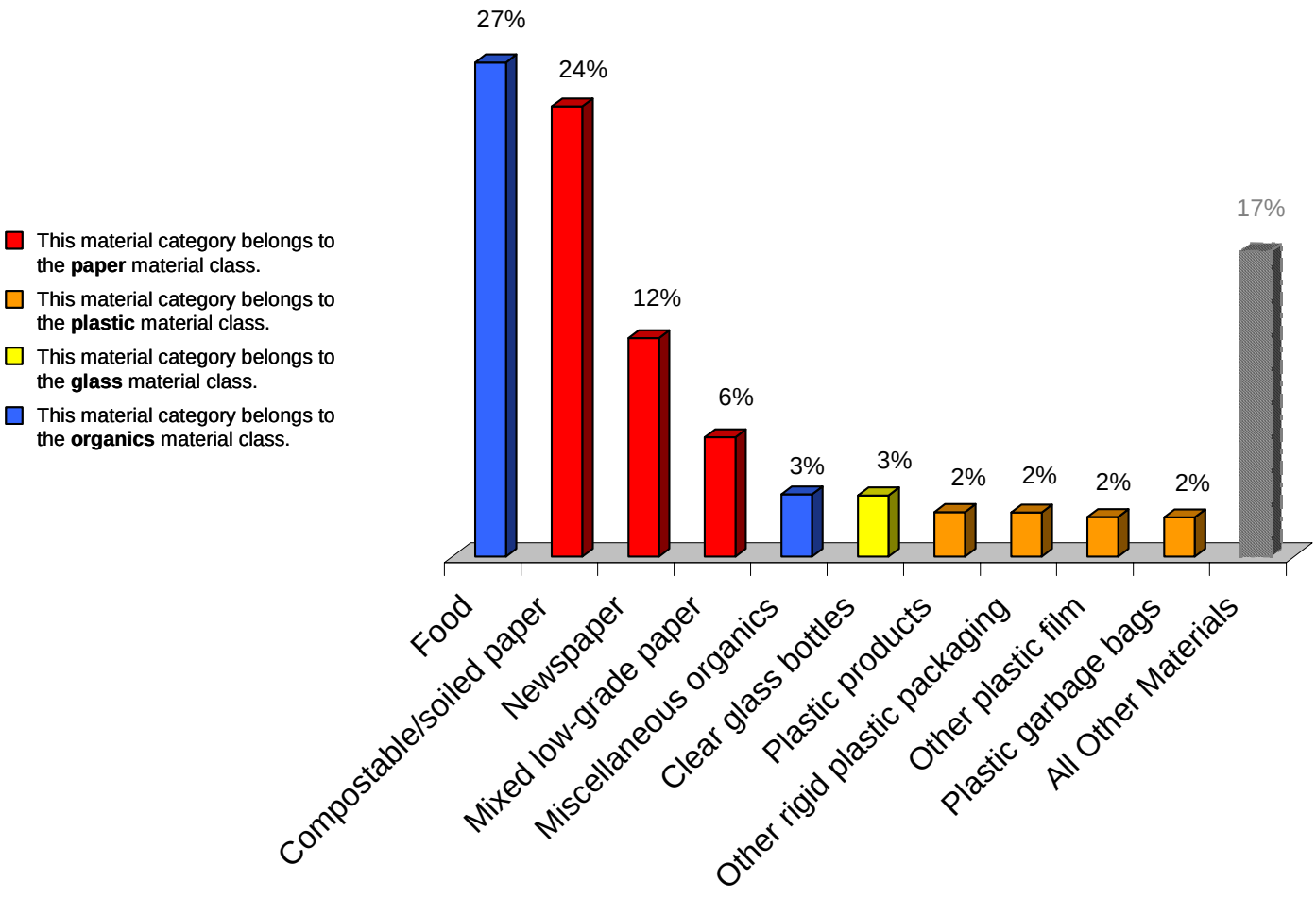
Top 10 Material Categories

For this study, each waste sample was sorted into 91 material categories. Figure 16-2 lists the 10 most predominant categories by weight. The remaining 81 categories are grouped into the *all other materials* column. The three single largest material categories of smart can waste are *food* (27%), *compostable/soiled paper* (24%), and *newspaper* (12%). Appendix A provides definitions for all 91 categories.

The 10 largest material categories of smart can waste account for about 83% of the total, by weight.

Figure 16-2. Top 10 Material Categories, Smart Can Waste (n = 40)

(July 1, 2002 – June 30, 2003)



16.3. Progress and Opportunities

Smart can waste reduction and recycling progress as well as near and long-term opportunities are considered here.

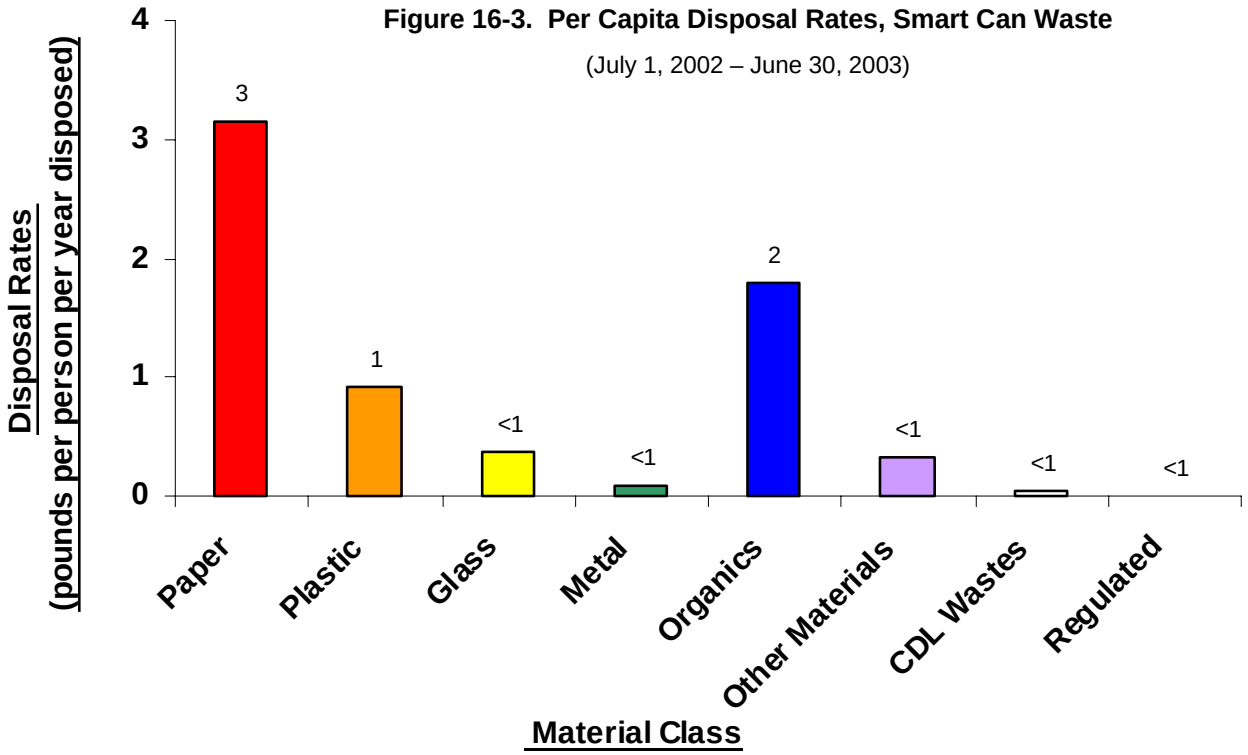
Per capita disposal of smart can waste was 7 pounds per person per year in 2003.

15 Years of Progress

A common metric for measuring waste disposal and recycling is the amount of waste disposed per capita. Figure 16-3 presents 2003 per capita disposal rates by material class. Per capita refers to quarterly faculty, staff, and student enrollment, which totaled to 59,516 in 2003. There is no comparable data available from the 1989 study to compare per capita disposal for smart cans.

Figure 16-3. Per Capita Disposal Rates, Smart Can Waste

(July 1, 2002 – June 30, 2003)

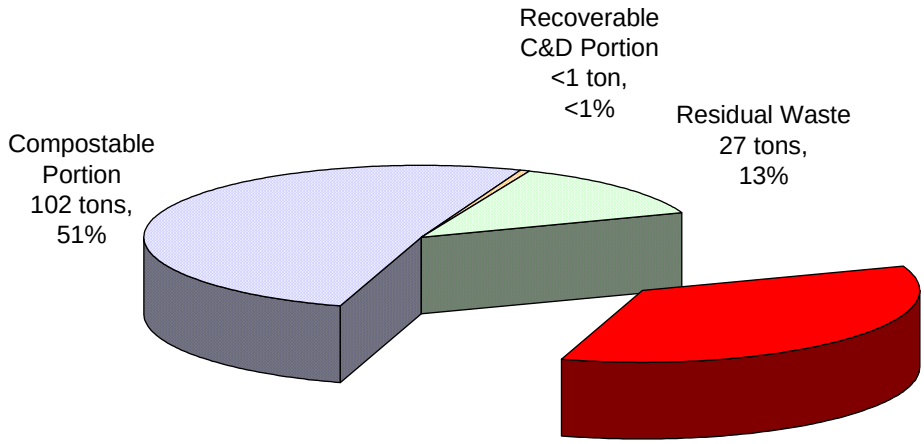


Existing Recycling Opportunities

In smart cans, recycling opportunities can be realized through more effective use of existing programs. As Figure 16-4 shows, 35% of all disposed waste, or 70 tons of material, are available for recovery through existing recycling programs. Between 50% to 60% of the 70 tons (or 35 tons to 42 tons) could be captured for recycling.

Figure 16-4. Recyclable Portion, Smart Can Waste

(July 1, 2002 – June 30, 2003)



Recyclables that can be captured via existing programs 70 tons, 35%

- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For smart can waste this is predominantly paper, cans and bottles, and plastic film.
- **Compostable Portion** – These materials are potentially compostable. For smart can waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.

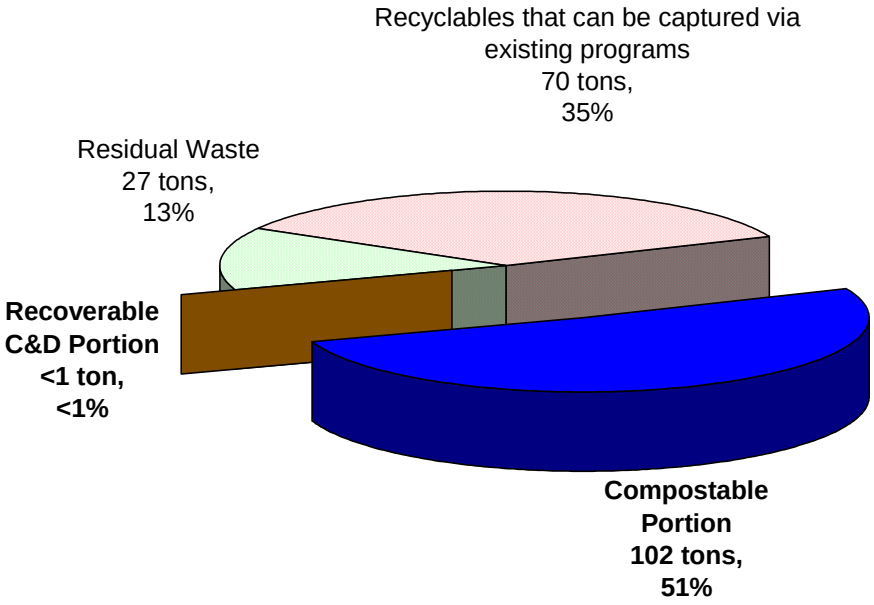
Outdoor Litter Receptacles: Smart Can Disposed Waste

Future Recycling Opportunities

Figure 16-5 illustrates future recycling opportunities for furthering waste reduction and recycling for wastes disposed in smart cans. Collecting and composting organic materials represents an opportunity for recovering new materials from smart cans. There are a total of 102 tons of organic materials currently disposed in smart cans (about 51% of outdoor litter receptacles: smart cans waste). Between 25% to 50% of this organic material could be captured for recovery, provided that an adequate collection system is initiated. However, to realize these future recycling opportunities, new programs must be developed.

Figure 16-5. Compostable and Recoverable Construction & Demolition Portions, Smart Can Waste[17]

(July 1, 2002 – June 30, 2003)



- **Compostable Portion** – These materials are potentially compostable. For smart can waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For smart can waste this is predominantly paper, cans and bottles, and plastic film.

[17] Material categories were categorized as *compostable* and r*ecoverable C&D* according to their best and highest use. For example, lumber was categorized as a *C&D recoverable* material because it has a higher associated market value when recycled through C&D recovery programs than when it is composted. Please see Appendix A for more information on material categories classified as *recyclable*, *compostable,* or *recoverable C&D*.

17. Outdoor Litter Receptacles: Cement Garbage Can Disposed Waste

This chapter examines the waste disposed in outdoor cement garbage cans (without recycling option). The chapter is organized into three sections:

1. a definition of cement garbage can disposed waste;
2. composition of cement garbage can disposed waste; and
3. an assessment of recycling accomplishments and future opportunities.

17.1. Definition of Cement Garbage Can Disposed Waste

Cement garbage can disposed waste comes from approximately 30 small public-use bins located outside of buildings throughout campus. Unlike smart cans, cement garbage cans have only one compartment for garbage. A total of 24 tons of waste were disposed in cement garbage cans during the 2002-2003 fiscal year. After being collected, this waste is taken to local transfer stations and then sent to regional landfills for disposal.

Photo 17-1 is a cement garbage can located at the University's main campus.

Photo 17-1. Outdoor Litter Receptacle: Cement Garbage Can (without recycling option)

17.2. Composition of Cement Garbage Can Disposed Waste

The makeup of cement garbage can waste is presented in two ways. First, a summary of waste composition is presented in a pie chart. Then, the 10 most predominant materials of cement garbage can waste appear in a bar graph.

Composition by Material Class

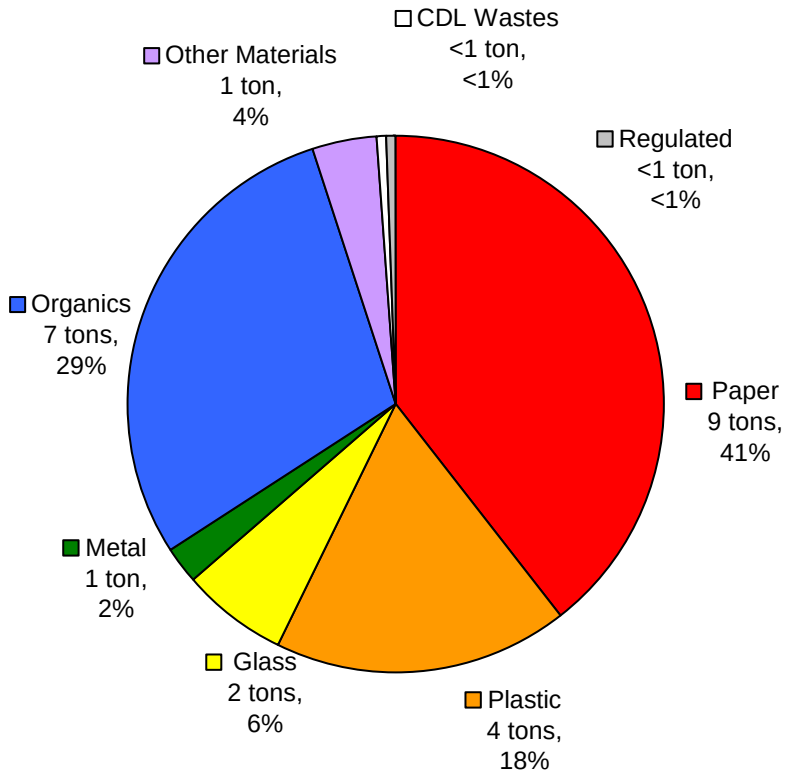
Figure 17-1 depicts the composition of the cement garbage can waste by material class. There are eight material classes, which include: *paper, plastic, glass, metal, organics, other materials, CDL wastes*, and *regulated materials*. Each of these material classes is composed of several material categories (e.g., the paper material class includes cardboard, newspaper, office paper, and other paper categories). Please see Appendix A for a complete listing of material class and category definitions.

Of the eight material classes, *paper*, *organics,* and *plastic* are the three largest by weight, accounting for approximately 41%, 29%, and 18% of cement garbage can waste, respectively. Of the 24 tons disposed, *paper* comprised 9 tons, *organics* comprised 7 tons, and *plastic* comprised 4 tons.

Figure 17-1. Composition by Material Class, Cement Garbage Can Waste (n = 40)

(July 1, 2002 – June 30, 2003)

- **Paper** – all papers including cardboard, newspaper, and other fibers
- **Plastic** – plastic products and packaging such as drink bottles, film, and polystyrene
- **Glass** – glass products and packaging such as drink bottles, jars, and laboratory glassware
- **Metal** – ferrous and nonferrous metals such as aluminum and tin cans
- **Organics** – biodegradable materials commonly composted, including yard debris and food
- **CDL Wastes** – materials commonly generated by construction and demolition, including wood, gypsum wallboard, and insulation
- **Regulated** – materials such as paints, solvents, oils, medical wastes, and other chemicals
- **Other Materials** – materials that don't fit into any other category, including clothes, furniture, and electronic equipment



Appendix B presents a detailed composition of cement garbage can waste.

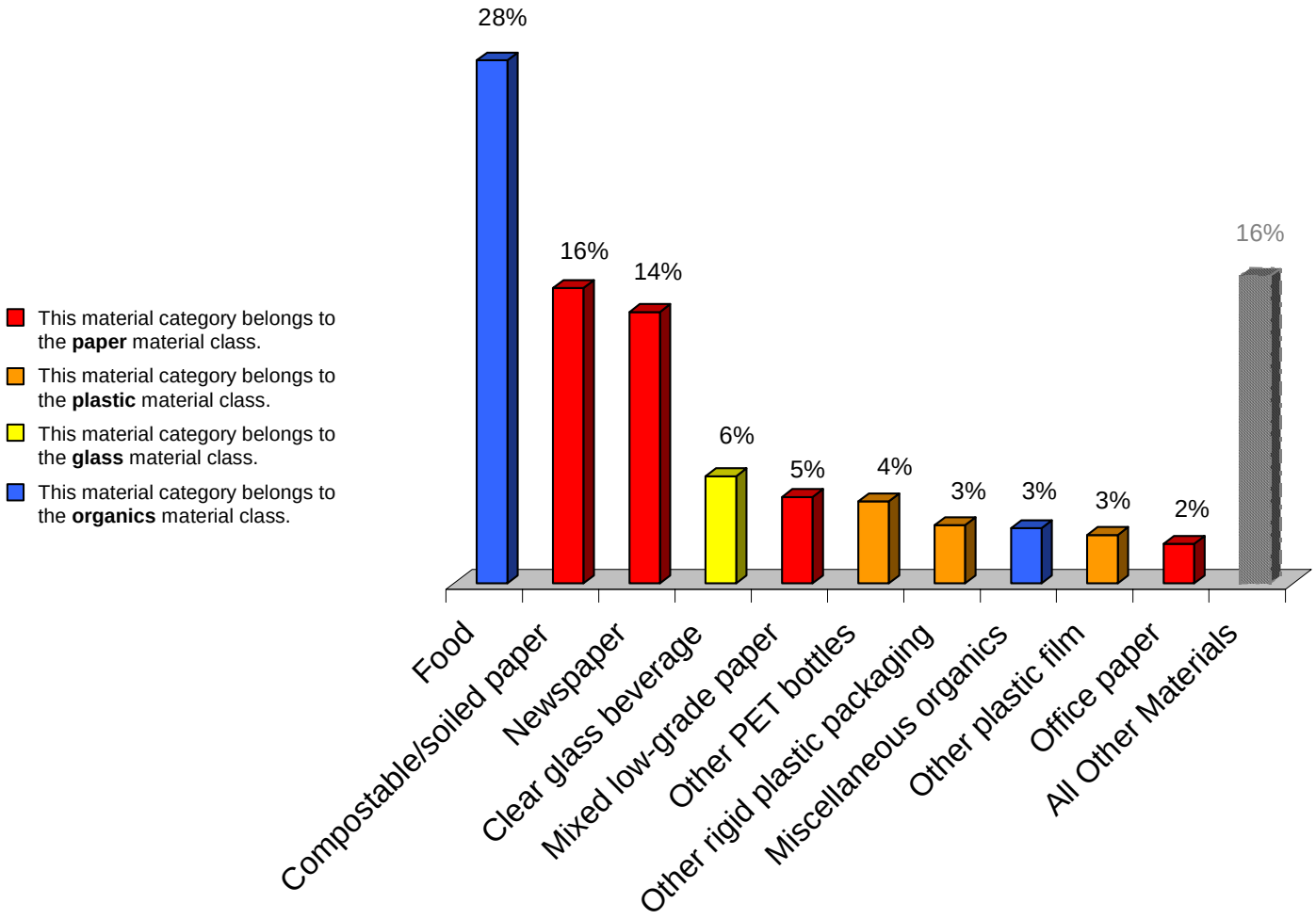
Top 10 Material Categories

For this study, each waste sample was sorted into 91 material categories. Figure 17-2 lists the 10 most predominant categories by weight. The remaining 81 are grouped into the *all other materials* column. The three single largest material categories of cement garbage can waste are *food* (28%), *compostable/soiled paper* (16%), and *newspaper* (14%). Appendix A provides definitions for all 91 categories.

The 10 largest material categories of cement garbage can waste account for about 84% of the total, by weight.

Figure 17-2. Top 10 Material Categories, Cement Garbage Can Waste (n = 40)

(July 1, 2002 – June 30, 2003)



Outdoor Litter Receptacles: Cement Garbage Can Disposed Waste

17.3. Progress and Opportunities

Cement garbage can waste reduction and recycling progress as well as near and long-term opportunities are considered here.

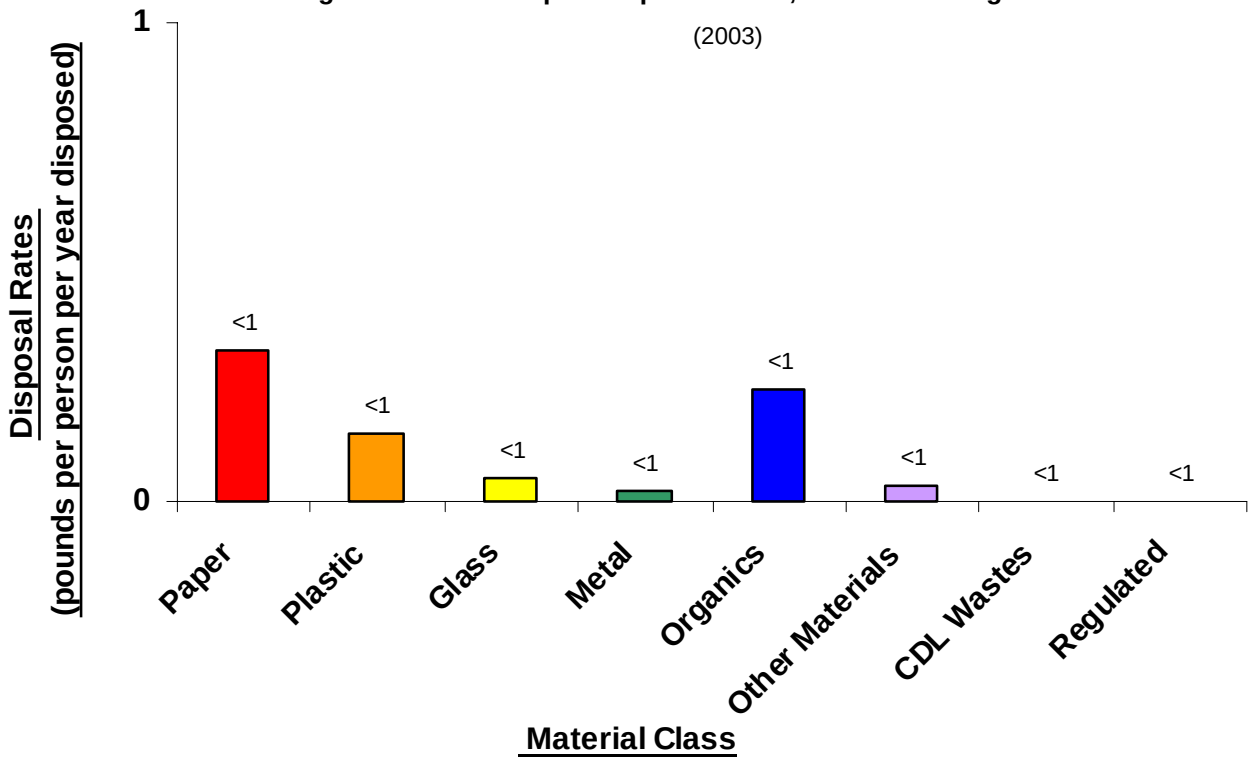
15 Years of Progress

A common metric for measuring waste disposal and recycling is the amount of waste disposed per capita. Figure 17-3 presents 2003 per capita disposal rates by material class. Per capita refers to quarterly faculty, staff, and student enrollment, which totaled to 59,516 in 2003. There is no comparable data available from the 1989 study to compare per capita disposal for cement garbage cans. Per capita disposal rates for cement garbage cans are much lower than those for smart cans because there were 30 cement garbage cans compared with 300 smart cans on campus during this study.

Per capita disposal of cement garbage can waste was less than 1 pound per person in 2003.

Figure 17-3. Per Capita Disposal Rates, Cement Garbage Can Waste

(2003)

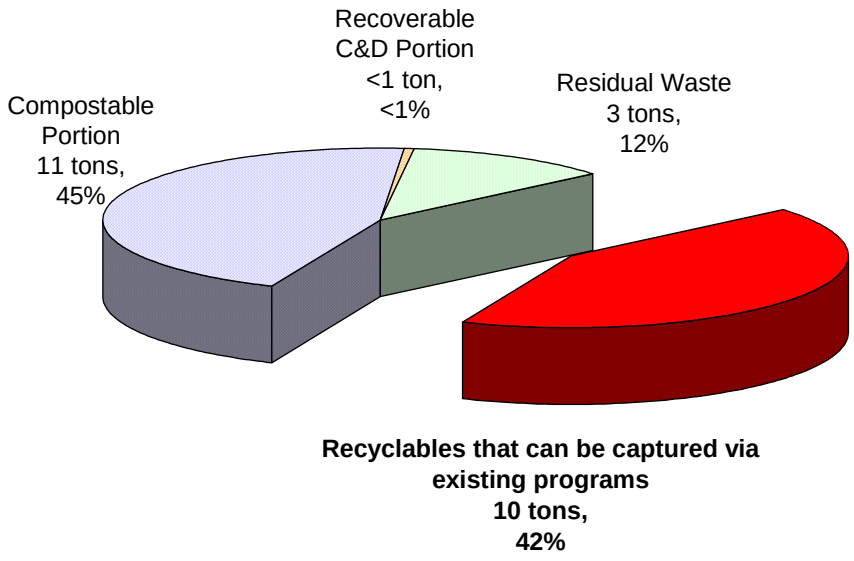


Existing Recycling Opportunities

In cement garbage cans, recycling opportunities can be realized through more effective use of existing programs. As Figure 17-4 shows, 42% of all disposed waste, or 10 tons of material, are available for recovery through existing recycling programs. Between, 50% to 60% of the 10 tons (or 5 tons to 6 tons) could be captured for recycling.

Figure 17-4. Recyclable Portion, Cement Garbage Can Waste

(July 1, 2002 – June 30, 2003)



- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For cement garbage can waste this is predominantly paper, cans and bottles, and plastic film.
- **Compostable Portion** – These materials are potentially compostable. For cement garbage can waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.

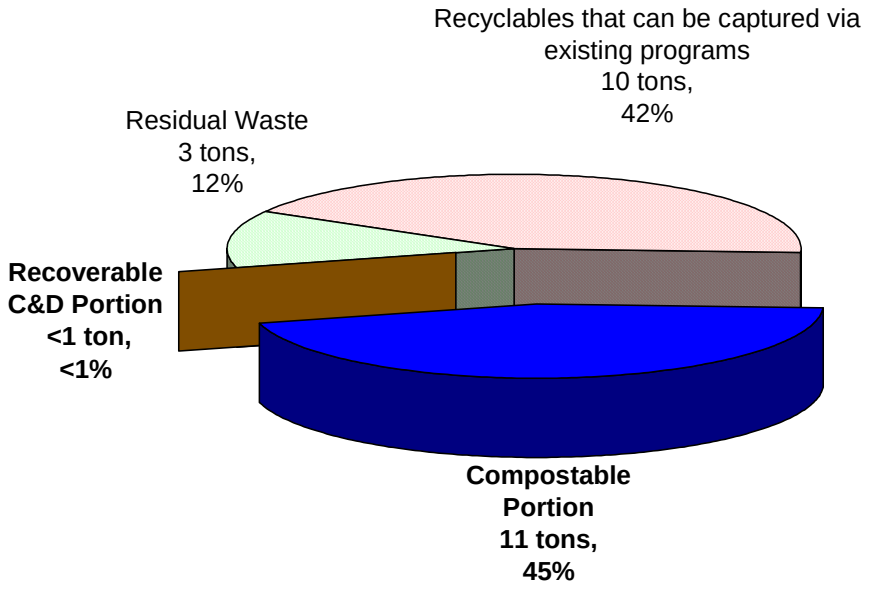
Outdoor Litter Receptacles: Cement Garbage Can Disposed Waste

Future Recycling Opportunities

Figure 17-5 illustrates the future recycling opportunities for furthering waste reduction and recycling for wastes disposed in cement garbage cans. Collecting and composting organic materials represents an opportunity for recovering new materials. There are a total of 11 tons of organic materials currently disposed in cement garbage cans (about 45% of cement garbage can waste). Between 25% to 50% of this organic material could be captured for recovery, provided that an adequate collection system is initiated. However, to realize these future recycling opportunities new programs must be developed.

Figure 17-5. Compostable and Recoverable Construction & Demolition Portions, Cement Garbage Can Waste[18]

(July 1, 2002 – June 30, 2003)



- **Compostable Portion** – These materials are potentially compostable. For cement garbage can waste this is predominantly food and compostable paper such as napkins.
- **Recoverable C&D Portion** – These materials are commonly generated by construction activities and potentially recoverable through a C&D recycling program.
- **Residual Waste** – These materials are not recoverable through existing recycling markets.
- **Recyclable Through Existing Programs** – These materials can be recycled through the University's existing programs. For cement garbage can waste this is predominantly paper, cans and bottles, and plastic film.

[18] Material categories were categorized as *compostable* and r*ecoverable C&D* according to their best and highest use. For example, lumber was categorized as a *C&D recoverable* material because it has a higher associated market value when recycled through C&D recovery programs than when it is composted. Please see Appendix A for more information on material categories classified as *recyclable*, *compostable,* or *recoverable C&D*.