MARCH 1, 1995

CITY OF NEW YORK
RUDOLPH W. GIULIANI
MAYOR

DEPARTMENT OF SANITATION
JOHN J. DOHERTY
COMMISSIONER

MARTHA K. HIRST
DEPUTY COMMISSIONER, SOLID WASTE

COMPREHENSIVE SOLID WASTE MANAGEMENT PLAN

COMPLIANCE REPORT

FOR THE PERIOD
NOVEMBER 1, 1992 THROUGH DECEMBER 31, 1994

Pursuant to the requirements of Environmental Conservation Law, Section 27-0107, the Department of Sanitation submitted the City of New York, Comprehensive Solid Waste Management Plan, as approved by the City Council, to the New York State Department of Environmental Conservation, which approved the Plan on October 28, 1992. This Compliance Report is submitted by the Department of Sanitation to the New York State Department of Environmental Conservation pursuant to the requirements of 6NYCRR Part 360-15.12 as a biennial report of the City's progress in implementing the Plan.

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GLOSSARY

Acronyms

CAAA	Clean Air Act Amendments of 1990
C&D	Construction and Demolition debris defined by State regulations
CEQR	City Environmental Quality Review
City	New York City
DCA	New York City Department of Consumer Affairs
DED	New York City Department of Economic Development
DEP	New York City Department of Environmental Protection
Department	New York City Department of Sanitation
DGS	New York City Department of General Services
DMA	Direct Marketing Association
DOH	New York City Department of Health
DOT	New York State Department of Transportation
EDC	New York City Economic Development Corporation
FY	Fiscal Year (July 1 through June 30)
GML 120aa	General Municipal Law 120-aa (2)(a)
HDPE	High Density Polyethylene
HHC	New York City Health and Hospitals Corporation
LAER	Lowest Achievable Emission Rate
LL19	Local Law 19 of 1989
MRF	Material Recovery Facility
MSW	Municipal Solid Waste
MTS	Marine Transfer Station
NCA	Neighborhood Cleaners Association
NSPS	New Source Performance Standards
6NYCRR Part 360	New York State Solid Waste Management Facilities Title 6 of the Official Compilation of Codes, Rules and Regulations, effective October 9, 1993.
NYSCACA	New York State Clean Air Compliance Act
NYSDEC	New York State Department of Environmental Conservation
NYSERDA	New York State Energy Research and Development Authority
NYSFMA	New York State Food Merchants Association
PET	Polyethylene Terephthalate
Plan	Comprehensive Solid Waste Management Plan for New York City: October 28, 1992
PSD	Prevention of Significant Deterioration
PWP	The Partnership for Waste Prevention
QBUF	Quantity Based User Fees
RFP	Request for Proposals
RMW	Regulated Medical Waste

SEQRA	State Environmental Quality Review Act
SPDES	Source Pollutant Discharge Elimination System
State	New York State
ULURP	Uniform Land Use Review Procedure
USEPA	United States Environmental Protection Agency

Definitions

Biosolids	Solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works, including scum or solids removed in primary, secondary, or advanced wastewater treatment processes and any material derived therefrom, but does not include grit and screenings or ash generated by the firing of biosolids in an incinerator.
Bulk Waste	Oversized items, including white goods, furniture, and construction and demolition debris.
Collection Districts	Districts identified by the Department for collection of recyclables. There are 59 in New York City.
Commercial MSW	Municipal solid waste generated by commercial and business establishments such as stores, offices, restaurants, warehouses, and nonmanufacturing activities in industrial facilities.
Construction & Demolition Debris (C&D)	Uncontaminated solid waste resulting from the construction, remodeling, repair and demolition of utilities, structures, and roads; and uncontaminated solid waste resulting from land clearing.
Diversion Rate	The percentage, by weight, of materials diverted from the waste stream for recycling.
Dredge Spoils	Solid wastes generated from dredging of the bottom of water bodies.
Institutional MSW	Municipal solid waste generated by institutions such as schools, governments offices, public areas (i.e., parks, train stations, airports, and litter from roadsides) and non-profit establishments.

Municipal Solid Waste	Non-hazardous solid wastes generated from households, commercial and business establishments, institutions, and nonmanufacturing activities in industry; it excludes industrial process waste, agricultural wastes, mining wastes, offal, sludges, regulated medical waste, and ashes, except ashes derived from the combustion of municipal solid waste.
Residential MSW	Municipal solid waste generated by households.
Sludge	Any solid, semi-solid or liquid waste generated from a wastewater treatment plant, water supply treatment plant or air pollution control facility but does not include the treated effluent from a wastewater treatment plant.
Solid Waste	Any garbage, refuse, sludge, and other discarded materials, including solid, liquid, semi-liquid, or contained gaseous material, resulting from industrial, commercial, mining and agricultural operations, and from community activities, but does not include, domestic sewage; irrigation return flows; industrial wastewater discharges; radioactive materials; and source separated recyclables that have been traditionally incorporated as a secondary material in the manufacturing process (for a more complete definition refer to the 6NYCRR Part 360 Solid Waste Management Facility regulations, Section 1.2(a), October 9, 1993).
Textiles	Any woven or knit article from a manufactured fabric including but not limited to cotton, wool, silk, or other natural fabric; nylon, polyester, or other synthetic fabric; or any blend of such fabrics.
White Goods	Old appliances such as refrigerators, air conditioners, ovens, and televisions

1.0 INTRODUCTION

The Comprehensive Solid Waste Management Plan (Plan) prepared by the New York City (City) Department of Sanitation (the Department) and adopted by the City Council was approved by the New York State Department of Environmental Conservation (NYSDEC) on October 28, 1992. The implementation process, including a milestone schedule, is provided in Chapter 19 of the Plan. With a few exceptions, these milestones prescribe activities for fiscal years (FY) 1993 through 1997, for example, the first five years of the planning period. Some activities beyond FY 1997 are determined based upon the results of studies and pilot programs called for in the Plan, the costs and effectiveness of programs implemented during the initial five-year planning period, advances in treatment and processing technologies, and external factors such as the availability of out-of-City disposal capacity. Other activities are ongoing, such as the use of the Fresh Kills landfill, and will continue throughout the 10-year planning period.

Pursuant to 6NYCRR Part 360-15.12, each planning unit in the state must submit a biennial Compliance Report, beginning on March 1, 1995. In accordance with the provisions of 6NYCRR Part 360-15.12, this Compliance Report will discuss:

- Waste generation, recycling and disposal over the reporting period;
- Current status of the Plan milestones, including any obstacles and/or deviations from the Plan;
- Planning unit resources; and
- Revisions in the implementation schedule.

1.1 Compliance Review Approach

For this Compliance Report, the milestones delineated in the Plan are grouped into programs. A program is a group of interrelated activities designed to meet a common objective. For example, all milestones related to residential curbside recycling, such as collection, processing, marketing, and outreach activities, are grouped together to define the Residential Recycling

Program. In some cases, a program needs to be subdivided into elements. Using the example above, the implementation of curbside collection is an element of the Residential Recycling Program. This organization of the Plan's milestones will facilitate a coherent discussion of the Plan's goals and the progress made by the City toward the implementation of these goals.

The municipal solid waste (MSW) programs are grouped in accordance with the waste management hierarchy of waste reduction and reuse; recycling, including composting; waste-to-energy and incineration; and landfilling. Programs for other wastes are grouped by waste type and include biosolids, medical waste, and dredge spoils. A list of the programs defined for each solid waste management option is provided in Table 1-1.

Although the definitions of programs and program elements relate to the Plan, the Plan was not written as a discussion of discrete programs. Therefore, the descriptions in this Compliance Report may vary from those given in the Plan. Nonetheless, this Compliance Report addresses the status of all the milestones in accordance with the requirements of 6NYCRR Part 360-15.12. The status of milestones scheduled after FY 1995 which have not begun and are anticipated to remain on schedule are not discussed in the status section of this Compliance Report. Such milestones are included in the new implementation schedule presented in Section 11.

The discussion of milestones will have the following narrative elements and logical structure: The milestones, as stated in the Plan, will be followed by statements of status and a description of the facts and circumstances which give rise to three possible outcomes: (1) a statement that the milestone was accomplished, possibly with some minor deviations, or (2) a statement that due to changing circumstances, the milestone is being eliminated and such a change reflects a deviation from the Plan, or (3) a statement that due to certain obstacles, the milestone was not accomplished but is either expected to be accomplished with some deviation, or was not accomplished and will require a modification to the Plan. Unless otherwise specifically stated in each milestone subsection of this report, there are no foreseeable impacts of milestone deviations on other aspects of the Plan. For example, implementation of a voluntary program to reduce junk mail rather than pursuing legislation is a deviation to the Plan that has no foreseeable impact on other aspects of the Plan.

TABLE 1-1
SOLID WASTE MANAGEMENT
OPTIONS AND PROGRAMS

WASTE REDUCTION AND REUSE
Rules, Regulations, and Legislative Initiatives Quantity Based User Fees Reuse Center Development Backyard Composting and Yard Waste Reduction Miscellaneous Waste Reduction and Reuse Programs
RECYCLING
Residential Commercial Institutional Household Special Waste Composting Market Development
WASTE-TO-ENERGY AND INCINERATION
Modification or Closure of Existing Facilities Construction and Operation of New Waste-to-Energy Facilities Ash Management
LANDFILL
Fresh Kills Landfill Out-of-City Landfill Capacity
BIOSOLIDS
MEDICAL WASTE
City-Wide Regulatory and Policy Initiatives HHC Waste Reduction, Reuse, and Recycling Measures
DREDGE SPOILS

This report is organized as follows: the quantities of waste managed by the City through recycling, combustion, and landfill disposal are presented in Section 2. The current status of the Plan milestones for Waste Reduction and Reuse, Recycling, Waste-to-Energy and Incineration, Landfill, Biosolids Management, Medical Waste and Dredge Spoils waste management options are discussed in Sections 3 through 9, respectively. A discussion of the City's planning resources is provided in Section 10 and a new implementation schedule is provided in Section 11. Appendix A contains a compilation of the Milestone Status Tables in each section. Appendix B provides a cross tabulation of the milestones, as presented in Chapter 19 of the Plan, to the discussions in this report. Appendix C provides examples of various outreach materials prepared by the City. Appendix D includes NYSDEC solid waste generation/management and recyclables inventory forms, and provides definitions of disposal and diversion categories and additional supporting data for the analysis presented in Section 2.

1.2 Highlights of Accomplishments

Since the adoption of the Plan in October of 1992, the City has made significant progress in implementing the integrated solid waste management goals detailed in the Plan. Major accomplishments have been made in the City's waste management practices, spanning waste reduction and reuse; recycling, including composting; waste-to-energy and incineration; and landfill management. Highlights of the major accomplishments achieved by the City since the adoption of the Plan are provided below.

1.2.1 Waste Reduction and Reuse

The City has made progress towards reducing the amount of waste generated through City initiatives for waste reduction and reuse. The City has accomplished the following major milestones:

- Issued a Mayoral Directive mandating office waste prevention;
- Developed a "Guide to Reuse" for City residents;

- Developed home composting demonstration sites in each borough and implemented a voluntary "leave it on the lawn" campaign to reduce the quantity of grass clippings in the waste stream;

- Expanded the City's Partnership for Waste Prevention Program to associations that represent more than 6,000 businesses;

- Implemented a Mail Preference Service Program that prevented an estimated 200 tons per year of waste junk mail; and

- Supported waste reduction and reuse legislation.

1.2.2 Recycling

The City has made substantial progress in residential, commercial and institutional recycling and composting. Today, recycling is a key component of the City's integrated solid waste management system. The City's key accomplishments in recycling include:

- Instituted City-wide residential, institutional and commercial recycling programs which provide more than seven million New Yorkers with opportunities to recycle at home, at work, and in public places;

- Diverted approximately 930,000 tons of the City's waste from combustion facilities and landfills in FY 1994;

- Implemented City-wide recycling of metal, glass and plastic containers; foil; newspaper; magazines and catalogues; corrugated cardboard; and telephone books for residential and institutional recycling;

- More than doubled residential and institutional curbside and containerized recycling from approximately 191,000 tons per year in 1992 to approximately 462,000 tons per year in 1994;

- Achieved preeminence among recycling programs in cities with populations over one million -- it is the only city serving all households, including those in multiple dwellings;

- Enacted commercial source separation rules targeting slightly over 50% of the commercial waste stream for recycling;

- Expanded outreach and public information with a $7.5 million campaign in all boroughs;

- Contracted for sufficient recyclable material processing capacity through the year 2000;

- Conducted a household special waste program in each borough, with more than 2,800 participants;

- Composted 3,400 tons of yard waste and leaves and 1,300 tons of Christmas trees; and

- Initiated the design of the Rikers Island food waste composting facility.

1.2.3 Waste-to-Energy, Incineration, and Landfills

Since the adoption of the Plan, the City has permanently closed two incinerators and made significant improvements in the operation of the Fresh Kills landfill. Specifically, the City has accomplished the following major milestones:

- Closed the Betts Avenue and Greenpoint incinerators;

- Completed the landfill gas migration system at Fresh Kills;

- Constructed a 200,000 gallon-per-day leachate collection and treatment plant and stopped leachate recirculation;

- Constructed a stormwater collection system for developed sections of the landfill;

- Closed two sections of the Fresh Kill landfill with final cover construction and landscaping currently underway;

- Submitted permit applications for State Pollutant Discharge Elimination System (SPDES), tidal wetlands and related permits to the appropriate regulatory agencies; and

- Submitted a draft operating permit application for the Fresh Kills landfill and initiated the environmental review process, which is ongoing.

2.0 WASTE AND RECYCLABLES ANALYSIS

This section provides the Department's inventory of waste and recyclables generation, disposal and treatment for each year covered by the Compliance Report for FY 1992, FY 1993, FY 1994, and FY 1995 through December of 1994. It is a comprehensive and current analysis of trends in the City's waste stream, based on data available to the Department.

For purposes of this Compliance Report, the term "diverted" is used in place of "recycled" and means: materials that are redirected from disposal for recycling or sale to markets. This term is used for consistency with the City's past reporting of its program activities. In addition, the sum of waste disposed and incinerated plus waste diverted for FY 1992 through FY 1995, is used in lieu of the term "generation" since the commercially generated portion of the City's waste is handled by private haulers and processors. The Department recognizes that a method of tracking commercial waste disposal and diversion is necessary to gain a complete understanding of the City's overall recycling achievements and waste generation, and has instituted a comprehensive reporting procedure, in place since July of 1994.

2.1 Disposal and Incineration

The Department is currently responsible for collecting all of the MSW and materials diverted for recycling from all residents in the City's five boroughs. The Department also collects MSW and materials diverted for recycling from some non-profit institutions, such as other government agencies, schools, and libraries. All MSW collected by the Department is currently taken to the Fresh Kills landfill in Staten Island for disposal, and prior to FY 1994, a portion of the MSW was incinerated within the City. All residential material diverted for recycling is taken to nine primary vendors with which the Department has recyclables processing contracts. The Department's reported waste also includes, among other things, street sweeping from cleaning waste in the City streets, and waste removed from cleaning vacant lots.

In addition to Department-collected MSW, waste from institutions, city, state and federal government agencies, and a small quantity of privately collected commercial waste is accepted by the Department for disposal at the Fresh Kills landfill. In FY 1994, the amount of waste disposed and incinerated from institutions and government agencies comprises approximately 7.3%, while the quantity of material disposed by private haulers comprises less than 1% of the total waste disposed at the Fresh Kills landfill or incinerated. Since the Fresh Kills landfill tip fee was raised in 1988 from $18.00 per cubic yard to $40.00 per cubic yard, over 2,000,000 tons less of commercial waste was disposed in the Fresh Kills landfill in FY 1994.

The quantity of material disposed at the Fresh Kills landfill and incinerated within the City each year since FY 1992 is presented in Table 2-1. Almost 4,000,000 tons of waste was disposed in FY 1994, which is a decrease of more than 9% since FY 1992. One reason for this decrease is that incineration in the City ceased in FY 1994. In FY 1994, the Department, through its residential MSW collection program, disposed of or incinerated almost 250,000 tons of waste less than in FY 1992.

2.2 Diversion

The Department collects materials diverted for recycling, which are set out at the curbside or in containers through the curbside recycling program, from a total of 59 collection districts (Districts) in the five boroughs. The Department began the residential curbside recycling program in 1986 with the collection of newspapers in one Manhattan District. Curbside collection of metal and glass containers began in 1989 in one Staten Island District and collection of plastics was introduced in 1990 in three Staten Island Districts. Prior to full-scale implementation of the curbside collection program, the Department provided a mobile unit which travelled to areas not yet receiving curbside collection. By September 13, 1993, all 59 Districts in the City received curbside collection of newspapers, magazines, catalogues, corrugated cardboard, telephone books, metal, glass and plastic containers, and aluminum. Today, all of the City's 7.4 million residents can participate in this mandatory program.

TABLE 2-1
TOTAL TONS OF WASTE DISPOSED AND INCINERATED (1)(2)

CATEGORY	FY 1992			FY 1993			FY 1994			FY 1995 (July-Dec)
	Disposed	Incinerated	Total	Disposed	Incinerated	Total	Disposed	Incinerated	Total	Total (3)
RESIDENTIAL DEPARTMENT COLLECTED AND DROP-OFF										
Curbside	2,934,910	255,450	**3,190,360**	2,865,090	245,840	**3,110,930**	2,816,230	78,450	**2,894,680**	**1,465,470**
Containerized	194,400	39,490	**233,890**	283,660	20,910	**304,570**	279,670	3,710	**283,380**	**165,860**
Bulk	185,570	0	**185,570**	186,200	0	**186,200**	125,360	50	**125,410**	**54,180**
Household Waste	11,830	0	**11,830**	10,950	0	**10,950**	9,340	0	**9,340**	**6,410**
Housing Authority	43,070	0	**43,070**	56,100	0	**56,100**	63,070	0	**63,070**	**30,500**
Subtotal	3,369,780	294,940	**3,664,720**	3,402,000	266,750	**3,668,750**	3,293,670	82,210	**3,375,880**	**1,722,420**
NON-RESIDENTIAL DEPARTMENT COLLECTED										
Lot Cleaning	107,600	0	**107,600**	107,480	0	**107,480**	91,490	0	**91,490**	**65,550**
Miscellaneous	10,120	20	**10,140**	9,650	0	**9,650**	6,770	70	**6,840**	**1,680**
Street Dirt	176,800	10	**176,810**	150,930	0	**150,930**	134,740	0	**134,740**	**67,670**
Subtotal	294,520	30	**294,550**	268,060	0	**268,060**	233,000	70	**233,070**	**134,900**
OTHER GOVERNMENT/NON-PROFIT AGENCY COLLECTED										
Institutions	21,390	40	**21,430**	19,360	0	**19,360**	20,940	0	**20,940**	**10,240**
City Agencies	291,800	10,810	**302,610**	287,680	3,240	**290,920**	269,300	360	**269,660**	**121,040**
State Agencies	1,970	270	**2,240**	1,670	0	**1,670**	1,760	0	**1,760**	**750**
Subtotal	315,160	11,120	**326,280**	308,710	3,240	**311,950**	292,000	360	**292,360**	**132,030**
PAID DISPOSED OR INCINERATED										
US Government	2,080	310	**2,390**	2,100	200	**2,300**	410	160	**570**	**170**
DEP Collected	0	0	**0**	67,350	0	**67,350**	59,250	0	**59,250**	**27,950**
PH Collected	119,220	900	**120,120**	65,760	50	**65,810**	35,410	20	**35,430**	**18,310**
Subtotal	121,300	1,210	**122,510**	135,210	250	**135,460**	95,070	180	**95,250**	**46,430**
TOTAL	4,100,760	307,300	**4,408,060**	4,113,980	270,240	**4,384,220**	3,913,740	82,820	**3,996,560**	**2,035,780**

Notes:

(1) Each category is defined in Appendix D. Quantities can be converted to daily averages based on 302 disposal days in a fiscal year.

(2) Source: Loads and Tonnage Report by the Department's Bureau of Waste Disposal. All numbers have been rounded to the nearest 10 tons.

(3) The City ceased incinerating waste in FY 1994. Therefore, the total is waste disposed.

The Department also provides curbside collection of materials diverted for recycling by some non-profit institutions. However, the total amount of Department-collected material does not represent a complete picture of the non-profit institutional material diverted for recycling in the City since non-profit institutions in the City often supplement the Department's program or receive full collection services for materials diverted from recycling through contracts with private haulers.

In addition to the curbside collection program, the Department operates a number of self-help recycling facilities where residents can drop off bulky recyclable materials. The Department also operates a composting facility at the Fresh Kills landfill for processing Department-collected leaf waste, yard waste, some institutional waste from Staten Island, and food waste from the Park Slope Intensive Recycling Zone. The Department is also responsible for vehicles which are abandoned on City streets (derelict vehicles) which are removed either by the Department, or by private haulers under contract with the Department. The derelict vehicles are taken to scrap yards for recovery of valuable materials. Finally, the Department accepts millings from the City Department of Transportation (DOT) at the Fresh Kills landfill for use in landfill roadways. Other diversion activities which occur in the City include the private vendor collection of white paper from City agencies, reuse of asphalt by the DOT during roadway construction jobs, materials exchange programs between donors and City art programs, the beneficial use of excavated material from City construction jobs delivered to the crushing and screening plant at the Fresh Kills landfill for landfill operations, and redemption of bottles at centers located throughout the City.

The tip fee increase at the Fresh Kills landfill to private haulers of commercial waste, together with the enactment of the City's commercial source separation rules, created additional incentives for private sector recycling. Though the Department is currently in the process of obtaining comprehensive data on materials which were diverted for recycling in the private sector, historical information is not available.

The total quantity of municipal material diverted for recycling through municipal programs from FY 1992 through December 1994 is presented in Table 2-2.

TABLE 2-2
TOTAL TONS OF MATERIALS DIVERTED FOR RECYCLING THROUGH MUNICIPAL PROGRAMS IN NEW YORK CITY (1)(2)

DIVERSION CATEGORY			FY 1992	FY 1993	FY 1994	FY 1995 (7) (July-Dec)
DEPARTMENT COLLECTED OR ACCEPTED						
Curbside	paper		115,170	150,690	256,100	131,000
	metal, glass and plastic		48,640	75,650	161,380	81,390
Containerized	paper		21,870	26,320	32,700	17,460
	metal, glass and plastic		5,730	7,840	11,760	6,190
Organics	food		150	290	430	210
	yard and leaf	(3)	2,100	3,130	3,430	2,950
	Christmas trees	(3)	460	660	1,320	0
	self-help yard waste		0	0	550	0
Bulk	self-help (metal,wood,dirt)		0	1,520	5,520	2,110
	lot cleaning (metal, dirt)		25,040	42,150	58,600	30,710
Millings			5,380	60,190	56,250	37,570
Mobile Drop-Off			150	240	0	0
Derelict Vehicles		(4)	115,860	85,110	56,820	16,400
TOTAL			**340,550**	**453,790**	**644,860**	**325,990**
NON-DEPARTMENT COLLECTED						
City Agency			5,190	5,380	5,240	2,250
Asphalt from DOT			79,490	76,730	48,970	10,610
Material for the Arts			90	280	440	200
Crushing and Screenings		(5)	166,320	147,340	142,200	68,290
Bottle Bill		(6)	90,600	90,600	90,600	45,300
TOTAL			**341,690**	**320,330**	**287,450**	**126,650**
TOTAL DIVERTED MATERIALS			**682,240**	**774,120**	**932,310**	**452,640**

Notes:

(1) Each diversion category is described in Appendix D. Quantities can be converted to daily averages based on 302 days in a fiscal year. All numbers have been rounded to the nearest 10 tons.

(2) Source: "Recycling Collection by Material-Annual Total" table dated February 10, 1995 from the Department's Operations, Planning, Evaluation and Control group, unless otherwise noted.

(3) Source: The Department's Landfill Engineering Group records dated December 15, 1994. Christmas tree quantities for FY 1995 are not yet available.

(4) Source: Management Analysis Report for Recycling from the Department's Bureau of Cleaning and Collection. for FY 1992 through December 1994. Quantities have been converted based on an average vehicle weight, as shown in Appendix D.

(5) Source: Crushing and Screening Plant Log Reports for FY 1992 through December 1994 from the Department's Crushing and Screening Plant. Quantities have been converted from volumes based on average material densities, as shown in Appendix D.

(6) Source: Department estimates.

(7) FY 1995, as noted, is July 1994 through December 1994, except for derelict vehicles which are reported for the period July 1994 though November 1994.

In FY 1994, more than 460,000 tons of material were diverted through the Department's curbside collection program, an increase of more than 270,000 tons of material from FY 1992. Other Department recycling programs diverted an additional 470,000 tons of material for recycling in FY 1994. The largest component of these diverted materials is approximately 140,000 tons from the crushing and screening plant at the Fresh Kills landfill. This operation processes excavated material from City construction jobs into dirt and aggregate for use in landfill operations.

2.3 Trends

The quantities of materials disposed and incinerated plus diverted from FY 1992 through December of 1994, and a graphical representation of trends through FY 1994 are presented in Table 2-3.

The amount of waste disposed at the Fresh Kills landfill in FY 1994 decreased by approximately 4.5% since FY 1992, while the amount incinerated decreased by more than 73%. In FY 1994, through the City's curbside collection program, 58.6% more material was diverted than in FY 1992, and overall, the City's municipal diversion rate has increased from 13.7% in FY 1992 to 19.3% in FY 1994.

The decrease in amount of waste incinerated is attributed to the fact that several incinerators in the City closed in FY 1994. The increase in diversion can be attributed to the full-scale implementation of the source separated curbside collection program in September of 1993 and the overall increase in recycling which has occurred, among other things, as a result of Department-sponsored outreach, education, and pilot programs. In addition, the Department has increased emphasis on educating residents, institutions, government agencies, and retail establishments to practice waste prevention and reuse activities and is working closely with other agencies and cities to further expand these programs.

These, and other Department activities which impact the overall management of waste in the City, are discussed further in this Compliance Report.

TABLE 2-3
CITY-WIDE MUNICIPAL DIVERSION RATE

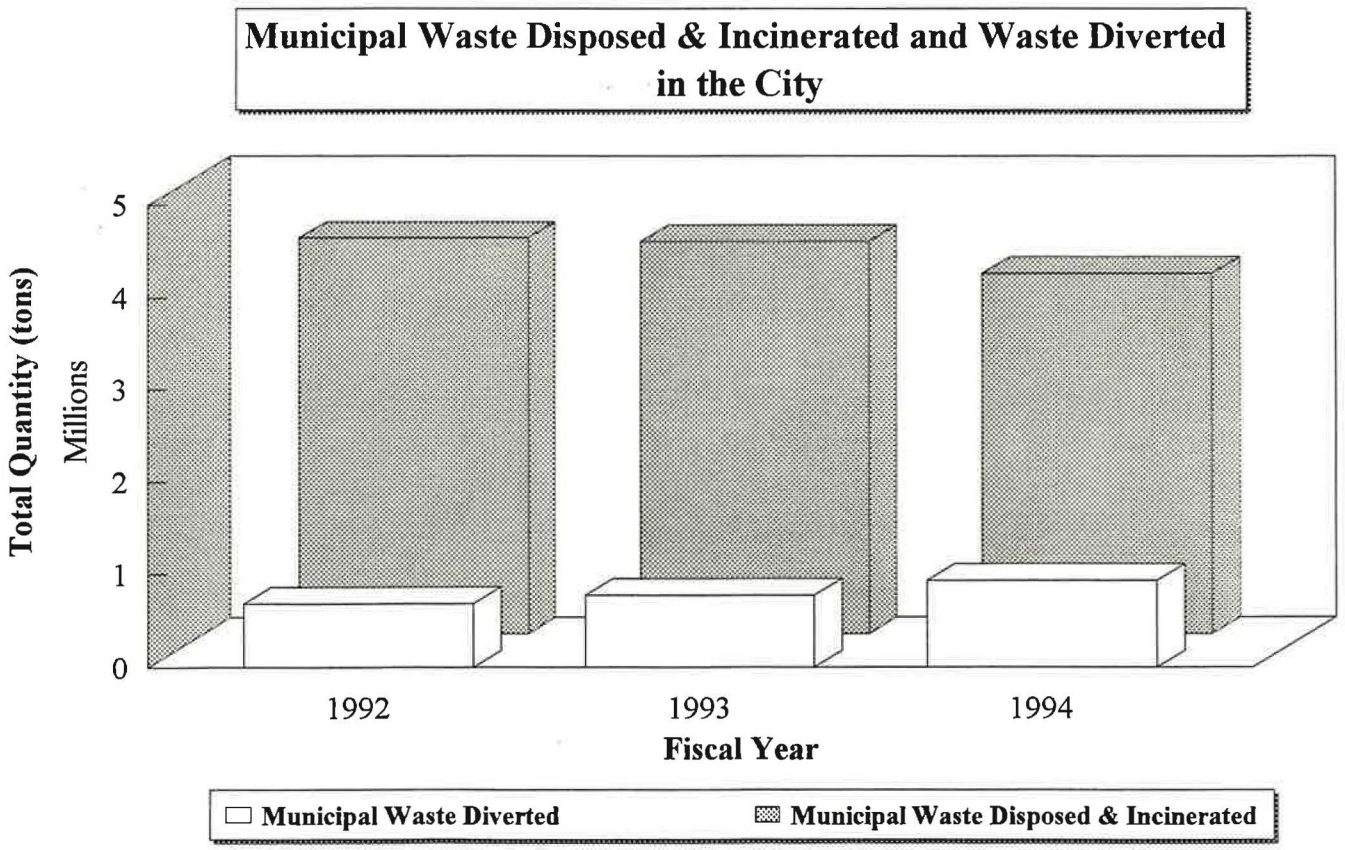
	FY 1992		FY 1993		FY 1994		FY 1995 (July-Dec)	
	Total (tons)	% of Total	Total (tons)	% of Total	Total (tons)	% of Total	Total (tons)	% of Total
Total (1)	4,970,180	100.0%	5,025,180	100.0%	4,834,190	100.0%	2,442,160	100.0%
Disposed & Incinerated (2)	4,287,940	86.3%	4,251,060	84.6%	3,901,880	80.7%	1,989,520	81.5%
Diverted (3)	682,240	13.7%	774,120	15.4%	932,310	19.3%	452,640	18.5%

Notes:

(1) Total = (Disposed & Incinerated)+Diverted

(2) From Table 2-1 total minus "DEP Collected and PH Collected"

(3) From Table 2-2 "TOTAL DIVERTED MATERIALS"



2.4 Solid Waste Generation/Management and Recyclables Inventory

The NYSDEC's solid waste generation/management and recyclables inventory forms are included in Appendix D of this Compliance Report. Where available, information from the Department has been included on these forms. However, this Section 2 has been provided as a comprehensive summary of information available to the Department which more accurately depicts the required information. It should be noted that the reporting periods on the forms are based on the City's fiscal year (July 1 through June 30), rather than a calendar year. In addition, the base year noted on the forms is FY 1992, which extends prior to the time required under the Compliance Report period, but is the fiscal year during which the Plan was developed. Finally, footnotes have been added to the inventory forms for clarification.

3.0 WASTE REDUCTION AND REUSE

Waste reduction is the production of fewer products and products made of less material or that are longer lasting. Reuse is the continued use of a material or product for primarily the same purpose. In the Plan and referenced milestones, the term "waste prevention" is utilized. For purposes of this Compliance Report, the term "waste prevention" and "waste reduction and reuse" are used interchangeably. The State's Solid Waste Management Act of 1988 establishes a goal of reducing waste by 8% to 10% through waste reduction and reuse activities by 1997. To achieve this goal, the Department has launched intensive waste reduction and reuse efforts. The Department has taken a multi-sector approach to waste prevention by developing programs that target the residential, commercial, and institutional sectors. These programs include extensive outreach and education to residents, businesses, and schools (samples of waste prevention and reuse outreach literature are included in Appendix C); technical assistance activities; legislation and regulatory initiatives; and research and development projects. The Department staff continuously monitors waste reduction programs being implemented elsewhere through participation at conferences and through associations such as the U.S. Conference of Mayors, the Coalition of Northeastern Governors, and the National Waste Prevention Coalition. The Department has also obtained funding and other support from federal and state agencies, such as the United States Environmental Protection Agency (USEPA), New York State Energy Research and Development Agency (NYSERDA), and the NYSDEC; worked closely with local agencies and associations such as the Long Island City Business Development Corporation; and met regularly with members of the Solid Waste Advisory Board (SWAB) Waste Prevention Committee to help enhance its programs.

The waste reduction and reuse programs discussed in this section are: Rules, Regulations and Legislative Initiatives, Quantity Based User Fees, Reuse Center Development, Backyard Composting and Yard Waste Reduction, and Miscellaneous Programs targeted at specific milestones identified in the Plan.

3.1 Rules, Regulations, and Legislative Initiatives

This program is an ongoing effort that consists of lobbying or providing support for federal and state waste reduction and reuse regulations and legislation; and evaluating, developing, and promoting City waste prevention and reuse rules and local laws, including amendments to the City's mandatory recycling law, Local Law 19 of 1989. The City will continue to support waste reduction and reuse legislative initiatives that are viewed by the City as consistent with the Plan and City policy. Program elements and milestones are presented in Table 3-1.

3.1.1 Lobby or Support Federal and State Regulations and Legislation

A number of initiatives that were being pursued or supported by the City during the preparation of the Plan, and those initiatives that the City could pursue or support during FY 1993 through FY 1995 were identified as milestones. Specifically, the following milestones are identified:

- **Lobby for federal and state waste reduction legislation, including the passage of RCRA amendments that address issues of excess products and packaging (FY 1993).**

As suggested in the Plan, the City supported, in its 1993 federal legislative agenda, passage of Resource Conservation and Recovery Act (RCRA) amendments to address the issues of excess products and packaging.

This milestone was accomplished. The City will continue to support reasonable waste reduction legislation.

TABLE 3-1
RULES, REGULATIONS, AND LEGISLATIVE INITIATIVES
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Lobby or Support Federal and State Regulations and Legislation			
Lobby for RCRA amendments to reduce excess products and packaging (FY 1993)	✓		The Department supported federal waste prevention legislation
Pursue legislation which mandates signs in stores to discourage use of bags (FY 1994)	✓		
Pursue state and local legislation for economic incentives to businesses that produce waste (FY 1994)	✓		Emblem regulations in place
Pursue legislation which requires companies to allow names to be removed from mailing lists (FY 1994)	✓		The Department sponsors the voluntary program
Work with other cities to establish a multiple cities coalition (FY 1993)	✓		
Evaluate, Develop and Promote City Rules and Local Laws			
Issue Mayoral Directive mandating office waste prevention (FY 1993)	✓		Issued on September 9, 1992
Propose that the Department of General Services review specifications (FY 1993)	✓		
Develop City guidelines to stipulate packaging restrictions (FY 1993)	✓		
Pursue legislation to promote durability and waste prevention (FY 1995)		✓	

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

- **Pursue state and local legislative initiatives that mandate signs in certain retail stores discouraging the use of unnecessary bags or banning the provisions of free bags and unnecessary packaging at retail establishments (FY 1994).**

The City has, through the Multiple Cities Coalition on Waste Prevention and U.S. Conference of Mayors, pursued initiatives that would discourage the use of unnecessary bags in retail establishments beginning September 1, 1994. In FY 1995, the Department issued a Request for Proposals (RFP) for providing consumer education services to City grocery store owners and employees on waste prevention and recycling. Proposals were due on February 10, 1995; however, none were received. The Department is re-evaluating its approach to this program. In addition, the City has relied on voluntary programs to reduce the use of bags in retail establishments as discussed further in Section 3.5.1.

The goal of this milestone was accomplished through voluntary programs.

- **Pursue state and local legislative initiatives that provide economic incentives to businesses that produce, and customers that purchase products that prevent waste, such as refillable packaging, washable diapers, and mulch mowers (FY 1994).**

The City supported NYSDEC's emblem regulations, which include a reuse emblem. The emblem program provides an economic incentive to businesses to produce products that can display the emblem since consumers may be more likely to purchase such products. The City also promoted federal and state legislation that addressed excess products and packaging as discussed above.

This milestone was accomplished. The City will continue to support reasonable waste reduction legislation in the future.

- **Pursue state and local legislative initiatives that require companies that send direct mail to include a means by which addressees may remove their names from the firm's mailing list (FY 1994).**

The Department has met the goal of this milestone by facilitating a program to support mail reduction on a voluntary basis. See Section 3.5.1 for a detailed discussion on the Department's mail reduction initiatives.

The goal of this milestone was accomplished through the Department's ongoing voluntary mail reduction program.

- **Pursue legislation to promote durability and waste prevention through product stewardship and requiring manufacturers through a deposit and/or leasing system, to take back specific products such as refrigerators, cars, toasters and televisions (FY 1995).**

In general, the City is not supportive of imposing local deposit and/or leasing take back systems to manufacturers as a means to promote durability or waste prevention. However, if such a system were to be proposed on the federal or state level, the City would consider its feasibility for implementation.

This milestone will be accomplished through a deviation from the Plan if such a system were proposed on the federal or state level.

- **Other Department Supported Initiatives.**

As part of the City's ongoing State lobbying efforts, the City supported numerous State legislative initiatives during the 1993-1994 legislative session to foster waste reduction and reuse. Specifically, the Department submitted testimony in support of the "Environmentally Sound Packaging Act" (A.2573-B and S.1534-A) and "Packaging Waste Reduction Act" (S.3366). The

City also supported a bill that would create a packaging waste reduction task force (A.9994 and S.7760) and a bill that would establish a dry-cell battery management program to require manufacturers to meet certain toxicity reduction standards in the manufacturing of alkaline and zinc-carbon batteries (A.10566). To date, none of these bills has passed.

- **Work with other cities to establish a multiple cities coalition to develop model waste prevention legislation to be adapted by the legislatures of the cities (FY 1993).**

The Department established the Multiple Cities Coalition on Waste Prevention through the U.S. Conference of Mayors' Municipal Waste Management Association. This coalition enables cities to work in concert on proposals for which the federal and state governments have not taken action as well as seek out and adopt model volunteer projects to be replicated or modified among cities.

This milestone was accomplished. The City will continue to support and participate in activities of this coalition.

3.1.2 Evaluate, Develop, and Promote City Rules and Local Laws

Pursuant to the Plan, the Department is working with appropriate agencies to develop City-wide procurement guidelines to promote the production of fewer products, use of durable and reusable goods in lieu of disposable goods, and the reuse of existing products. The following milestones are listed in the Plan:

- **Issue Mayoral directives mandating office waste prevention in City agencies and designating a waste prevention coordinator in each administrative unit. The directive should address procurement practices and office procedures, such as two-sided copying (FY 1993).**

Mayoral Directive Number 92-5, "City Agency Waste Prevention and Reuse," issued on September 9, 1992, requires that all City agencies adopt and implement office paper waste prevention and reuse measures. This Mayoral directive was accompanied by "Guidelines and Suggestions for Waste Prevention and Reuse." Some of the waste reduction and reuse provisions proposed by the City are: double-sided printing and copying; common access and circulation of information through bulletin boards or reference binders; elimination of cover sheets and confirmation pages for all facsimiles and the mailing of follow-up copies of faxed material; use of two-way envelopes and durable or reusable food service items; and reuse of paper discards, including kraft envelopes, file folders, and corrugated boxes. City agencies and departments are also required to consider measures to prevent and/or reuse non-paper goods and supplies.

This milestone was accomplished. The Administration continues to promote waste prevention in City agencies.

- **Propose that the Department of General Services review specifications to encourage waste-prevention in City purchasing practices (FY 1993).**

- **Develop City procurement guidelines to stipulate packaging restrictions and the purchase of reusable products (FY 1993).**

The Department is working with the Department of General Services (DGS) on initiatives to require suppliers of certain commodities to take back transport packaging used to ship City purchases such as pallets, drums, and padding. The Department is also supportive of proposals for federal legislative initiatives that would have disposal costs reflected in manufacturers' costs.

The Department and DGS jointly drafted legislation that, among other things, would incorporate waste prevention measures in the review of purchase specifications and practices, and require the Mayor's Offices of Construction and Contracts to review their practices related to service and construction contracts for waste prevention opportunities. This legislation was introduced in the City Council but not enacted in 1993. The Department, in conjunction with DGS, is reviewing the bill to determine whether it or a similar bill should be pursued in the coming year.

These milestones were accomplished in part and efforts in these areas are ongoing.

3.2 Quantity Based User Fees

Quantity Based User Fees (QBUFs) are utilized to charge individual generators for waste collection and/or disposal services on the basis of the quantity of waste that is set out for collection, or that is accepted for disposal at a waste-to-energy facility or landfill. QBUFs promote waste reduction and reuse by providing economic incentives to reduce the amount of solid waste that is generated. The Department is providing such economic incentives to commercial waste haulers and their customers through the tip fees charged at the marine transfer stations (MTSs) and the Fresh Kills landfill. The program element and milestones are presented in Table 3-2.

3.2.1 Feasibility Studies

Prior to the Department implementing QBUFs for a given sector, studies were performed to determine whether this type of fee structure is feasible for implementation in the City. The focus of the Plan was to achieve the milestones listed below:

- **Evaluate feasibility of residential QBUF. If feasible, seek funding from the United States Environmental Protection Agency (USEPA) for QBUF pilot program and conduct pilot test in a residential area (FY 1993).**

- **Conduct pilot testing of a residential QBUF (FY 1995).**

In 1993, the Department conducted a national survey of 14 residential QBUF systems currently in use. Although the results of the survey indicate increased waste prevention and recycling rates from this form of economic incentive, none of the existing programs addressed the fundamental problem of instituting such a system in the City, which is devising a system that would allow user fees to affect the waste generation and recycling practices of individual tenants or apartment

TABLE 3-2
QUANTITY BASED USER FEES
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Feasibility Studies			
Evaluate feasibility of residential QBUF (FY 1993) Conduct pilot test of residential QBUF (FY 1995)	✓		Program not feasible in the City
Evaluate feasibility of institutional QBUF (FY 1993)	✓		Program not feasible in the City
Evaluate feasibility of government agency QBUF (FY 1993)	✓		
Promote commercial QBUF (FY 1993)	✓		Private hauler tip fees set at MTSs and Fresh Kills landfill

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

owners in multi-unit buildings. No existing program includes high-density, multi-unit buildings in a variable-rate system. In addition, costs for establishing and enforcing such a system would be significant and such a system does not ensure an increase in waste reduction and reuse practices. The analysis concluded that residential QBUFs are not feasible for implementation in the City at this time. The Department summarized the analysis in a report dated June 1993.

These milestones were accomplished on time. The Department is not considering the implementation of a residential QBUF in the City in the near future.

- **Evaluate feasibility of an institutional QBUF (FY 1993).**

- **Evaluate feasibility of charging government agencies for waste disposal (FY 1993).**

In 1993, the Department conducted a survey of government agency and institutional QBUF systems currently in use in this country and in the City. The Department summarized the analysis on QBUFs and variable rate incentives for government agencies and institutions in a report dated March 24, 1993. The analysis presented the conclusion that implementation of a QBUF system for government agencies and institutions would be quite costly and instead recommended focusing such agencies on expanding waste reduction and reuse practices.

This milestone was accomplished on time. As a result of the study, the Department is no longer considering the implementation of a government agency or institutional QBUF in the City.

- **Promote volume-based user fees for commercial garbage with the DCA (FY 1993).**

A discussion of commercial waste collection practices is provided in Section 4.2. All commercial waste is collected by private haulers who charge customers a volume-based rate for collection services. The Department's responsibility for regulating these haulers begins at the MTSs located throughout the City. The Department charges QBUFs to haulers who deliver waste to the MTSs

and the Fresh Kills landfill, and has been doing so for more than 25 years. Tip fees at the landfill increased since the early 1980s through 1988 to reflect a growth in disposal costs to the City. Private haulers are permitted to pass these fees, or any portion of them, to their customers. The rate, which can be charged to the customers by the haulers, is regulated by the City Department of Consumer Affairs (DCA) through a limit or "cap" set on the fee. The avoidance of hauler fees creates an economic incentive for commercial waste generators to reduce the quantity of waste which is produced by utilizing various methods of waste reduction and reuse. Furthermore, the QBUFs charged by the Department at the MTSs provide the haulers with an incentive to divert material from disposal.

This milestone was accomplished and will continue through fees charged by the Department at the MTSs and the Fresh Kills landfill for commercial haulers; and through hauler rates regulated by the DCA.

3.3 Reuse Center Development

Reuse centers, such as the Salvation Army and Goodwill, accept used goods as donations and clean and/or repair these goods for sale at low prices to the consumer. It is recommended in the Plan that the drop-off and buy-back centers be developed into reuse centers, or that existing centers be hired to collect reusable goods delivered to the drop-off or buy-back centers. A more detailed discussion of drop-off and buy-back centers is included in Section 4.1.1. The program element and milestones are presented in Table 3-3.

3.3.1 Reuse Programs

The milestones discussed below have been identified in the Plan to assist the Department in achieving a City-wide goal of 8% to 10% waste reduction or reuse. Included in the discussion of milestones are the Material for the Arts (MFA) and the new bicycle reuse programs, both currently ongoing Department-sponsored activities. These programs supplement the overall development of reuse activities in the City and were not identified as milestones in the Plan.

TABLE 3-3
REUSE CENTER DEVELOPMENT
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Reuse Programs			
Facilitate development of a pilot program for a reuse center (FY 1993)	✓		"Guide to Reuse" program developed; telephone "hotline" being investigated
Explore a materials exchange program between buy-back and drop-off centers (FY 1993)	✓		
Seek to involve non-profit and thrift organizations in an exchange program with buy-back centers (FY 1994)	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

- **Facilitate development of a pilot program for a reuse center (FY 1993).**

In FY 1993, the Department developed an RFP for a pilot program to support the efforts of an existing private, non-profit organization, such as the Salvation Army. The Department would pay a service fee to the organization, which would provide curbside collection services of bulk and small reusable items from residents and institutions, and removal of reusable items from the Department's self-help bulk recycling facilities (see Section 4.1.3 for further discussion of these facilities) for repair or sale to markets. The pilot program was to take place in Queens District 14, which consists of approximately 38,000 households, from which approximately 50 tons of bulk reusable materials are generated per week. Following an extensive outreach to the targeted industry as well as substantial advanced advertising of the solicitation, the RFP was issued on February 25, 1994 with co-funding to be provided by the NYSERDA and the NYSDEC. However, no responsive proposals were received. Due to the lack of responsive proposals, the Department has restructured its plans to assist private existing reuse programs. The Department has developed a "Guide to Reuse" in the City which provides a written summary of information on why and where to reuse, rent, repair, and obtain reused items.

In addition, the Department hired a consultant to conduct a market research project to determine the feasibility of implementing a telephone-based reuse outlet listing or "hotline" service. Results of the survey have indicated that the "hotline" service will be used by the public as well as reuse organizations. The telephone service would be provided with the assistance of a $60,000 grant from the NYSDEC to partially fund the project. The grant application was approved by the NYSDEC in May of 1994, and the Department is awaiting the award of funds.

This milestone was accomplished. The Department has re-structured the approach to expanding reuse through a public education and outreach program, and additional programs are discussed further in this section. These efforts are ongoing.

- **Explore opportunities for incorporating a materials exchange program into recycling buy-back and drop-off centers (FY 1993).**

- **Seek to involve not-for-profit or thrift organizations in a program to exchange and reuse goods collected at the buy-back centers (FY 1994).**

The Department is funding a waste exchange program for material, which will be partially funded by a NYSDEC grant. A consultant contract to assist with the waste exchange program is currently being developed by the Department and is anticipated to begin in FY 1995. Also, the Department will coordinate with non-profit and thrift organizations to continue seeking means of increasing the reuse and recycling of secondary materials.

These milestones were accomplished. The Department continues to encourage materials exchange programs.

- **Materials for the Arts**

The Department has implemented new initiatives to divert materials from the waste stream by facilitating cost-effective exchange of reusable items. In addition to accomplishing the milestones, the Department and the Department of Cultural Affairs have jointly funded the MFA reuse program. The MFA program collects donated surplus items, such as computers and scrap materials, to be used by non-profit art organizations throughout the City. This program receives approximately 30 to 40 tons of material for diversion from the City's waste stream each month. In addition, the Department funded a direct-donations coordinator for FY 1994, whose purpose, among other things, was to reduce costs by matching donors directly with recipients.

3.4 Backyard Composting and Yard Waste Reduction

Backyard composting, or the placement of certain food and/or yard wastes into an outdoor enclosure or area to allow natural decomposition to take place, is one way to reduce the amount

of waste set out for collection by residents. Backyard composting and a reduction in the amount of grass clippings set out for collection are two ways to promote "at home" waste reduction practices. Section 4.5 includes further discussion of composting activities identified in the Plan. Program elements and milestones are presented in Table 3-4.

3.4.1 Public Information and Outreach Programs

A small percentage of the City's total waste stream is grass clippings. As a result, the Department has investigated ways to encourage residents to manage composting practices and grass clipping recycling at the source. The following milestones are identified in the plan:

- **Issue an RFP to develop home-composting demonstration sites and promote home composting and grass mulching City-wide. Develop programs for backyard composting of organics in low density areas and community gardens. Set up demonstration projects (FY 1993).**

- **Implement home-composting demonstration sites and grass mulching promotion City-wide (FY 1994).**

A three-year inter-agency agreement was reached in FY 1993 between the Department and the City's Botanical Gardens (which received assistance from the Green Guerrillas) to develop home-composting demonstration sites and to promote these practices in each of the five boroughs. This program has been underway since the beginning of FY 1994. The program also includes a contract with the New York Hall of Science in Queens for additional public education on small-scale composting.

This milestone was accomplished, and is ongoing through a deviation from the Plan. The deviation was an inter-agency agreement used in place of an RFP to set up the demonstration projects which, by utilizing an existing City resource, resulted in avoided costs to the Department for RFP development, proposal review, and negotiations.

TABLE 3-4
BACKYARD COMPOSTING AND YARD WASTE REDUCTION
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Public Information and Outreach Programs			
Issue RFP to develop home-composting sites and promote home-composting (FY 1993)	✓		Three-year inter agency agreement in place
Implement home-composting demonstration sites City-wide	✓		Home composting sites in each borough
Legislative and Policy Initiatives			
Adopt rules halting the municipal collection of grass clippings (FY 1993)	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

3.4.2 Legislative and Policy Initiatives

The following milestone is identified in the Plan for implementing legislation to promote composting and yard waste reduction:

- **Adopt rules halting the municipal collection of mown grass (FY 1993).**

The Department prepared draft rules to this effect in FY 1994. Upon further consideration, the Department has been engaged in outreach efforts, which include the distribution of educational material at the backyard composting demonstration sites, to promote voluntary "leave it on the lawn" practices and backyard composting. In addition, the New York City Housing Authority (Housing Authority) began implementation of the "leave it on the lawn" program in the summer of 1994 at public housing developments. When the program is implemented for all of the Housing Authority's 2,400 acres of lawn within the next year, the waste reduction and recycling is anticipated to be up to 15,000 tons of grass clippings per year.

The goal of the milestone was accomplished. As an alternative to directly imposing a ban on the collection and disposal of grass clippings, the City has promoted the "leave it on the lawn" program as a voluntary initiative.

3.5 Miscellaneous Programs

The Department has instituted several programs to reduce the quantity of specifically targeted materials in the waste stream, such as direct mail and excess bags and packaging in small businesses and methods for evaluating the impact of these programs. The program element and milestones are presented in Table 3-5.

3.5.1 Waste Reduction Program Initiatives

The Department has expanded the City's Partnership for Waste Prevention (PWP), reduced the

TABLE 3-5
MISCELLANEOUS PROGRAMS
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Waste Reduction Program Initiatives			
Expand the City's Partnership for Waste Prevention (FY 1993)	✓		Over 6,000 companies represented
Develop programs to reduce direct mail (FY 1993)	✓		Over 200 tons per year reduced
Expand the pilot "no bag" campaign (FY 1993)	✓		
Monitor status of "leave the packaging behind" initiatives (FY 1993)	✓		
Develop a plan to monitor the impact of waste prevention programs (FY 1993)	✓		Pilot programs conducted; consultant selected for long-term monitoring
Continue to expand and monitor the progress of waste prevention and reuse programs (FY 1994)	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

quantity of waste generated for collection or disposal of third class mail by over 200 tons per year, encouraged reuse of bags at dry cleaning establishments and other businesses, and monitored and developed waste prevention programs on an ongoing basis. The following milestones are identified in the Plan:

- **Expand the City's Partnership for Waste Prevention to include designers, manufacturers, and distributors (FY 1993).**

The Department initiated the City's PWP in September 1991. To become members of PWP, businesses must commit to research and identify specific waste prevention initiatives and undertake the initiatives at their business establishments, measure and report on the results of their efforts, and educate employees and customers on waste prevention practices. By May of 1994, seven associations, representing over 6,000 businesses, belonged to the PWP. Members include the Neighborhood Cleaners Association (NCA), New York State Food Merchants Association (NYSFMA), D'Agostino Supermarkets, Inc. (D'Agostino), the Direct Marketing Association (DMA), the Chinese American Restaurant Association of Greater New York (Chinese Restaurant Association) and NYNEX.

The NCA represents 1,200 dry cleaners in the City and works to reduce the amount of plastic bags discarded from dry cleaners, and increase the return of hangers for reuse. The NYSFMA represents more than 500 grocery stores in the City and is an advocate for the food industry, working on such issues as waste reduction and education. D'Agostino is a chain of 23 supermarkets located within the City. Waste prevention and recycling brochures are distributed in each of its supermarkets. The DMA is the oldest and largest association, representing more than 3,600 trades and has developed a waste prevention and recycling campaign that focuses on reshaping direct mailing companies to be less wasteful and save more money. The Chinese Restaurant Association represents almost 600 restaurants and focuses on encouraging the reduction of additional disposable items with take-out orders. Finally, NYNEX has reduced paper stock for Yellow Pages, the borders on each page, and the quantity of volumes printed through better forecasting.

On January 13, 1994, the Department co-sponsored a meeting with the Coalition of Northeastern Governors for Fortune 500 companies based in the City. The meeting brought industry and government together to discuss waste reduction and reuse activities. As a result, the Department anticipates that four more businesses and/or organizations, Lever Brothers Company, Bristol-Myers Squibb, the Times Square Business Improvement District, and NYNEX-New York, will join the PWP.

Participation in the program is voluntary, and the Department has invited a number of industries to participate. Therefore, the goal of this milestone was accomplished. The Department continues to evaluate new initiatives with the PWP.

- **Develop programs to reduce direct mail (FY 1993).**

During the spring and summer of 1993, the Department distributed 4.9 million bilingual post cards and recycling brochures to households and, upon request, to public officials, environmental organizations and others, with instructions on how to send the cards to the DMA's Mail Preference Service. As a result of this distribution, more than 28,000 City residents registered with the service. This is a 50% increase above the 56,000 people already registered, and is over 1% of the City's total population. Based on a 1993 United States Postal Service estimate of third class mail delivery, the new registrants are expected to prevent more than 1,000 tons of third class mail from distribution over the five years that the registration with the DMA remains in effect. A seminar hosted by the Department and the DMA, with involvement by the United States Postal Service, is planned for the spring of 1995 and will target businesses in the City that send direct mailings.

This milestone was accomplished. Individuals who wish to reduce unsolicited third-class mail can continue to register with the DMA with post cards available at the Department's offices.

- **Expand the pilot "no bag" campaign and program to reduce and reuse packaging at dry cleaning establishments, to other retailers, focusing particularly on excess packaging at small businesses (FY 1993).**

More than 100 dry cleaners in the City use reusable garment bags. The Department, with the assistance of the PWP, conducted an outreach program in 10 neighborhoods, located in each of the five boroughs, which, among other things, promoted the reuse of bags and packaging in small businesses. In FY 1994, more than 700 signs were distributed to all members of the NYSFMA to encourage customers to bring their own bags when shopping. The Department distributed these same signs to the Council on the Environment for distribution to farmers who sell to the "Green Markets" throughout the City. Department staff visited more than 250 Chinese restaurants to encourage owners to limit the number of disposable items distributed with take-out orders. In addition, a draft legislative proposal on waste prevention was developed through the Multiple Cities Coalition on Waste Prevention.

The milestone was accomplished. The Department continues to promote the reuse of dry cleaner and retail establishment bags.

- **Monitor the progress of the "leave the packaging behind" initiatives (FY 1993).**

The German Ordinance on the Avoidance of Packaging Waste commonly known as the "green dot" system, was enacted in Germany on June 12, 1991. The "green dot" system applies to all German manufacturers and distributors of packaging or products, including retail stores and mail order companies. The ordinance states that packaging must be reusable, if possible, and if not reusable, must be recyclable. In addition, manufacturers and distributors must accept returned packaging, unless an alternative collection system is established.

Given the potential for waste prevention in the City, the Department reviewed the German ordinance to determine applicability of the concept, if any, to the City. The Department's

June 1993 report on the German "green dot" system concluded that although the concept was good, its application appears incompatible with practices in the United States due to individual state and local labeling requirements.

The milestone was accomplished and the Department continues to support new initiatives to reduce packaging waste.

- **Develop a plan to evaluate the impact of waste prevention programs (FY 1993).**

- **Continue to expand and monitor the progress of waste prevention and reuse programs (FY 1994).**

The Department recognizes the importance of measuring the impact of waste prevention programs and some of its waste reduction and reuse evaluation and monitoring programs are discussed below. With co-funding from the New York State Department of Economic Development (NYSDED), it conducted pilot waste prevention assessments and, in FY 1994, demonstration projects at three locations in the City. The assessment identified low-cost or no-cost waste prevention opportunities in the three locations of over 1,700 cubic yards per year. The project is continuing, with the assistance of a NYSDED grant, through FY 1995.

In addition, the Department issued an RFP, which was developed in FY 1993, for the purpose of procuring services of a consultant to evaluate and measure the impact of the Department's waste prevention programs and overall reductions of the City's waste stream. The Department has selected a consultant and is currently drafting a contract for services. The objective of the waste assessment will be, among other things, to present and recommend to the Department methods for measuring cumulative changes in the City's solid waste generation rates, estimate changes in environmental and economic impacts, review and analyze data generated by the Department, and provide recommendations for measuring program-specific and cumulative changes in waste prevention.

Also, a second consultant is performing detailed waste assessments in at least 24 businesses (a minimum of one in each borough) in eight commercial business sectors. This consultant is reviewing and evaluating programs adopted by businesses to present overall effectiveness of the programs and make recommendations for improvements.

4.0 RECYCLING

The six recycling program areas are: Residential Recycling; Commercial Recycling; Institutional Recycling; Household Special Waste; Composting; and Market Development.

Because of the progress made by the City in these programs over the last few years, the City now has one of the most comprehensive and successful recycling efforts in the United States. The goal during this time period was to establish recycling as a major component of the City's MSW management system. The goal was achieved and, except for landfilling, more MSW is now managed via recycling than any other MSW management option. Over the next few years, the objective of the City will be to make the existing programs more cost-effective by reducing program costs and/or increasing diversion rates.

Each of the six recycling programs, their program elements, and milestones are described in the following sections.

4.1 Residential Recycling

The residential recycling program consists of the following six program elements: Implementation of Curbside Collection; Public Information and Outreach; Material Processing Capacity Development; Pilot Recycling Programs; Contracting for the Sale of Recovered Materials; and Legislative and Policy Initiatives.

As can be seen from the number of milestones listed in the following sections, the residential recycling program entails more than just collecting the recyclables at the curbside. The Department has developed an extensive public information and outreach program to educate and inform residents about the procedures for participating in the recycling program. The Department has used several approaches to obtain substantial capacity to process the recyclables that are collected, using primarily the power of the private market to secure long-term capacity for the

processing of its recyclables at private material recovery facilities (MRFs). A number of pilot programs were conducted by the Department to ascertain if the collection and processing approaches currently being used by the City can be made more cost-effective. Finally, the Department will continue to pursue legislative and policy initiatives and market development activities to support the recycling program.

A residential curbside recycling program of the scope and magnitude of the City's program does not exist anywhere else in the country. As a result, experiences of other communities are not readily transferrable to the City. Until now, however, the City in part has relied upon analyses conducted in other locations or analyses based on data from other locations. Now that the City's program is fully implemented, information generated from City program operations can help to make its program more cost-effective. Improving the cost-effectiveness of the recycling program will be a primary objective of the City over the next few years. Any further commitments to expand the program will be evaluated in this context. This is consistent with the Solid Waste Management Act of 1988 and General Municipal Law 120-aa(2)(a) (GML 120-aa) which conditions the implementation of a source separation program on the availability of "economic markets" for all the materials included in the program. The GML 120-aa defines "economic market" to exist when: "the full avoided costs of proper collection, transportation and disposal of source separated materials are equal to or greater than the cost of collection, transportation and sale of said material less the amount received from the sale of said material."

Each of the residential recycling program milestones set forth in the Plan is discussed below. A brief description and status is given for each milestone, as well as a summary of obstacles and achievements. The program elements and milestones are presented in Table 4-1.

4.1.1 Implementation of Curbside Collection

The City's residential curbside collection program is the most comprehensive and effective program in the country, measured in terms of the number and percentage of residents served and

TABLE 4-1
RESIDENTIAL RECYCLING
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Implementation of Curbside Collection			
Expand curbside to boroughs, then City-wide (FY 1993)	✓		Service to 2.9 million households is largest in the nation
Monitor recycling rates, technologies, markets (FY 1993)	✓		The Department continues research
Expand to all high quality recyclables and bulk metal (FY 1995)		✓	Delayed pending review of "economic market" assessment. Self-help bulk facilities accept bulk metals
Expand to include non-metal bulk (FY 1996)		✓	Self-help bulk facilities accept non-metal bulk
Issue RFPs (FY 1993) for and enter into contract with (FY 1994) one buy-back center in each borough		✓	
Continue contracts with existing drop-off centers (FY 1994)	✓		Three contracts are funded through local elected officials' discretionary funds
Public Information and Outreach Programs			
Expand outreach and public information (FY 1993)	✓		$7.5 million dollar campaign advertised to all five boroughs
Material Processing Capacity Development			
Issue RFPs for publicly-owned MRF's in Brooklyn, Bronx, Manhattan, and Queens, or contract for private MRF capacity (FY 1993)	✓		Capacity through private contracts sufficient through the year 2000

TABLE 4-1 (Cont'd)
RESIDENTIAL RECYCLING
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Begin construction of MRF's, if City issued RFP for publicly-owned MRFs	NA		
Begin construction of Staten Island MRF (FY 1993)		✓	
Develop six self-help bulk recycling facilities (FY 1993)	✓		
Pilot Recycling Programs			
Dual compaction/collection vehicle (FY 1993)	✓		30 prototype vehicles tested; vehicle not feasible
Alternative methods of collection and processing (FY 1993)	✓		The Department continues monitoring
Private collection of recyclables (FY 1993)		✓	
Battery collection (FY 1993)	✓		Began in December of 1993
Textile collection (FY 1993)	✓		Full scale program will not be implemented at this time
Mixed waste processing (FY 1994)		✓	
"Four bag sort" in each borough (FY 1994)		✓	
Contract for the Sale of Recovered Materials			
Expand market with long-term contract (FY 1993)	✓		The goal has been met through long-term processing and marketing contracts with MRF owners

TABLE 4-1 (Cont'd)
RESIDENTIAL RECYCLING
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Enter into long-term contract for newspaper (FY 1993)	✓		The goal has been met through long-term processing and marketing contracts with MRF owners
Enter into long-term contract for an additional recyclable material (FY 1993)	✓		The goal has been met through long-term processing and marketing contracts with MRF owners
Legislative and Policy Initiatives -			
Expand and improve Returnable Container Act (FY 1993)	✓		
Revise rules to allow bags and bins (FY 1993)	✓		Rules revised in September of 1993
Pursue building code changes (FY 1993)	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.
NA = Not applicable.

the quantity of materials diverted from the MSW stream. All 7.4 million residents of the City are now provided residential curbside collection of recyclable paper consisting of newspaper, magazines, corrugated cardboard; plastic (PET and HDPE), metal (ferrous and aluminum), and glass containers; and foil. In FY 1994 more than 462,000 tons of these materials were collected and diverted for recycling.

The curbside recycling program includes service to both single-family and multi-family high-rise residential units. A major milestone of expanding residential curbside collection City-wide by 1993 was achieved in September of 1993. For the curbside collection program, one vehicle is utilized to collect the paper stream, while a second vehicle is utilized to collect commingled containers. Residents can use either blue bins or bags to set out their recyclables. Residents or building maintenance personnel of high-rise buildings may also use specially marked dumpsters for setting out recyclables.

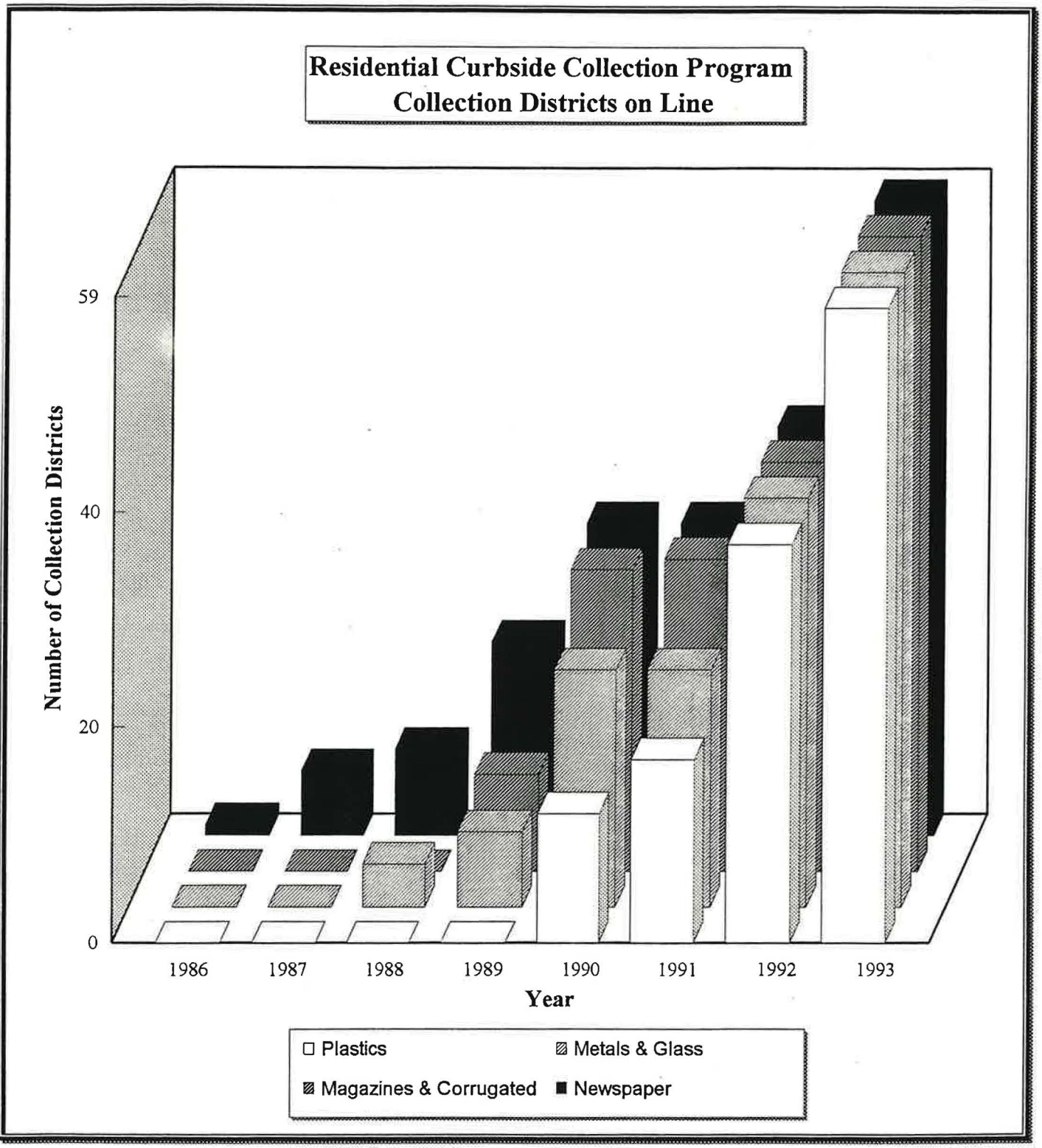
Each of the milestones related to implementation of residential curbside collection is discussed below:

- **Expand the curbside collection program to all of Manhattan (September of 1992); the Bronx (December of 1992); Brooklyn (June of 1993) for all six currently designated materials (including telephone books) (FY 1993).**

- **Expand curbside collection program City-wide by September 15, 1993 (FY 1994).**

These milestones were accomplished on time. The Department's City-wide residential curbside collection program is ongoing. Figure 4-1 shows the number of districts that offered curbside recycling, by material, from 1986 through 1993, when the program became fully implemented.

FIGURE 4-1


Residential Curbside Collection Program
Collection Districts on Line
Number of Collection Districts
0
20
40
59
1986
1987
1988
1989
1990
1991
1992
1993
Year
Plastics
Metals & Glass
Magazines & Corrugated
Newspaper

- **Monitor participation rates, new collection and processing technologies and markets for recyclable materials (FY 1993).**

The Department routinely analyzes information on the types and quantity of material collected from the residential curbside program obtained from monthly reports prepared by MRF operators. The Department calculates diversion and capture rates. In 1993, the Department conducted a 10-week survey on Staten Island to monitor the residential recycling participation rates. City-wide participation rates are more difficult to estimate because the City is unable to determine individual household set-out or participation rates in large, multi-unit buildings which comprise most of the City's housing.

The Department has an ongoing effort to monitor and develop markets for recyclable materials. See Section 4.1.5 for more details on this program.

The Department continues to monitor the rapidly changing technology for collection and processing of recyclables. In the Spring of 1993, the Department received and tested 30 prototype dual compartment compacting trucks in Districts spanning the range of housing density and income levels. The Department also studied alternative methods of collection and conducted several pilot programs. These pilot programs are discussed in detail in Section 4.1.4 of this report.

The monitoring activities identified in this milestone were accomplished on time. All of the above activities are ongoing.

- **Expand the curbside collection program to include all "high quality" recyclable materials and bulk metal (FY 1995).**

- **Expand curbside collection program to include nonmetal bulk materials (FY 1996).**

The Plan identified 25 components of the City's MSW stream as "High Quality Recyclables" as shown in Table 4-2. Many of these materials are already designated for inclusion in the City's residential and institutional recycling programs, while others are designated for the commercial recycling program.

Prior to expanding the residential curbside recycling program, the City will evaluate its current program to identify ways to make it more cost-effective. Furthermore, pursuant to GML 120-aa, any expansion of the program will depend on the availability of economic markets.

The Department has determined that adding bulk metal to the curbside recycling program is not cost-effective, and does not plan, at this time, to expand the program to include bulk metals.

The above milestones have not been accomplished. The delay in implementing these milestones will require a Plan modification.

- **Issue RFPs for one buy-back center in each borough (FY 1993).**

- **Enter into contract with five buy-back centers - one in each borough (FY 1994).**

Publicly-sponsored buy-back centers compete for the same materials that are collected from the residential curbside recycling program and will reduce its effectiveness. Therefore, the City no longer plans to contract for buy-back centers.

TABLE 4-2
"HIGH QUALITY" RECYCLABLES[1]

High Quality Material	Currently Designated for Recycling
Papers	
Corrugated/Kraft	✓
Newsprint	✓
Office/Computer	
Magazines/Glossy	✓
Mixed Paper[2]	
Plastics	
Clear HDPE Containers	✓
Colored HDPE Containers	✓
LDPE	✓
Films & Bags	
Green PET Containers	✓
Clear PET Containers	✓
PVC	
Polypropylene	
Miscellaneous Plastics	
Glass	
Glass Containers - Clear	✓
Glass Containers - Green	✓
Glass Containers - Brown	✓
Aluminum	
Food Containers/Foil	✓
Aluminum Beverage Cans	✓
Miscellaneous Aluminum	
Ferrous	
Food Containers	✓
Bi-Metal Cans	✓
Miscellaneous	
Dry Cell Batteries	
Textiles	
Polystyrene	

[1] Source: Table 15.1.1-1 of SWM Plan.
[2] 50% of mixed paper is assumed to be "high quality."

These milestones have not been accomplished, which is a deviation from the Plan.

- **Continue contracts with existing drop-off centers (FY 1994).**

The Department has contracts with three drop-off centers, each serviced by the Department but supported with local elected officials' discretionary funds. This milestone was accomplished.

4.1.2 Public Information and Outreach Programs

The Department implemented a full-scale, $7.5 million community outreach program. It consisted of numerous television, radio, print, newspaper and media campaigns specifically geared toward both English-speaking and non-English speaking residents. Public information and outreach program milestones are discussed below:

- **Expand public information for recycling program by establishing a telephone "hot line," sustaining the media program, and seminars for building owners and superintendents. The media program will include radio, television and print advertisements as well as Department mailings (FY 1993).**

- **Expand out-reach efforts to enhance participation rates (FY 1993).**

- **Focus educational outreach on low-income persons and on people for whom English is a second language (FY 1993).**

- **Expand educational outreach on waste prevention in schools and with tenant and community groups (FY 1993).**

The public outreach effort implemented by the Department included:

- Meetings with all elected and community board officials;
- Multi-lingual mailings to all residents, landlords, building managers, and building superintendents;
- Multi-lingual seminars for landlords and building staff;
- Public promotional events;
- Press releases;
- A year-long advertising campaign that included multi-lingual television, radio, print, bus, subway, and outdoor advertisements;
- Community-specific seminars and public presentations; and
- A telephone hotline.

Program materials were made available in the following languages: English, Spanish, Chinese, Korean, Russian, Greek, French-Creole, and Polish. The Department's outreach staff was supplemented by the part time workers hired by Borough Presidents with Department funding. Outreach employees have been working to increase participation rates in areas where recycling and waste reduction and reuse programs have been underway. A partial list of the outreach material developed by the City is provided in Table 4-3. See Appendix C for examples of these outreach materials.

TABLE 4-3
PARTIAL LIST OF OUTREACH MATERIAL PREPARED BY THE CITY

Material	Number Printed	Number Distrib.	How Distributed and To Whom
Area Decals	350,000	325,000	Mail, by phone request, and outreach to apartments
Container Decals	2,526,000	2,300,000	Mail, by phone request, and outreach to apartments
Superintendents' Handbook	250,000	100,000	Mail, by phone request, seminars and landlords
Building Posters (7 languages)	1,140,000	1,038,000	Mail, by phone request, seminars, landlords and backreach to residents
Recycling Instructions (8 languages)	325,000	75,000	By phone request, outreach to apartments, meetings
Mini Flyer (English/Spanish)	3,375,000	3,335,000	Mail and outreach to residents
Recycling Materials (3 languages)	37,500	19,500	Backreach to residential
Borough Brochures	4,388,000	4,145,000	Mail, by phone request, outreach to residential
Schools Recycling for Teachers	25,000	15,301	Mail, by phone request, outreach to schools
Schools Posters	22,000	12,000	Outreach to Schools
Schools Flyer	6,000	1,000	Outreach to Schools
Waste Reduction Handbook	300,000	215,000	Mail, by phone request
Waste Prevention Partnership	2,000	250	Potential Partners (businesses) mailings & meetings
Bring Your Own Bag Poster	65,000	20,000	Retail Stores, Retail Associations, Grocery Stores & Associations
No Condiments Poster	3,000	1,000	Chinese restaurants and Restaurant Association
Stop Direct Mail	1,750,000	1,625,000	Mail to residents, owners and by phone request
Reuse Guide	20,000	15,800	Mail, by phone request, outreach
Recycle Household Batteries & Poster	33,400	29,000	Park Slope residents in pilot program
Household Special Waste (HSW)	40,000	29,198	General distribution
HSW Collection Days & Poster	200,000	200,000	Mail to residents & by phone request

The milestones within this program element were accomplished on time, and are ongoing efforts. An intensive and broad based advertising and promotional campaign was necessary during the implementation of the curbside recycling program to educate the public and encourage their participation. Now that the City-wide program is fully implemented, the scope of future outreach activities will be appropriately adjusted.

4.1.3 Material Processing Capacity Development

The Plan provided for a "dual track" approach to developing the necessary capacity to process the recyclable materials collected from the residential curbside program. One approach is to procure City-owned MRFs while the other approach is to procure processing capacity at privately-owned MRFs. The City has chosen a combined approach whereby it is developing a City-owned MRF on Staten Island and has also secured long-term privately-owned processing capacity to meet the City's anticipated needs through the year 2000.

The decision to enter into contracts for processing and marketing services at privately-own MRFs has allowed the City to implement its residential curbside collection program on time. Experience in other cities, such as Chicago, indicates that delays in the development of MRFs through RFPs have delayed the implementation of their curbside program because of a lack of capacity to process the material. The City of Los Angles has also abandoned its plan to construct five publicly-owned MRFs and replaced it with short-term contracts for processing capacity at privately-owned facilities. Similarly, the City of Boston has contracted for processing and marketing of recyclables at privately-owned MRFs.

The privatization of the MRF program also facilitates access to markets for the recovered materials. Many of the private firms contracted by the City have access to national or international markets. As a result, all of the material being collected by the City is being processed and marketed.

The Plan milestones are discussed below.

- **Issue RFPs to design and construct the Bronx, Brooklyn, and Manhattan MRFs. The City will continue to rely on privately owned waste transfer stations to process recyclable materials to the extent City-owned MRFs do not have sufficient capacity to process the recyclable materials collected by the City. The City may issue an RFP for one or more long-term contracts for the use of privately owned MRFs (FY 1993).**

- **Submit Uniform Land Use Review Procedure (ULURP) applications for the Bronx, Brooklyn, Manhattan and Queens MRFs (FY 1993).**

- **Issue RFP to design and construct Queens MRF (FY 1994).**

- **Begin design/construction of Bronx, Brooklyn, and Manhattan MRFs (FY 1994).**

- **Begin design/construction of Queens MRF (FY 1995).**

- **Issue RFP for second Queens MRF (based on need) (FY 1997).**

- **Begin construction of second Queens MRF (FY 1998).**

In January 1993, the Department entered into five-year contracts, which include two, one-year extensions, with seven private paper (corrugated, newspaper, magazines, phone books) processors. In March 1994, the Department also entered into five-year contracts, which include two, one-year extensions, with four private container (metal, glass, plastic) processors. The stipulations of the contracts with both the paper and container processors include processing and marketing all source separated materials delivered to their facilities. These firms own facilities, located in

Brooklyn, Queens, and the Bronx as well as locations in other cities. The Department also has "contingency" contracts for additional processing capacity. These processors currently have about 4,000 tons per day of capacity reserved for the City which is sufficient to process all of the recyclables projected to be collected by the City through the year 2000. The Department's contracts with the processors provide flexibility in terms of quantities and types of materials delivered, as well as delivery schedules.

Due to the Department's success in contracting with private firms for long-term processing and marketing capacity, the City has deferred the issuance of RFPs for City-owned MRFs to be located in the Bronx, Brooklyn, Manhattan, and Queens. The objectives of this program have been satisfied.

The milestone goal relative to obtaining sufficient capacity was accomplished on time. The City plans to continue to use long-term contracts to meet most or all of its processing and marketing needs.

- **Begin construction of Staten Island MRF. The anticipated construction period for all MRFs is approximately two years (FY 1993).**

An RFP was issued, and a vendor was selected, to construct the Staten Island MRF. Under the five-year agreement negotiated with the contractor and registered in June 1992, the proposed Staten Island MRF will be built and operated by a joint venture between Resource Recovery Systems, Inc. and the Briarwood Contracting Corporation. Pursuant to the agreement, 80% of material revenues would go to the City, and the annual processing fees would be tied to tonnage throughput and escalated on the basis of changes in the consumer price index. The plant's construction cost is currently estimated at $20 million. It is designed to accept two material streams, one of paper and the second of metal, glass, and plastic. All separated materials would be baled, with the exception of glass, which will be processed into color-sorted, furnace-ready cullet. The commencement of operations at the MRF was planned for the Spring of 1995.

Public concerns about the size and location of the facility have delayed the construction of the MRF. However, a City-owned MRF on Staten Island would be advantageous because (1) it would provide the City with a benchmark for comparing prices offered by private MRF operators, and (2) it would enable the City to achieve transportation savings in processing Staten Island's recyclables which are now processed in private facilities in other boroughs.

This milestone was not accomplished. The delay in the construction of the Staten Island MRF is a deviation from the Plan, but is not affecting the City's ability to process all of the residential recyclable materials it is collecting.

- **Develop six self-help bulk recycling facilities (FY 1993).**

Bulk items in the waste stream include: appliances, furniture, rugs, logs, stumps and brush, wood, tires, and large metals. The Department developed six self-help bulk recycling facilities in FY 1990 and FY 1993. Three of these self-help bulk recycling facilities are located at existing MTSs in the Bronx, Brooklyn, and Queens, one is located at the foot of the now-closed Edgemere landfill in Queens, one is located at the Fresh Kills landfill in Staten Island, and one is located at the Department's 52nd Street maintenance garage in Brooklyn. Residents may deliver bulk items to these facilities for processing, free of charge, seven days per week. Material from commercial vehicles is not accepted at these sites. Due to budget constraints, the Edgemere and 52nd Street self-help facilities are temporarily closed.

Recyclable materials, i.e., metals and whole tires, from these facilities are sold to vendors and residue is transported to the Fresh Kills landfill. It is estimated that approximately 18 tons per day of bulk material is recycled from these facilities.

This milestone was accomplished. In addition, the Department is developing a conceptual plan for the design of a self-help facility at the Spring Creek site in Brooklyn, which is currently a site for processing the Department's lot cleaning materials and derelict vehicles operations.

4.1.4 Pilot Recycling Programs

Pilot programs are a means of field testing, the most efficient, reasonable, and cost-effective options for the collection and processing of recyclables. For the residential curbside recycling program, the Department has conducted several pilot programs for collecting different types of materials, testing variations to typical collection vehicles, and testing various containers in which the recyclables are set out at the curb. The pilot program milestones are discussed below:

- **Conduct a pilot test program of dual compartment/compacting collection trucks and explore other truck technologies (FY 1993).**

- **If pilot tests of dual compartment/dual compacting trucks are successful, procure additional dual compartment/dual compacting collection trucks. If pilot tests are not successful, conduct a pilot test of other truck technologies, if appropriate (FY 1994).**

In early 1993, the Department received and tested 30 prototype dual compartment, compacting trucks. These 25 cubic yard trucks had two compartments (10 and 15 cubic yards): one for the paper recyclables, and a second for the remaining commingled recyclables. This six-month pilot program was conducted in 17 Districts that spanned the range of housing density and income levels. The intent of the pilot test was to determine if the dual compartment trucks could create efficiencies that would overcome the additional costs and disadvantages of adding such a vehicle to the fleet. The evaluation criteria hierarchy was as follows: (1) collection costs, addressing whether the dual compartment truck can complete at least half of the route formerly served by two conventional trucks; (2) maintenance costs, comparing the cost of maintaining the dual compartment truck versus a conventional truck; (3) capital costs, comparing the purchase price, useful life and out-of-service spare ratios; (4) the marketability of the recyclables collected; and (5) the adaptability of the truck to serve in other Department functions.

The Department found that in most Districts, the dual compartment truck required at least as many truck shifts as the single compartment trucks, due to either volume or time constraints. The additional truck shifts ranged from a 4% increase to a 33% increase, as compared to the rear loader, single compartment recycling trucks operated in the same District. One compartment would fill before the other and require unloading, and the loading time per stop was longer than the single compartment vehicle. The dual compartment truck provided collection savings only in high-income, low-density Districts.

When the results of the pilot Districts are projected to the entire City, the use of a dual compartment truck would, at most, produce only a 2% savings in overall truck shifts. However, with the increase in recycling participation and the increase in collection productivity expected from the route extension productivity program now underway, the actual savings would be less than 2%. This marginal savings would be offset by the additional capital and maintenance costs projected for the dual compartment trucks.

In addition, the Department achieves certain economies from having a standard vehicle that serves in a variety of functions. Certain functions, such as bulk collection, could not be accomplished with dual compartment trucks.

The negligible net savings, combined with the disadvantage of moving away from a uniform collection fleet, has resulted in the decision not to purchase dual compartment trucks. The Department will continue to monitor and evaluate other collection technologies and may conduct further pilot programs as additional information is gathered and evaluated.

These milestones were accomplished on time and a full-scale program will not be implemented. Since pilot tests were not successful, the Department has not procured additional vehicles.

- **Develop pilot tests for alternate methods of collection and processing recyclable materials (FY 1993).**

An eight-month pilot program was conducted during FY 1994 in which the two recyclable streams (the paper stream; and the commingled metal, plastic, and glass stream) normally collected in separate vehicle compartments were collected together in one compactor truck. The commingled materials were sorted and baled at a private processing facility. The sorted material was then tested to measure their respective levels of contamination and their suitability for sale to the market.

A comparison between bales of newspaper from the pilot test and from the normal collection method was performed by a consultant to the City. This analysis included a physical sort of sample bales, a laboratory analysis of contaminant volumes, and an inspection by a panel composed of representatives from seven paper-brokerage firms. All three types of analysis supported the conclusion that commingled collection reduces the quality and marketability of the paper stock.

This program produced substantial collection savings, with an approximate 25% reduction in the number of truck shifts required to collect the recyclables. However, because the reduction in the quality of the baled newspaper would limit or eliminate the City's ability to market this material (which represents the largest portion of the City's recyclables stream), the Department determined that commingled collection of paper and metal, glass, and plastic containers is not a near-term option.

This milestone was accomplished in FY 1994. The alternate collection methods will not be implemented at this time, but the Department will continue to monitor and evaluate other methods of providing efficient collection of recyclables.

- **Develop a pilot program for private collection of recyclables (FY 1993).**

During FY 1993 and FY 1994 the City was negotiating with the Sanitation Worker's Union to improve collection productivity for both recycling and refuse trucks. The development and implementation of a pilot program to privatize the collection of recyclables would have impeded these negotiations. The goal of this pilot program was to improve productivity and reduce associated costs. The efficacy of such a program will be re-examined, taking into account the gains realized by the route extension program now underway.

This milestone was not accomplished, and represents a deviation from the Plan.

- **Conduct a battery collection pilot program. In FY 1995 batteries will be collected as part of the "high quality" recycling program. The Department will participate on a state task force to develop a statewide action plan for battery collection. Department will review the task force's report relative to the City's battery collection program (FY 1993).**

A pilot drop-off program for battery collection began in Park Slope, Brooklyn in December of 1993 and was completed in January of 1995. The contractors for this project established some 30 drop-off collection centers for household batteries throughout the area. These centers, which include such locations as libraries, retail stores, and senior-citizen centers, received special containers in which to deposit used batteries. The containers were shipped by the United Parcel Service (UPS), at no cost to the center, to a battery-recycling facility. The two centers that have collected the most batteries by weight are each expected to receive $50 U.S. Savings Bonds. The program was endorsed by community officials and publicized through local newspapers, direct mail, and public presentations.

Batteries are also collected during Department-sponsored household special waste collection events each year (see Section 4.4). The Department collected more than one ton of batteries during five household special waste collection days in the spring of 1994. The mercuric, silver oxide, and nickel cadmium batteries were recycled while the remainder of the batteries were disposed of at licensed facilities.

The Department is re-evaluating collecting batteries at curbside. Collecting batteries with other recyclables could contaminate the other materials and jeopardize their market value. Other issues which have caused the Department to re-examine the value of this program include:

- Reduction in battery toxicity through the removal of most mercury content. The industry is also phasing out the sale of mercuric oxide (button) batteries. Alternatives for cadmium, another metal of concern, have recently been developed for batteries.

- Limited markets for household batteries, with only one company in the United States recycling nickel cadmium, and only one on the east coast recycling silver oxide and mercuric oxide batteries.

- Program concerns related to cost, training, handling, storage, and safety.

This milestone was accomplished on time.

- **Conduct a textile collection and processing pilot program (FY 1993).**

In early 1993, the Department began accepting textiles in the curbside recycling program in the Park Slope Intensive Recycling Zone pilot program. The pilot textile program was implemented to test the feasibility of designating this material for source separation on a City-wide basis. The results of this pilot program indicated that few textiles were placed out for collection. Analysis

of the results indicates that residents choose other methods of recycling or reusing their old textiles. Many residents either pass articles of clothing on to non-profit agencies, give the items to neighbors or relatives, or retain the material for further use in the home. In any case, the material is being reused and is not disposed.

Since reuse is preferred to the recycling of clothing and other textiles and the curbside pilot textile program in the Park Slope Intensive Recycling Zone resulted in low capture rates, the Department is considering ways to expand existing clothing-reuse programs operated by charitable organizations rather than collecting textiles at the curb. The Department is planning a conference to develop a consensus on the most effective ways to collect and recycle used textiles.

This milestone was accomplished on time. A full-scale program will not be implemented, but the Department will continue to evaluate the best approach to foster the reuse of textiles.

- **Conduct a mixed waste processing pilot using residential waste (FY 1994).**

The Department drafted contract documents for a pilot program to process mixed waste and recover materials for recycling. The projected cost of a three-month pilot program was greater than $1 million. Insufficient funds prevented the award of a contract.

This milestone was not accomplished, which is a deviation from the Plan.

- **Conduct five pilots in residential sections (one in each borough) to test the feasibility of collecting compost materials and additional recyclables (in addition to those currently collected at the curbside) under a "four bag sort" or "bin sort" system. The Park Slope "Intensive Zone" shall be used as a model for these pilot programs (FY 1994).**

The Park Slope Intensive Recycling Zone pilot program has been operating since 1991 in a residential section of Brooklyn. In this medium density neighborhood, the residents have been separating organic food wastes and recyclable materials and setting this material at the curb in four separate bags or bins for collection and processing. This pilot test involves one collection truck on one route with one truck shift.

The Park Slope Intensive Recycling Zone pilot program is an ongoing evaluation of weekly curbside collection of the following materials: mixed paper, in addition to newspaper, magazines, catalogues, corrugated cardboard, and telephone books; mixed plastic, in addition to metal and glass containers and plastic bottles and jugs; textiles; and food waste (in part of the Park Slope Intensive Recycling Zone). The food waste is the "fourth sort." The highly motivated community participating in the Park Slope Intensive Recycling Zone receives a great deal of support for this program, including free containers for each of the four sorts and extensive outreach support. In addition, most households in Park Slope have space available for storing these materials between weekly collections.

The following capture rates were estimated in the intensive zone:

- 20% to 30% of the organics stream;
- 65% to 75% of the paper stream; and
- 50% to 53% of the commingled metals, glass and plastics stream.

These results indicate that the addition of mixed paper and plastics created a synergistic effect, improving diversion for all the designated materials.

For the economic projections of a "four bag sort" program, the City assumed a City-wide average capture rate of 50% for residential organic wastes. The actual capture rate in the Park Slope Intensive Recycling Zone was less than half the projected capture rate of 50%. Consequently, an expanded program would have much higher costs per ton of diverted material than originally

projected. Furthermore, it is unlikely that the Park Slope Intensive Recycling Zone experience could be successfully duplicated across the entire City because its success relied heavily upon the motivation of its participants and their ability to store recyclables and organic material for an entire week, and significant commitment of public funds for free containers, out reach and education conditions that are difficult to replicate City-wide.

Based on the results of the organic sort pilot in the Part Slope Intensive Recycling Zone, the City concluded that a "four bag sort" program would not be economically feasible for the entire City and, therefore, conducting additional "four bag sort" pilot programs was unnecessary. Since the purpose of these pilot programs was to determine the feasibility of a "four bag sort" program, the goal of the milestone was achieved.

4.1.5 Contract for the Sale of Recovered Materials

The purpose of this program was to promote and enhance markets for recycled materials and to enter into long-term contracts for the sale of the material processed at any City-owned MRF. These long-term contracts would help reduce the market price risk the City anticipated taking at the City-owned MRFs. Furthermore, a long-term supply of material from the City would help encourage the growth of markets for recyclables.

The Plan milestones for this program are:

- **Research and develop strategies to encourage the growth of markets for the City's recyclables. The focus of this effort is to enter into long-term contracts for large quantities of each type of recyclable material collected by the City (FY 1993).**

- **Award a long-term supply contract for newspaper (FY 1993).**

- **Issue an RFP for a long-term supply contract for an additional recyclable material (FY 1993).**

The goal of these milestones have essentially been accomplished because the City has entered into long-term contracts to supply recyclable materials to private firms that have the responsibility of processing and marketing these materials. All of the materials included in the current residential curbside program are being marketed by these firms.

The Department hired a consultant to develop a computer model of the waste paper business that will aid the City in the evaluation of alternative paper collection and sorting methods. This consultant is also reviewing the entire chain of paper handling, including the processing, brokerage, and manufacturing of paper products. The final report is expected in mid 1995.

The Department prepared a draft RFP for the processing and marketing of mixed paper which was issued for public comments. The RFP may be issued if the City determines that mixed paper will be included in the residential curbside recycling program.

These milestones were completed with a deviation from the Plan, as discussed above. The Department will continue to monitor secondary material market developments.

4.1.6 Legislative and Policy Initiatives

The following milestones have been identified in the Plan with respect to legislative and policy issues related to residential recycling:

- **Support legislation to expand and improve the effectiveness of the State's Returnable Container Act (FY 1993).**

The Returnable Container Act is noted in the Plan as a crucial part of the state's solid waste management program which reduces the City's solid waste stream by approximately 5% by weight and 8% by volume. As part of the City's legislative packages submitted to Albany in FY 1992 and FY 1993, the City included enhancements to and expansion of the state's returnable beverage container legislation. The City provided comments on a State Senate bill (S.3532) that would prohibit the intentional disposal of beverage containers in any landfill or incinerator, and allow any MSW management facility to operate as a redemption center for beverage containers.

The City also supported a State Assembly bill (A.5414) that would expand recycling market development and an Assembly bill (A.7626) that would require state agencies to make funding available for secondary material (such as recycled containers) demonstration projects. Neither of these bills was enacted into law.

This milestone was accomplished.

- **Revise the City's residential recycling rules to permit the use of bags as well as plastic containers for recyclables and to increase building signage requirements (FY 1993).**

The Department's residential recycling rules were revised, effective April 15, 1993, to allow for the placement of recyclables in bags as well as the plastic recycling bins and to increase signage requirements.

This milestone was accomplished. Currently, residents can use both bags and bins.

- **Pursue changes in the City building codes to encourage waste prevention and recycling (FY 1993).**

The Department does not consider mandating waste prevention through the City building code a feasible option. However, for recycling, the Department consulted with the City Building Department regarding changes to the City building code in October of 1993. These changes

require the design of each new residential building, any old residential buildings undergoing a major renovation, and all new commercial and institutional buildings to include sufficient storage and sorting space for recyclable materials. Smaller buildings would be required to have central storage areas, with proper signs and fire protection, that can be used by all residents of the building. Larger buildings, such as residential buildings with more than 49 units, would be required to have both a central area and an area on each floor for storage of recyclable materials.

This milestone was met with respect to recycling initiatives.

4.2 Commercial Recycling

The commercial waste stream comprises more than 50% of the overall waste stream in the City. The potential exists in the commercial sector to divert large quantities of recyclable materials from the waste stream. Based on the City's regulatory requirements for commercial source separation programs, which complement economic incentives for the private sector to reduce the amount of waste being disposed, it is estimated that a large portion of the commercial waste stream is currently diverted for recycling.

The Department recognizes that a method of tracking commercial waste disposal and recycling is necessary to achieve a complete understanding of the City's overall recycling achievements. Therefore, the Department instituted a comprehensive reporting procedure, in July of 1994, through which the transfer station operators provide requested information to the Department on a quarterly basis. This information is currently being compiled to obtain a recycling database of the City's commercial waste.

The three commercial recycling programs are: Targeting Additional Materials for Commercial Recycling, Monitoring Programs for Commercial Recycling, and Legislative and Policy Initiatives. The program elements and milestones are presented in Table 4-4.

TABLE 4-4
COMMERCIAL RECYCLING
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Targeting Additional Materials for Commercial Recycling			
Examine the economic feasibility of designating additional high quality materials for collection (FY 1994)	✓		Study completed. No additional materials added
Monitoring Programs for Commercial Recycling			
Prepare a description of efforts to recover recyclables by private carters and transfer station operators (FY 1994)		✓	
Evaluate mandatory waste audits (FY 1993)	✓		
Legislative and Policy Initiatives			
Seek amendments to commercial recycling rules (FY 1993)	✓		Revised rules took effect on September 30, 1993

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

4.2.1 Targeting Additional Materials for Commercial Recycling

The Department does not provide MSW or recyclable collection services to the private sector. Rather, businesses must contract for this service through private haulers or recyclers. Private haulers charge their customers (on a volume basis) for the collection and disposal of the waste and recyclables. Private recyclers, on the other hand, frequently pay for the material they collect from businesses. Some businesses generate large quantities of recyclable materials, such as office paper, corrugated cardboard, and metals, which lends them to private sector recycling initiatives. Private haulers and recyclers remove the recyclables for sale and have been doing so for many years.

- **Examine the economic feasibility of designating additional high quality materials for collection in the commercial recycling programs (FY 1994).**

The Department conducted an economic analysis of the markets for various components of the commercial waste stream in April 1993 to determine what materials could be economically source separated from the commercial waste stream. City rules, requiring the recycling of the materials for which economic markets were determined to exist, went into effect on September 30, 1993 (see discussion in Section 4.2.3).

The evaluations of recycling markets and the economic feasibility of formally designating additional materials are ongoing. If markets for mixed paper continue to be strong, the Department will consider designating this material for recycling in the commercial sector. However, the Department notes that the current commercial source separation rules were purposely structured to facilitate the recycling of additional materials, such as mixed office paper or non-designated plastics. Specifically, the rules allow for non-designated materials to be mixed with designated materials, provided both the designated and non-designated materials are recycled. Given this flexibility in the rules, market forces will drive the recycling of additional materials where economic markets exist.

This milestone was completed on time.

4.2.2 Monitoring Programs for Commercial Recycling

As noted above, to quantify commercial diversion rates, the Department must obtain better information about commercial recycling and processing efforts occurring in the City. Many communities are recycling relatively high quantities of materials from the commercial sector. For example, the City of Seattle reports that at lease 45% of its commercial MSW is being recycled. Furthermore, approximately two-thirds of the material diverted from Seattle's MSW stream for recycling in 1992 was done through private sector initiation. For this program element, the Department created a reporting procedure for private carters and transfer station operators. The milestone is described below.

- **Based on data provided by private carters and private waste transfer stations, prepare a description of efforts to recover recyclables, including the quantities and types of materials collected (FY 1994).**

The Department has instituted a procedure for obtaining information from privately owned transfer stations in the City. Owners of these transfer stations generally also have the ability to report on private collection practices, since most own a fleet of collection vehicles as well. Reporting forms were distributed to the transfer station operators in June 1994, along with an explanation of the need to determine private sector recycling rates. An orientation meeting for these operators was held in July, and the first quarterly reports were due in August 1994. Included on the forms are such items as: incoming quantity of materials on a volume and weight basis, by type; outgoing quantity of recyclables and markets, by type; and quantity of residue and ultimate destination. This information is to be compiled for a three-month reporting period.

As expected with any new reporting program, much of the information received in the first set of responses was incomplete and required clarification or verification. The Department is evaluating the reported information and has notified the respondents of the need to provide all of the information requested. The Department expects significant improvement in the quality of the next set of quarterly reports.

To better track private sector recycling rates, the DCA shares the recycling tonnage data that it receives from private carters. The Department is also working closely with trade associations that represent the waste paper, scrap metal, and other secondary material industries in an effort to obtain accurate information on the quantity of material actually being recycled in the City.

This milestone activity is underway and is ongoing.

- **Evaluate implementing mandatory waste audit requirements for commercial and institutional waste (FY 1994).**

The Department evaluated the feasibility of mandating waste audits for commercial and institutional waste generators in a report dated May 1994. The study concluded that mandatory waste audits have proven to be effective in achieving significant reductions; however, individual businesses can benefit by applying the results of waste audits and implementing waste prevention plans.

This milestone was met on time. The Department will continue its efforts to establish a comprehensive business education and assistance program by expanding its waste prevention assessment and assistance program.

4.2.3 Legislative and Policy Initiatives

- **Revise commercial recycling rules and transfer station rules to minimize contamination and maximize recovery of designated recyclable material (FY 1993).**

Revised commercial recycling rules took effect on September 30, 1993. These modifications were promulgated to reduce contamination and maximize the recovery of recyclables. Food and beverage service establishments are now required to source separate corrugated cardboard, metal cans, glass bottles and jars, plastic bottles and jugs, and foil products. All other businesses are required to source separate corrugated cardboard, high-grade office paper, newspaper, magazines, catalogues, and telephone directories. In addition, all City businesses must arrange to recycle certain types of construction waste, metal components of bulk waste (such as file cabinets), and textiles if these items constitute more than one-tenth of a business' waste stream. Operators of transfer stations are required to process all of these designated materials for recycling. Rules promulgated by the DCA require private carters to collect designated paper and textile materials in a separate vehicle compartment from other materials, and to keep designated metal, glass, and plastic in separate bags or separate compartments. A manual on commercial recycling was developed and mailed to 200,000 City businesses in August 1994.

This milestone was accomplished. The Department is continuing to work with private carters, trade associations, and business organizations to inform businesses of these requirements.

4.2.4 Commercial Construction and Demolition Debris

In the commercial sector, a common bulky waste is construction and demolition waste (C & D waste). This bulky waste could account for 10% of the MSW stream (based on projected composition in the year 2000), which is higher than any other single recyclable item. C & D waste is generated during the process of demolishing or remodeling older structures or during the

construction of new structures by construction contractors or homeowners. The material is collected in open top, roll-off containers. These containers are transported to private transfer stations where some recyclable material is removed and the remainder is densified for transport to final disposal. The types of materials that could be recycled from C & D waste include: metal, concrete, rock, wood, plastics, glass, paper, and other material such as bricks and asphalt.

4.3 Institutional Recycling

Institutional recycling refers to recycling efforts in institutions such as schools, prisons, hospitals, government agencies, and other non-profit facilities. The milestones in this program involve a combination of educational programs and recycling services that target specific materials. The program elements and milestones are presented in Table 4-5.

4.3.1 Public Information and Outreach Programs

The Department has coordinated several outreach programs to City agencies and institutions to establish and improve recycling efforts. These are discussed in the following milestone:

- **Improve recycling rates of City agencies through aggressive outreach and monitoring programs (FY 1993).**

The Department has established recycling programs in 65 mayoral agencies, through individual agency coordinators and managers and through DGS, which manages the City's physical structures and leased space. These recycling programs focus on materials generated in the office and include the same types of materials collected in the residential recycling and commercial programs. The Department has managed this outreach effort through numerous training and education workshops within the agencies.

TABLE 4-5
INSTITUTIONAL RECYCLING
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Public Information and Outreach Programs			
Improve recycling in City agencies (FY 1993)	✓		
Miscellaneous Institutional Recycling Programs			
Tire shredder at Fresh Kills landfill (FY 1993)	✓		Two shredders in operation at landfill
Pilot polystyrene recycling program (FY 1993)		✓	Pilot not started due to lack of space at schools participating in the program

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

The Department is also implementing a pilot recycling program in 310 public schools. School custodians and school principals work to recycle materials, such as high-grade paper, beverage containers, and similar products. The Transit Authority has set up similar pilot programs at seven stations where metals, glass, and plastic containers, as well as newspapers and magazines, are recycled.

This milestone was accomplished and is ongoing.

4.3.2 Miscellaneous Institutional Recycling Programs

The milestones for this program element are described below.

- **Acquire a tire shredder for use at the Fresh Kills landfill (FY 1993).**

Historically, the Department has collected tires during either lot cleaning activities or during normal MSW collection. The Department has installed two tire shredders at the landfill. Tires from the lot cleaning and others that are identified and picked from the landfill are shredded.

This milestone was accomplished on time.

- **Conduct a polystyrene collection and processing pilot (FY 1993).**

The Department developed a polystyrene collection and processing pilot program for two Manhattan school districts in the Spring of 1993. This milestone is being deferred and will be re-evaluated when the City schools are successfully recycling the currently designated materials.

This milestone has not been accomplished since the pilot program was not conducted. This results in a deviation from the Plan.

4.4 Household Special Waste

Household special wastes are materials generated from households, such as cleaning products, paints, thinners, and solvents. They can also include batteries, waste oil, and other special wastes.

4.4.1 Household Special Waste Collection

A program to remove these household special wastes from the regular waste stream relies on each resident voluntarily separating the special wastes and taking the wastes to a drop-off location. The program milestones are presented in Table 4-6.

- **Arrange for a one day drop-off of household special waste, including batteries, at a location in each borough. Continue program for collection of household special waste (FY 1993) (FY 1994).**

In FY 1991, the Department conducted a pilot program for a household special waste drop-off site in Park Slope, Brooklyn. Based on the results of the pilot program, the Department has conducted a drop-off program for household special waste in each borough one day per year since FY 1993. More than 2,800 participants brought in 43 tons of special waste, including:

- 2,000 gallons of motor oil;
- 2,500 gallons of paint (in Queens); and
- 1,000 automotive batteries.

The Center for Biological Systems at Queens College has been contracted by the Department to assist in educational and related services to support this program. This educational program has assisted in diverting these wastes from the regular waste stream.

TABLE 4-6
HOUSEHOLD SPECIAL WASTE
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Household Special Waste Collection			
Arrange for a drop-off household special waste collection day (FY 1993)	✓		
Continue program (FY 1994)	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

Due to the relatively high cost of this program, future household special waste collection days will only target high-volume special wastes, such as waste oil, for collection.

This milestone was accomplished and is continuing.

4.5 Composting

The Plan projected that composting had the potential to contribute in the range of 7% to 11% in the near-term and long-term, respectively, to the City's overall recycling goal. The Plan also noted some unique features of the City's MSW stream which dictate a different focus to the City's composting program from the typical municipal compost program which primarily composts leaf and yard waste. New York's high-density housing pattern results in a leaf and yard waste component that comprises less than 5% of the solid waste stream, compared to an overall national average of approximately 17%. Because in-sink food waste disposals are currently banned in the City, food waste in residential solid waste is approximately 12%, which is significantly higher that the national average of approximately 7%.

These facts have caused the City to focus on a seasonal leaf waste collection and composting program as a more cost-effective approach to economically capture a large portion of the total leaf-yard waste fraction. The balance of yard waste, such as grass clippings, is addressed through a public information oriented waste reduction strategy employing the demonstration of back yard composting methods and a "leave it on the lawn" pubic information program. These activities are discussed in more detail in Section 3.4.

Recycling the balance of the potentially available organic material in the waste stream is addressed by several pilot programs which focused upon evaluating the capture potential and the related economics of organic waste collection, and on improving the City's understanding of and experience with composting technology.

The elements of the City's composting program are presented in the three subsections which follow. The specific milestones referenced in the Plan are addressed in each subsection. The program elements and milestones are presented in Table 4-7.

4.5.1 Seasonal Leaf Waste and Yard Waste Composting Program Implementation

This program element includes activities related to the collection and composting of leaf and yard waste. The following describes the Department's progress in implementing the specific milestones established in the Plan for this program element.

- **Continue leaf and yard waste collection in Staten Island (FY 1993).**

The Fresh Kills leaf waste composting program was in operation when the Plan was approved and 1994 marked its sixth year of operation. The quantity of leaves composted annually at the facility have increased from 1,000 tons in 1989 to 3,400 tons in 1994. The facility is located on a presently inactive portion of the Fresh Kills landfill and processes leaves collected on Staten Island during a six-week period in the Fall. This facility is operated by the Department's Bureau of Waste Disposal.

The facility is equipped with two shredders for debagging leaves, two "Scarab 18" windrow turners for mixing and aerating the windrows, conveyors and a trommel for screening the cured compost, front-end loaders, and roll-off containers. The leaves are debagged and composted in open windrows with periodic turning and moisture addition. The composting process extends over nine months. The compost product from Fresh Kills is used in the final cover and re-vegetation of the landfill under the final closure program.

In the Fall of 1991, the Department arranged for deliveries of source separated, clean yard waste by commercial landscapers to this facility. Landscapers are charged a fee of $10 per cubic yard.

TABLE 4-7
COMPOSTING
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished? YES	Milestone Accomplished? NO	Highlights
Seasonal Leaf Waste and Yard Waste Composting Program Implementation			
Continue leaf and yard waste collection in Staten Island (FY 1993)	✓		3,000 tons per year composted
Expand Christmas tree collection (FY 1994)	✓		1,300 tons of trees in FY 1994
Construct Edgemere leaf composting facility (FY 1994)		✓	Delayed but continuing and subject to Plan modification
City-wide leaf and yard waste collection (FY 1996)		✓	Subject of Plan modification
Evaluation of Organic Waste Capture Methods and Collection Economics			
Evaluate feasibility of organics collection program (FY 1994)	✓		Park Slope Intensive Recycling Zone organic collection pilot program in place
Institutional composting pilot (FY 1993)	✓		
Composting Technology Evaluation			
Rikers Island composting pilot (FY 1993)	✓		Technology selected
Submit ULURP - issue RFP for in-vessel composting facility (FY 1994)	✓		Not required
Begin construction of in-vessel composting facility (FY 1995)	✓		Design in progress
Biosolids and MSW out-of-city co-composting feasibility (FY 1993)	✓		No longer applicable
Mixed waste composting feasibility (FY 1994)	✓		
Issue RFP for two in-vessel composting facilities, if feasible (FY 1996)		✓	Subject of Plan modification
Begin constructing two in-vessel composting facilities, if feasible (FY 1997)			
Start operations of two in-vessel composting facilities, if feasible (FY 1999)			
Start collection of organics, if feasible (FY 1999)			

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

This milestone was accomplished. The program is continuing throughout Staten Island.

- **Initiate City-wide leaf and yard waste collection (FY 1996).**

Due to budgetary constraints, the Department's current plans are to defer expansion of the leaf collection program. This deferral will be addressed in a Plan modification.

- **Construct a leaf waste composting facility at the Edgemere facility (FY 1994).**

The Department continues to pursue development of this facility and has awarded an engineering contract for the design of this facility. Operation of this facility will be required for processing leaves from the expanded leaf collection operation. As noted above, the Department has deferred expansion of leaf collection operations. Accordingly, the Department will address the rescheduling of this milestone in the portion of the Plan modification which also addresses expansion of leaf collection operations.

- **Expand Christmas tree collection City-wide (FY 1994).**

In January 1994, the Department initiated City-wide collection of Christmas trees as part of the leaf waste composting program. In the first year of this program, 160,000 trees (approximately 1,300 tons) were collected by Department vehicles running special collection routes. These trees were shipped to Fresh Kills, chipped, and used as bulking material in the composting operation.

This milestone was accomplished on time. The program is continuing.

- **Construct a new leaf waste composting facility at Fresh Kills to replace the existing facility (FY 1997).**

The progression of ongoing operations at the Fresh Kills landfill will require the relocation of the existing leaf waste composting operation to a new site at Fresh Kills. The Department anticipates that this relocation will be accomplished in FY 1999. The delay in the construction of a new leaf waste composting facility at Fresh Kills will not disrupt the ongoing program.

4.5.2 Evaluation of Organic Waste Capture Methods and Collection Economics

The Plan referred to two possible approaches to the problem of obtaining a relatively contaminant-free stream of organic material for composting. These were (1) implementation of collection regime for curbside pick-up of source separated organics, and (2) development of mixed waste processing facilities to recover organic material through mechanical processing of the residential MSW stream. The Department decided to focus its resources on the first option for the following reasons:

- The very limited experience with mechanical processing to recover clean compostable organics from the MSW stream and the high capital cost associated with this technology; and

- The assumed higher level of quality (i.e., less contamination) that could be obtained in a source separated organic stream.

The Department evaluated the diversion potential of curbside pickup of source separated organics in the Park Slope Intensive Recycling Zone pilot program which is discussed below.

- **Conduct five pilots in residential sections (one in each borough) to test the feasibility of collecting compost materials in addition to those currently collected under a "four bag sort" system (FY 1994).**

This milestone is also reported on in Section 4.1.4 which pertains to the collection and processing of recyclables. It is restated here because some of the findings from the Park Slope Intensive Recycling Zone pilot program have direct relevance to the composting program.

The Park Slope Intensive Recycling Zone pilot program is an ongoing Department program started in November 1991 to evaluate the potential to "capture", through source separation, various recyclable and organic materials. The results of this pilot program, relative to household separation and set-out of organic food waste, indicate a capture rate that is significantly lower than the 50% rate anticipated for capture of food waste organics in the Park Slope Intensive Recycling Zone pilot program. The Department has concluded that implementation of a residential food waste curbside collection program is not justified for the following reasons: (1) the low rate of capture of food waste in Park Slope, and (2) the significant level of resources committed by the Department for public education to achieve this diversion in a neighborhood already highly motivated to recycle. This conclusion is based on the quantity of material likely to be diverted, the cost of implementing a public information program and separate collection route to pick up this material, and the low market value of the recovered compost product.

Accordingly, the findings of the Park Slope Intensive Recycling Zone pilot program have caused the Department to reassess its approach toward implementing a large-scale program for the curbside collection of residentially generated food waste organics. The implications of these findings, as they address the implementation of future composting program milestones, will be addressed in a Plan modification.

This milestone was completed.

- **Conduct institutional composting pilot at Fresh Kills composting facility (FY 1993).**

This project was initiated in January 1993 to support the institutional organics collection program. The Department obtained a temporary permit from the NYSDEC to operate a composting facility for source separated food waste organics at the Fresh Kills landfill in the area adjacent to the leaf waste composting program. However, the purpose of the program is not to evaluate the composting operation (although that has been carefully monitored and found to be successful), but rather to serve as a basis for collecting and evaluating information on the quality and quantity of food waste generated by institutions and the logistical requirements to support collection of this material.

The program has been implemented for the collection of food waste from 16 non-profit institutions on Staten Island, such as nursing homes, colleges, and correctional facilities. Participating institutions were initially provided with cellophane-lined kraft paper bags to line metal dumpsters, also provided by the Department. At the composting facility, the food waste is mixed with a bulking agent which also improves the carbon to nitrogen ratio (a 6:1 ratio has been found to be the most effective recipe). The material is composted over a period of approximately nine months.

The finding of this program include:

- The quantity of material collected averaged between four and five tons per week;
- Testing has indicated the material is capable of meeting Class I standards; and
- Future plans for the institutional pilot program include adding institutions and continuing outreach activities until collection capacity is filled.

The Department will evaluate these results in conjunction with the experience gained from implementation of a pilot program at Rikers Island in deciding the future scope of its institutional food waste composting program. This milestone was accomplished.

4.5.3 Composting Technology Evaluation

There is ample experience in the United States with successful implementation of open windrow composting of source separated yard waste. However, this is not the case with large-scale projects for the composting of the non-yard waste organic fraction of MSW. In the United States, experience with composting this organic fraction in large-scale applications is very limited and the results of several projects that have been implemented are inconclusive. The Department's concerns with composting the non-yard waste organic fraction of MSW include longer retention times and consequently higher costs associated with composting a waste stream that has a high cellulose component; the capability to produce compost that meets NYSDEC Class I or Class II and USEPA 503, Class A standards; the efficacy of odor control systems; the actual diversion rate (accounting for process losses) of material to compost net of residue; market applications for compost derived from MSW; the overall site area requirements; and capital and operating costs for large scale facilities.

The Plan outlined a program of technology assessment, evaluation, and development which incorporated both research and implementation of pilot programs for composting organics. These activities are intended to increase the Department's knowledge of implementation experiences with this technology in other settings and to provide it with hands-on experience with pilot scale facility development and operation.

- **Conduct in-vessel composting pilot at Rikers Island (FY 1993).**

- **Submit Uniform Land Use Review application for and issue RFP for design and construction of an in-vessel composting facility (FY 1994).**

- **Begin construction of in-vessel composting facility (FY 1995).**

In 1993, the Department initiated work under a NYSERDA funded grant program to evaluate in-vessel composting technology for use in a pilot scale facility to be developed to compost the food waste generated at Rikers Island. A preferred technology for this pilot technology was selected in 1993. Because the facility would be sited on Rikers Island and designed for food waste generated exclusively at the Department of Correction facilities on Rikers Island, ULURP was not required for this siting action.

This program involved the extensive evaluation of several composting technologies, analysis of Rikers Island food waste, and site identification activities. The program was delayed by difficulties in finding an adequate site on Rikers Island (which has now been accomplished) and by a mid-stream change in the food preparation system used on Rikers Island to chill-cook food preparation (which potentially affected waste quantities and composition). These obstacles have been overcome and the project is proceeding into construction. The facility will utilize a two-bay agitated-bin system in totally enclosed buildings and will process at approximately 15 tons per day capacity to compost food waste generated on Rikers Island.

This project will provide the Department with important data on the following: the cost of developing this technology in a New York setting; the efficacy of in-vessel technology and related odor control system to minimize the impact of odors on the surrounding environment; the retention time required to compost waste with a significant cellulose component (shredded corrugated generated at Rikers Island will be used as a source of carbon and as a bulking and moisture absorbing agent); net residue rates; product applications for the compost produced other than landfill cover; and the quality of the compost produced compared to regulatory standards.

The Department has awarded an engineering contract for the preparation of construction drawings and anticipates an award of a construction contract in the summer of 1995. An 18-month allowance for construction and performance testing is required before this facility can begin commercial operation. This milestone will be accomplished in FY 1995 with the award of a construction contract.

This milestone is being accomplished, although completion of construction will occur later than initially planned.

- **Examine feasibility of developing an out-of-City co-composting facility combining biosolids and compostables waste (FY 1993).**

This milestone assumed that there would be a benefit to combining MSW-derived compostable material with the waste water biosolids generated by the City Department of Environmental Protection (DEP) treatment facilities to produce a compost feedstock. However, the biosolids management programs which were selected by DEP (which are discussed in Section 7.0 of this report) obviate the need to use MSW compostables as a bulking agent and source of carbon. Accordingly, because this concept is no longer applicable to the DEP program, this milestone is no longer relevant to the Department's program.

This milestone was completed.

- **Research and evaluate composting technologies, monitor facilities' operations (FY 1993).**

The Rikers Island project, previously described, involved an extensive evaluation of in-vessel technology. A qualification process solicited technology information from approximately 20 vendors. A progressively more detailed evaluation led to the shortlisting of four vendors and the final selection of a preferred technology which is being utilized in the Rikers Island project.

Other evaluative activities include: (1) in conjunction with NYSERDA, the Department plans to evaluate anaerobic digestion systems in 1995, and (2) as a participant in the U.S. Conference of Mayors' Compost Technology Review Advisory Committee, the Department is reviewing experience with large scale aerobic, in-vessel systems for both source separated organics and mixed MSW.

This milestone was accomplished. Research and evaluation activities will continue.

- **Evaluate feasibility of developing a mixed waste composting facility (FY 1994).**

The Department has followed the status of existing mixed waste composting projects in the United States, such as the Dade County, Florida, the Portland, Oregon and the Mora, Minnesota projects, all of which have been closed because of significant operational problems. Conversely, the Sevierville, Tennessee mixed waste composting facility continues to operate without reports of major problems. The Department has also tracked developmental activity with implementation of several regional projects. Projects in Morris County and Cape May, both in New Jersey, have been indefinitely deferred while a facility in Calverton, Long Island continues in development. The Department will continue to monitor progress with existing and developmental projects to identify where mixed waste composting applications are succeeding.

This milestone is being accomplished. Evaluative activities will continue.

- **Based on the status of composting technology, the experiences with the Rikers Island composting facility, and other relevant information, consider proceeding with the development of two additional composting facilities. The size of these facilities will depend on whether they are designed to accommodate only commercial and institutional organic waste or also residential organic waste. For purposes of the composting section of this implementation schedule, it is assumed that residential (in low density areas), is determined to be feasible, even though the final decision on whether to proceed with this course of action will not be made until the earliest FY 1997 (FY 1995).**

- **Issue RFP for two in-vessel composting facilities, if feasible (FY 1996).**

- **Start construction of two in-vessel composting facilities, if feasible (FY 1997).**

- **Start operations at two in-vessel composting facilities, if feasible (FY 1999).**

- **Start collection of organics in low-density residential areas, if feasible (FY 1999).**

Commencement of the above milestones depend upon the Department's determination that: (1) the composting of the non-yard waste organic fraction of MSW has achieved a degree of technological reliability and has been shown to be economically competitive with alternatives, and (2) economical methods of obtaining a reliable and relatively contaminant free supply of organic feedstock are found from sources other than curbside pick-up of source separated organics. The Department is generating the information needed for this determination from its implementation experience with the Rikers Island project and the evaluative activities previously discussed. However, it will not be able to make that determination on the timetable envisioned in the original Plan. The Plan modification will address the Department's future program activity in this area.

4.6 Market Development

The objective of this program is to foster the development of new industries that remanufacture secondary material into useful products. In addition, the City is encouraging such industries to locate in the City to create jobs and local markets for recyclable materials. The program elements and milestones are presented in Table 4-8.

TABLE 4-8
MARKET DEVELOPMENT
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Develop New Industries			
Develop new industries in the City to use recyclables (FY 1993)	✓		The Department and EDC held two-day workshops for over 90 businesses
Legislation and Policy Initiatives			
Lobby for federal and state recycling and material market development legislation (FY 1993)	✓		
Seek changes in Local Law 19 to support material market development (FY 1993)	✓		Mayoral Directive issued which allows up to 15% premium be paid to market for recycled paper

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

4.6.1 Develop New Industries

The Plan milestone for this program element is:

- **Encourage development of new industries in the City that use the City's recyclables (FY 1993).**

The Department sponsored a report entitled "Exploring Economic Development Opportunities in Recycling." As a result, three conferences were held which brought recycling-industry representatives and public officials together to identify opportunities to foster the development of recycling businesses in the City. In 1993, the Department worked with the Economic Development Corporation (EDC), and together with EDC, sponsored two workshops on Industrial Development Authority financing for recycling businesses. The workshops were attended by representatives of more than 90 businesses. In addition, the Department and EDC have worked together in developing the concept for a "Green Industrial Park" at Bush Terminal in Sunset Park, Brooklyn. Also, the Department and EDC have assisted several manufacturers with identifying reliable sources of secondary materials that are not collected through the curbside program, including light bulbs, carpeting, tires, wood pallets, and plastic wrap, by providing these companies with information on real estate and economic-development incentives. Finally, the Department is working on a survey of all recycling companies in the City, which include about 700 haulers, processors, and end-users. The survey will identify the nature and scope of the City's recycling industry to track recycling-related economic development and to learn more about the needs of each recycling business.

The Department and the Mayor's Office of Construction have started a working group to expand the City's use of construction products, such as paint, insulation, carpeting, and wallboard, manufactured with secondary materials. This group will work with the Law Department to change the bid language for purchasing to require bid alternates to have recycled content, develop a seminar with the Procurement Training Institute on purchasing recycled construction products,

expand opportunities for plastic lumber in marine construction in the City, and develop a brochure to assist manufacturers of recycled content construction products in obtaining the certification necessary for selling products to the City.

The Department provided funding to New York University in September 1993 to study economic development opportunities in recycling. This analysis of market development resulted in a report entitled "Exploring Economic Development Opportunities in Recycling," issued in August 1993. The study finds that new enterprise development can be a benefit of the City's recycling programs. The potential for new economic development exists because the technical, institutional and other supportive services required by new businesses of this kind already exist within the City. Furthermore, companies that create commercially viable uses for materials that are now difficult to recycle, such as tires, filmed plastics, and mixed glass, can make important contributions toward achieving the City's recycling objectives. The report also identifies several ways that the City can foster the development of new recycling related enterprises.

This milestone was accomplished on schedule.

4.6.2 Legislative and Policy Initiatives

Governments can help to promote markets for recyclable materials through their purchasing power. For this program element, the City supported legislation that would require the federal and state governments to give preference to materials purchased with post-consumer secondary material content and allow them to pay a premium for such purchases.

The specific Plan milestones for this program element are:

- **Lobby for federal and state recycling and secondary material market development legislation, including the passage of RCRA amendments that support recycling, such as a provision encouraging the federal government to purchase materials with minimum recycled content and a provision for establishing a national data base on recycling materials markets and technologies (FY 1993).**

As part of the City's federal legislative agenda, the City supported the inclusion of recycling market proposed provisions to the RCRA. In addition, during RCRA reauthorization hearings, the City supported, through written comments, the passage of amendments that addressed market development, a national data base on recyclable materials and technologies, and the federal purchasing of materials with recycled content.

This milestone was accomplished.

- **Seek amendments to Local Law 19 to conform to this plan (FY 1993).**

- **The Department will work with the DGS on appropriate legislation to implement a recent amendment to General Municipal Law Section 104-a, which authorizes municipalities to grant a ten percent price preference in the awarding of public contracts to vendors of all recycled products as opposed to just paper products (FY 1993).**

The Administration has engaged in discussions with the City Council on possible amendments to Local Law 19 of 1989, particularly with regard to the law's tonnage provisions. Discussions began in the Spring of 1994 and are continuing.

In addition, the Department, in conjunction with DGS, drafted a local law to implement the price preference provisions of General Municipal Law 104-a. This bill was introduced in the City Council but was never adopted. The Administration has agreed to work with the City Council in a recently introduced City Council bill on environmental purchasing initiatives. Mayoral Directive No. 93-2, "Procurement of Printing and Writing Paper with Recycled Content," issued on October 28, 1993, requires that printing and writing paper purchased by City agencies contain post-consumer recycled content.

These milestones were accomplished.

5.0 WASTE-TO-ENERGY AND INCINERATION

Three waste-to-energy programs are prescribed in the Plan: Modification or Closure of Existing Facilities, Construction and Operation of New Facilities, and Ash Management. Each of these programs is described in more detail below.

5.1 Modification or Closure of Existing Facilities

In 1990, approximately 4.7% of the residential, institutional, and commercial MSW generated in the City, or about 1,200 tons per day, was combusted in the City's three existing incinerators, i.e., the Betts Avenue, Greenpoint, and Southwest (SW) Brooklyn incinerators. The City has permanently closed both the Betts Avenue and Greenpoint incinerators and has ceased accepting waste at the SW Brooklyn incinerator and is considering whether to repair or rehabilitate this facility. As a result, none of the MSW generated in the City is currently being combusted within the City. The program elements and milestones are presented in Table 5-1.

5.1.1 The Betts Avenue Incinerator

Two of the four units of the Betts Avenue incinerator were to be closed under this program element of the Plan in FY 1994. By FY 1995, the other two units were to be closed or renovations were to be initiated to bring the incinerator into compliance with 6NYCRR Part 360 operating requirements and the federal Clean Air Act Amendments of 1990. The City's decision to renovate the Betts Avenue incinerator depended upon the status of the Brooklyn Navy Yard facility. In particular, the City was to consider the renovation only if the Brooklyn Navy Yard waste-to-energy facility permit was denied by the NYSDEC; the permit application was withdrawn by the City; or the Brooklyn Navy Yard project was terminated by the City or the contractor.

TABLE 5-1
MODIFICATION OR CLOSURE OF EXISTING FACILITIES
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
The Betts Avenue Incinerator			
Cease operation of two of the four lines (FY 1994)	✓		
Decide whether to proceed with renovation (FY 1995)	✓		The City decided to close the Betts Avenue incinerator ahead of schedule
Cease operation or renovate facility (FY 1995)	✓		
The Greenpoint Incinerator			
Decide whether to proceed with renovation (FY 1995)	✓		The City decided to close the Greenpoint incinerator ahead of schedule
Cease operation or renovate facility (FY 1996)	✓		
SW Brooklyn Incinerator			
Evaluate feasibility of front-end pre-processing (FY 1993)	✓		Infeasible because of insufficient space at site
Begin renovation of air pollution control system (FY 1993)		✓	Delayed, requires Plan modification
Issue RFP for the installation of waste-to-energy capability (FY 1997)	NA		
Start construction of waste-to-energy conversion (FY 1999)	NA		
Start operation of waste-to-energy equipment (FY 2001)	NA		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

NA = Not applicable.

Specifically the Betts Avenue incinerator program element consists of the following three milestones:

- **Cease operations of two of the four furnace lines (FY 1994).**

- **Decide whether to proceed with the renovation of the Betts Avenue incinerator (FY 1995).**

- **Cease operation by June 30, 1995, unless it is to be renovated (FY 1995).**

Because none of the conditions related to the Brooklyn Navy Yard, as stated above, has occurred or is expected to occur, the City decided to close the Betts Avenue incinerator and convert it to a Department garage. This was accomplished in FY 1993.

These milestone were completed.

5.1.2 The Greenpoint Incinerator

This program element called for either the closure of the Greenpoint incinerator or the initiation of renovations of the facility to bring it into compliance with 6NYCRR Part 360 operating requirements and the Clean Air Act Amendments of 1990. The City's decision to renovate the Greenpoint incinerator depended upon the status of the Brooklyn Navy Yard facility and/or the existence of an "emergency." In particular, the City was to consider the renovation only if: (1) the Brooklyn Navy Yard waste-to-energy facility permit was denied by the NYSDEC, or the permit application was withdrawn by the City; or (2) the Brooklyn Navy Yard project was terminated; or (3) an emergency which would include an event such as a government restriction that curtailed the export of the City's MSW, a NYSDEC restriction on the use of the Fresh Kills landfill, or a NYSDEC denial of permits to renovate the SW Brooklyn incinerator, occurred.

The Plan listed two milestones for the Greenpoint incinerator program element:

- **Decide whether to proceed with the renovation of the Greenpoint incinerator (FY 1995).**

- **Cease operation by November 15, 1995, unless it is to be renovated (FY 1996).**

Because none of the conditions related to the Brooklyn Navy Yard has occurred, the City decided to close the incinerator and convert it to a Department garage. This was accomplished in FY 1994.

These milestones were completed.

5.1.3 SW Brooklyn Incinerator

The SW Brooklyn incinerator began operation in 1962. It was retrofitted with a new electrostatic precipitator in the early 1970s to comply with the Clean Air Act Amendments of 1970. The facility has ceased to accept waste.

This program element in the Plan consists of the repair and rehabilitation of the facility which would bring it into compliance with 6NYCRR Part 360 operating requirements and the Clean Air Act Amendments of 1990. Furthermore, the City evaluated the feasibility of retrofitting the SW Brooklyn incinerator with a material recovery front-end processing capability.

One milestone for this program element is:

- **Evaluate a front-end pre-processing system for retrofitting at the SW Brooklyn incinerator (FY 1993).**

The Department contracted with a consultant to determine the feasibility of constructing a front-end processing facility to recover materials for recycling prior to the combustion of MSW.

The feasibility consultant's analysis was completed in 1989 and reconfirmed in 1993. The study concluded that it was not feasible to build a front-end pre-processing facility at the SW Brooklyn incinerator due to insufficient space to build such a facility in addition to installing the air pollution control equipment, including spray dryers, bag houses, and a lime preparation building; a new electrical substation; and the ash handling system required to bring the SW Brooklyn incinerator into compliance with the Clean Air Act Amendments of 1990 and convert it to a waste-to-energy facility.

This milestone was accomplished.

The other milestones related to the repair and rehabilitation of the SW Brooklyn incinerator are:

- **Begin renovation of SW Brooklyn incinerator to provide the combustion and air-pollution controls required to meet the new Clean Air Act requirements (FY 1993).**

- **Issue RFP for installation of waste-to-energy capacity at the SW Brooklyn incinerator (FY 1997).**

- **Start construction of waste-to-energy equipment at the SW Brooklyn facility (FY 1999).**

- **Start operation of waste-to-energy equipment at SW Brooklyn facility (FY 2001).**

On March 31, 1992, the Department formally began the process of obtaining permits for the project by filing applications, with the NYSDEC, for a Part 360 solid waste management facility

permit to construct and a Part 201 air emission source permit to construct. The Department's environmental review of the project, which included the preparation of a health risk assessment, resulted in the issuance of a Negative Declaration/Notice of Determination of Non-Significance on May 29, 1992 and an amendment to the Negative Declaration on July 7, 1992. In the context of the permit application review process, the Department also provided NYSDEC with a revised ash sampling plan and letters of intent to provide long-term ash transportation and disposal capacity from proposers responding to an RFP issued by the Department.

On November 6, 1992, the NYSDEC issued to the Department, a Notice of Complete Application for the project and determined that a public hearing and issues conference must be held on the permit application. At the March 3, 1992 issues conference, an Administrative Law Judge (ALJ) determined that there were unresolved legal issues to be briefed. On the basis of those briefs, the ALJ issued Rulings, dated November 18, 1993. Among other conclusions, the Rulings determined that the NYSDEC lacked the authority to review the Negative Declaration in the permit proceedings. The ALJ's Rulings holding that NYSDEC lacked the authority to review the Negative Declaration was not appealed by the parties.

After a second round of briefs and replies, an Interim Decision was issued by the NYSDEC Commissioner on March 2, 1994, which largely upheld the ALJ's Rulings.

On November 9, 1992, an Article 78 petition was filed against the Department and the City by intervenors consisting of citizens and civic groups alleging that the Department failed to comply with the State Environmental Quality Review Act (SEQRA) and City Environmental Quality Review (CEQR) by issuing a Negative Declaration and finding that the proposed repair and rehabilitation of the SW Brooklyn incinerator would not have an adverse effect on the environment. On January 12, 1993, the Article 78 petition was dismissed on the grounds that the issues were not ready for adjudication because the NYSDEC had not made a permit decision, and the applicants had a forum for addressing adequacy of environmental review as part of the permit hearing process. On appeal, the City agreed to settle the matter by rescinding the

Negative Declaration issued for the project. The Negative Declaration was rescinded by the Department on October 3, 1994.

If the City proceeds with the planned repair and rehabilitation of the SW Brooklyn incinerator, the City will prepare an Environmental Impact Statement (EIS) which will further delay this milestone.

Furthermore, in August 1993, the New York State Legislature passed the Clean Air Compliance Act. The Clean Air Compliance Act contained an amendment to the Environmental Conservation Law, ECL §19-0321, requiring that the City demonstrate its ability to offset nitrogen oxide and volatile organic compounds emissions from the proposed Brooklyn Navy Yard and the proposed repair and rehabilitation of the SW Brooklyn incinerator through reductions in the emissions of these pollutants from other sources before it could obtain permits to construct these projects. In compliance with ECL §19-021, an offset analysis was filed by the City and the Brooklyn Navy Yard co-applicant, SES Brooklyn Company, L.P., on December 15, 1993. On April 4, 1994, NYSDEC issued a draft final determination which concluded that the offset analysis established sufficient offsets for the Brooklyn Navy Yard project only if all of the pollution reduction credits derived from the closure of the SW Brooklyn incinerator were applied to the Brooklyn Navy Yard.

Waste is not being accepted at the SW Brooklyn incinerator, pending a resolution of the issues discussed above. Because of the delay in implementing this program element and the potential need to apply all of the offsets derived from the closure of the SW Brooklyn incinerator to obtain permits for the Brooklyn Navy Yard waste-to-energy facility, the implementation of this program element requires further study and will require a modification to the Plan.

5.2 Construction and Operation of New Waste-to-Energy Facilities

The Plan states that a new waste-to-energy facility should be constructed and that the facility should be constructed at the Brooklyn Navy Yard. The development of the 3,000 ton-per-day

Brooklyn Navy Yard facility began in 1978. A summary of the key milestones that were achieved prior to the submission of the Plan is provided below. A program element and milestones are presented in Table 5-2.

5.2.1 Brooklyn Navy Yard Waste-to-Energy Facility

A full-service RFP to design, build, and operate the Brooklyn Navy Yard waste-to-energy facility was issued in 1980, and a private contractor was selected in 1981. An EIS for the project was completed and approved by the Board of Estimates in 1985 and a Prevention of Significant Deterioration (PSD) Permit was issued by the USEPA Region II in September 1990. On February 28, 1992, the USEPA administrator remanded the permit to Region II for the limited purpose of considering the viability of a reasonable materials-separation program for nitrogen-containing materials. Permit proceedings before the NYSDEC began in 1986 and have continued, intermittently, to the present.

In November 1989, the NYSDEC Commissioner issued his fourth interim decision, which essentially endorsed all aspects of the proposed project's design and operation, but required the Department to provide either a complete permit application for an ashfill for residue from the facility or evidence of a five-year capacity commitment for a landfill outside the City that is permitted to receive ash. The Department submitted a permit application for an ash landfill with an accompanying Draft EIS, both of which were certified as complete by the NYSDEC in March 1991. The Department, in accordance with the Plan, formally withdrew this permit application on September 1, 1992 (see section 5.3.1).

The Plan called for the continued development of the Brooklyn Navy Yard waste-to-energy facility. The Brooklyn Navy Yard project would provide new long-term disposal capacity within the City limits for non-recycled MSW that can reduce reliance on the use of Fresh Kills, and it may provide a cost effective disposal alternative. Specifically, the Plan milestones are:

TABLE 5-2
CONSTRUCTION AND OPERATION OF NEW WASTE-TO-ENERGY FACILITIES
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Brooklyn Navy Yard Waste-to-Energy Facility			
Start construction of the Brooklyn Navy Yard facility (FY 1996) Begin operation of the Brooklyn Navy Yard facility (FY 1999)		✓	Delayed, requires Plan modification

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

- **Start construction of the Brooklyn Navy Yard facility (FY 1996).**
- **Begin operations at the Brooklyn Navy Yard facility (FY 1999).**

The FY 1996 start of construction of the Brooklyn Navy Yard waste-to-energy facility is conditioned upon the Department providing residential curbside recycling service City-wide and establishing a pilot program to test "four bag sort" collection in each of the five boroughs. The first condition has been satisfied. To date the City has only conducted one of the five, "four bag sort" pilot tests. Conducting the remaining pilot programs, however, does not present a significant obstacle in implementing these milestones.

Since the adoption of the Plan, the City has proceeded with the development of the Brooklyn Navy Yard project. In September 1992, at the request of the City, the ALJ reconvened the permit proceeding on the Brooklyn Navy Yard project. In September 1993, the NYSDEC Commissioner ruled, in the Fifth Interim Decision, that the only remaining issue was the required emission offsets for the project.

Offsets for nitrogen oxides, volatile organics, and carbon monoxide are required pursuant to the passage of the New York State Clean Air Compliance Act (NYSCACA). In compliance with ECL §19-021, an offset analysis was filed by the City and the Brooklyn Navy Yard co-applicant, SES Brooklyn Company, Ltd., on December 15, 1993. On April 4, 1994, NYSDEC issued a draft final determination which concluded that the offset analysis established sufficient offsets for the Brooklyn Navy Yard project only if all of the pollution reduction credits derived from the closure of the SW Brooklyn incinerator were applied to the Brooklyn Navy Yard. If the City pursues the repair and rehabilitation of the SW Brooklyn incinerator, then additional offsets may be required.

In addition to delays caused by the need to conduct the offset analysis, the City will also have to conduct site investigations, perform remedial measures, and obtain permits to dredge and dispose of sediments from the Wallabout Channel, and may need to negotiate changes in the service agreement with the full-service contractor. Further delays may also occur from other permit, legal, and contractual requirements.

Because of the delay in implementing these milestones, a modification to the Plan will be required.

5.3 Ash Management

The City had to demonstrate at least five years of capacity for the disposal of ash as a condition to proceed with the Brooklyn Navy Yard facility. Furthermore, the City has agreed to export ash rather than dispose of the ash from the Brooklyn Navy Yard facility at the Fresh Kills landfill. In conjunction with acquiring ash disposal capacity, the City is evaluating the feasibility of using the ash beneficially. The program elements and milestones are presented in Table 5-3.

5.3.1 Ash Disposal Capacity

The program element milestones for acquiring ash disposal capacity are:

- **Withdraw the NYSDEC application for an ashfill at Fresh Kills (FY 1993).**

In September 1992, the City withdrew its permit application to construct an ash landfill at Fresh Kills to dispose of ash from its three incinerators and the proposed Brooklyn Navy Yard waste-to-energy facility. This action successfully completed this milestone.

- **Issue an RFP for out-of-City ashfill capacity seeking a minimum of five years of capacity for the ash from the SW Brooklyn and Brooklyn Navy Yard facilities (FY 1993).**

- **Enter into contract for out-of-City ashfill capacity (FY 1994).**

An RFP for out-of-City ash disposal capacity was issued on September 14, 1992. Three responsive bids for disposal of ash residue from the proposed Brooklyn Navy Yard waste-to-energy facility and the SW Brooklyn incinerator were received in October 1992.

TABLE 5-3
ASH MANAGEMENT
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Ash Disposal Capacity			
Withdraw application for an ashfill at Fresh Kills (FY 1993)	✓		
Issue out-of-city ashfill capacity (FY 1993)	✓		
Enter into contract for out-of-city ashfill capacity (FY 1994)		✓	Delayed, will require Plan modification
Beneficial Use of Ash			
Continue research on ash reuse and issue an RFP or RFI for the beneficial reuse of ash (FY 1994)		✓	Scope for continued research agreed to between City and NYSERDA; project now on hold.
Enter into a contract for the beneficial reuse of ash, if feasible (FY 1995)		✓	

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

Because of the early closures of the Betts Avenue, Greenpoint and SW Brooklyn incinerators and the delay in the start of construction of the Brooklyn Navy Yard facility, no award was made pursuant to this RFP. Pending resolution of the SW Brooklyn incinerator and Brooklyn Navy Yard waste-to-energy facility projects, the City may need to issue another RFP. The revised 6NYCRR Part 360-3.3(b)(2)(ii) regulations no longer require that five years of capacity for the disposal of ash be in place prior to the issuance of a permit to construct a waste-to-energy facility.

5.3.2 Beneficial Use of Ash

The program element milestones for the beneficial use of ash are:

- **Continue research on ash reuse and issue an RFP or Request for Information (RFI) for the beneficial reuse of ash (FY 1994).**

- **Enter into a contract for the beneficial reuse of ash, if feasible (FY 1995).**

The City and the NYSERDA began investigating the beneficial use of ash in the early 1980's when they co-funded a study to assess the feasibility of using ash from the SW Brooklyn incinerator as an aggregate substitute in bituminous paving mixtures. Prior to the Plan approval, the City participated in the Long Island Regional Planning Board's ash management investigations. The City had two roles in this effort. One role was to become part of the overall ash management advisory staff by providing technical and administrative support. The other role was to co-fund a demonstration project for the City. In August 1991, the City entered into an agreement with NYSERDA to fund this demonstration project.

The Department first conducted a feasibility study that included an in-depth evaluation of the following three potential ash utilization strategies for the City: landfill applications, i.e., landfill cover; bituminous paving; and vitrification or high temperature treatment and volume reduction.

A detailed evaluation of potential markets was also conducted. This six-month study was completed in October 1992.

Based on this evaluation, it was recommended that the City pursue a landfill utilization strategy and focus on demonstration of the acceptability of using the incinerator ash as an aggregate or soil substitute in various landfill applications. These applications include landfill cover, barrier protection layer, final site grading, gas venting layer, unclassified roadway fill and temporary roadway construction. It was estimated that these applications combined could provide an annual market outlet of approximately one million tons of material.

The proposed project included laboratory studies and actual field demonstrations. The laboratory studies consisted of bench scale tests designed to determine the physical, chemical, and leaching properties as well as vegetative growth, erosion, and dust potential of ash products or blends of ash with other aggregates or stabilizing agents. The design of the field demonstration activities was to be based on the results of these bench scale tests. The proposed field demonstrations encompassed using ash products and blends in a selected area of a landfill as well as conducting a comprehensive field monitoring and environmental assessment. The duration of the demonstration and monitoring activities was expected to be about three years.

The bench scale scope of work was developed and approved by NYSERDA in early 1994. However, the project was put on hold in May 1994 pending decisions on the renovation of the SW Brooklyn incinerator and the Brooklyn Navy Yard waste-to-energy facility. These program milestones were partially implemented.

6.0 LANDFILL

Although residents, businesses, and institutions are reducing solid waste through the various source reduction, reuse, and recycling programs, approximately 13,000 tons per day of solid waste was disposed at the Fresh Kills landfill on Staten Island in FY 1994. This landfill has a capacity of 100 million cubic yards and is an essential and cost-effective resource in the City's solid waste management system.

The City has closed five landfills since 1979, and recognizes the value of the Fresh Kills landfill as the single remaining landfill within City limits for solid waste disposal. Thus, the Department has identified in the Plan, a need to have alternate disposal options including export of solid waste to landfills located outside of the City. Furthermore, recent reductions in out-of-state landfill tipping fees have made export of solid waste a more cost-effective alternative disposal option. This section presents the progress of the Department toward meeting the Plan milestones for both the Fresh Kills landfill and export landfill activities.

6.1 Fresh Kills Landfill

The Fresh Kills landfill is currently the only operating MSW landfill serving the five boroughs of the City. The landfill is owned and operated by the City and has received solid waste since 1948. Located on the western shore of Staten Island, the 2,400 acre landfill site is divided into four sections. Sections 1/9 and 6/7 are the largest areas and are located on the eastern and western portions of the site. Sections 2/8 and 3/4 are approximately half the size of sections 1/9 and 6/7 and lie along the northern and southern portions of the site. Landfill sections 2/8 and 3/4 have been closed in accordance with the Plan.

In April 1990, the Department entered into a consent order with the NYSDEC to assess the landfill's impact on the surrounding environment and to implement corrective actions designed to improve the operations of this 47-year-old landfill. Many of these mitigative measures are Plan milestones for landfill improvement activities defined under the consent order. The consent

order further requires that the Department obtain approval to continue operating the landfill by submitting a 6NYCRR Part 360 permit application.

The Fresh Kills landfill Plan milestones have been divided into two program elements: landfill improvements and 6NYCRR Part 360 Permit Application. The Department has made significant progress toward implementing landfill improvements and permitting activities, as defined in the Plan and the consent order with the NYSDEC. The major accomplishments toward carrying out the landfill improvements and submitting a permit application include:

- Construction of a gas migration and monitoring system around the entire landfill;
- Commencement of construction for a gas recovery system for landfill sections 2/8 and 3/4;
- Issuance of an RFP for a gas concessionaire;
- Issuance of a Leachate Mitigation Report;
- Construction of a 200,000 gallon-per-day leachate treatment plant and the cessation of leachate recirculation;
- Construction of stormwater management systems for developed sections of the landfill continued;
- Cessation of waste deliveries and the implementation of a closure plan for sections 2/8 and 3/4;
- Submission of complete applications for SPDES and Tidal Wetlands Permits;
- Progression toward obtaining a permit for sections 1/9 and 6/7 of the landfill; and

- Submission of draft Part 360 permit application documents and environmental review documents for the continued operation of sections 1/9 and 6/7 of the landfill.

The program elements and milestones are presented in Table 6-1.

6.1.1 Landfill Improvements

This program element addresses landfill improvements for landfill gas control and recovery, leachate control and stormwater control, and landfill closure.

Landfill gas, generated by the natural decomposition of refuse, builds pressure within the landfill. This pressure will eventually force the landfill gas into the atmosphere or cause it to migrate underground. This gas is recognized as a potential source of odors, air pollution, and an explosion hazard. Thus, a landfill gas control system has been installed that provides for (1) controlling gas migration and venting through a trench system; (2) sealing of utility trenches; and (3) monitoring of methane content in the landfill gas. In addition, the landfill gas collected in section 1/9 is currently recovered and processed for sale to Brooklyn Union Gas Company. This recovery system will be expanded to the entire landfill site.

Modern landfills utilize leachate control and stormwater control systems to mitigate potential groundwater and surface water pollution. The Fresh Kills landfill leachate control system will contain, collect, and treat at least 80% of the leachate generated by active sections of the landfill. The stormwater control system manages the water run-off from a 24-hour, 25-year storm event.

TABLE 6-1
FRESH KILLS LANDFILL
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Landfill Improvements			
Complete gas migration control system (FY 1993)	✓		Gas migration system installed over entire landfill
Continue development of gas remediation/recovery program (FY 1993)	✓		Gas recovery system in sections 2/8 and 3/4
Begin gas recovery from entire Fresh Kills landfill (FY 1994)		✓	Concessionaire proposals non-responsive; RFP reissued January 1994
Continue development of leachate collection and treatment program (FY 1993)	✓		Installed leachate collection system for section 1/9
Complete stormwater control system (FY 1995)	✓		Installed stormwater collection system for developed sections
Ongoing landscaping and site improvements (FY 1993) Continue to develop Fresh Kills landfill infrastructure (FY 1994)	✓		
Close section 3/4 (FY 1993) Close section 2/8 (FY 1994)	✓		Landfill closure is under construction for these sections
Part 360 Permit Application			
Submit permit application to NYSDEC for Fresh Kills landfill (FY 1995)	✓		Draft permit has been prepared and submitted to the NYSDEC

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

The landfill closure plan for sections 3/4 and 2/8, as approved by the NYSDEC in 1992, includes cover material and the following components of final cover:

- Gas venting layer;
- Hydraulic barrier;
- Drainage layer;
- Barrier protection layer;
- Top soil; and
- Landscaping.

The following milestone activities to implement these landfill improvements are identified in the Plan:

- **Complete gas migration control system (FY 1993).**

The Plan requires that the Department curtail off-site migration of landfill gas at the Fresh Kills landfill. In addition, the Department must monitor landfill gas migration and report results to the NYSDEC. Implementation of this landfill gas migration control and monitoring system was to be completed during FY 1993.

In 1991, the Department completed a series of investigations to identify actual and potential areas of off-site migration of landfill gas and recommended a program to curtail migration and monitor landfill gas generation. Working with the NYSDEC, the Department undertook an aggressive program to reduce the potential underground migration of landfill gas and install an extensive monitoring network. Design and construction of the Phase I gas venting trench system was completed by March 1992.

In the summer of 1992, Phase II construction work was initiated. The trench systems installed in Phase I were extended to vent all migration pathways. In addition, areas surrounding underground utility lines were sealed to prevent off-site gas migration. Construction of the

Phase II gas venting and monitoring system was completed by early 1993 and included the following remediation projects:

- The installation of 168 landfill gas monitoring sensors;

- The installation of 11,313 additional feet of landfill gas venting trench around the landfill perimeter to control off-site migration; and

- The installation of 64 new landfill gas monitoring wells (for a total of 91 wells).

Thus, the landfill gas migration control system was completed on schedule in FY 1993. Since then, the Department prepares monthly and quarterly gas monitoring reports for the NYSDEC.

- **Continued development of gas remediation/recovery program (FY 1993).**

Continued development of the gas recovery system, with the installation of gas collection wells, was identified in the Plan as a milestone for FY 1993.

The ongoing development of the gas remediation and recovery system was accomplished on schedule in FY 1993. Gas collection has been expanded in section 1/9 and recovery wells, for landfill sections 2/8 and 3/4 are currently under construction. Construction of the gas recovery system for section 6/7 will occur after the gas concessionaire is selected, as presented in the ensuing milestone.

- **Gas recovery from entire Fresh Kills landfill (FY 1994).**

Since 1982, the Fresh Kills Gas Recovery Plant, located along Muldoon Avenue, has extracted up to 10 million cubic feet of landfill gas daily from 400 acres of the landfill (section 1/9). The City receives an annual economic benefit of over $520,000 per year from the landfill gas recovery concessionaire. The milestone for recovering gas from the entire 2,200 acre landfill site was to be completed in FY 1994.

Procurement problems have delayed gas recovery from the entire landfill beyond the FY 1994 milestone. The Department issued an RFP for a landfill gas recovery concession in March 1993. All proposals received were non-responsive. This obstacle was overcome by meeting with gas recovery industry vendors to obtain information necessary to prepare an RFP to solicit responsive proposals. The Department revised the RFP and issued a new RFP in January 1994. The concession contract is expected to be awarded by April 1995.

After the gas concession contract has been awarded, the concessionaire will construct the section 6/7 gas recovery system and recover gas from sections 2/8, 3/4, and 6/7. A gas recovery system for the entire landfill is expected to be in place in 1997. This change in milestone schedule is a deviation from the original Plan.

- **Continued development of leachate collection and treatment program (FY 1993).**

The Plan provides for the continued development of a leachate collection and treatment system that is necessary under the April 1990 NYSDEC consent order. The Department is proceeding with the development of the leachate collection and treatment program. A Final Landfill Leachate Mitigation Report was submitted to the NYSDEC in October 1993. The report was approved by the NYSDEC in October 1994. Construction of the leachate treatment plant began in FY 1993 in accordance with the milestone and operation began in January 1994. This plant treats leachate from the existing collection system at landfill section 1/9 and has a permitted capacity for 200,000 gallons per day.

An application to modify the SPDES permit to expand the leachate treatment plant capacity to handle projected leachate flows from sections 1/9 and 6/7 was submitted to the NYSDEC in March of 1994. The expansion of leachate treatment to the rest of the landfill has been slowed by the following:

- USEPA changes in RCRA regulations related to landfill corrective measures requirements;

- Delayed approval of SPDES and other permits by the NYSDEC; and

- Lengthy reviews of the design by the NYSDEC under the 1990 consent order.

Solicitation for bids to construct the expansion of the treatment plant is expected to be issued in FY 1995. Award of this contract, as well as bidding for the remaining components of the leachate control system, may be delayed pending approval of corrective measures. The landfill consent order requires completion of this project by November of 1996, and operation of the expanded treatment facility to begin by December of 1996.

This milestone was accomplished. The development of a leachate collection and treatment system is ongoing.

- **Complete stormwater control system for Fresh Kills landfill (FY 1995).**

The developed sections of the landfill nominally represent 80% of the final stormwater control system (after all landfill sections have been developed).

The stormwater control system is designed for a 24-hour, 25-year storm event and is being completed in phases: (1) 50% of the construction was completed in FY 1994; and (2) the next 30% of the stormwater control system is to be completed in FY 1995 in accordance with the milestone schedule. The schedule for completing the final 20% of the stormwater system will depend upon the rate at which the remaining portions of the landfill are filled.

- **Ongoing landscaping and site improvements (FY 1993).**

- **Continue to develop Fresh Kills landfill infrastructure improvements. This work will extend through FY 1996 (FY 1994).**

Ongoing landscaping and site improvements of closed landfill sections were identified in the Plan as a single milestone for FY 1993. The objectives of the landscaping plan are to protect the final landfill cover and stabilize the site for future uses in an environmentally sound manner.

This milestone to initiate ongoing landscaping and site improvements for closed sections of the landfill was accomplished. During FY 1993, the landscape activities were initiated by the closing of landfill sections 3/4 and 2/8 and the approval of closure design plans for both sections by the NYSDEC. By the end of FY 1994, portions of both landfill sections 3/4 and 2/8 received final cover and landscaping. The landscaping of remaining portions of the closed section currently proceeds in conjunction with the construction of the final cover and will be completed during FY 1997.

In conjunction with the implementation of the landscape plan, the Department has embarked on a series of experiments and studies to identify plants, woody shrubs, and trees that will be compatible with the final landfill cover and increase protection against erosion of the cover. An important additional goal of landscaping is to create an environment that encourages the presence of birds and other natural wildlife. These plant studies will continue through FY 1996 and the information will be shared with the NYSDEC. The results of these studies will be used by the Department to address the public's request for enhanced landscaping beyond the grassy and shallow rooted planting allowed under current regulations.

- **Close sections 3/4 and 2/8 (FY 1993) (FY 1994).**

In accordance with the Plan, landfill sections 3/4 and 2/8 were targeted to be closed in FY 1993 and FY 1994, respectively. Solid waste continues to be delivered to sections 1/9 and 6/7.

During FY 1993, both sections 3/4 and 2/8 stopped receiving solid waste and the closure design plans for both sections were approved by the NYSDEC. By the end of FY 1994, portions of both landfill sections 3/4 and 2/8 received final cover. Final cover construction is now underway for the sections and will be completed during FY 1997. The post closure operations and

maintenance program for sections 3/4 and 2/8 will continue for 30 years after closure, as required by regulations.

This Plan milestone was accomplished. Sections 3/4 and 2/8 of the Landfill were closed.

6.1.2 6NYCRR Part 360 Permit Application

- **Submit permit application to NYSDEC for Fresh Kills landfill (FY 1995).**

Pursuant to the April 1990 consent order issued by the NYSDEC, the Department must submit a complete application for a 6NYCRR Part 360 permit for the remaining open landfill sections by March 15, 1995.

The draft 6NYCRR Part 360 permit application for the Fresh Kills landfill's sections 1/9 and 6/7 has been prepared and submitted to the NYSDEC for review. A major obstacle that has delayed the final issuance of a complete application package is the air quality impact study. The Department contracted with the NYSDEC in FY 1993 to perform the air quality impact study necessary for this permit application. The Department is waiting for the results of this study so that it can be incorporated into the Draft EIS.

As a result of this obstacle, the Department has requested an extension to the consent order deadline of March 15, 1995. This extension is a deviation from the Plan milestone schedule.

The Department is also proceeding with other necessary permit requirements and the CEQR process for environmental review of projects. On July 29, 1994, NYSDEC issued a Notice of Complete Application for a SPDES permit, as required by 6NYCRR Part 750-758, and a Tidal Wetlands permit, as required by 6NYCRR Part 661, for the Fresh Kills landfill. In September, the Department made a Positive Declaration that the action for the continuation of landfilling at sections 1/9 and 6/7 may have potential environmental impacts and that a Draft EIS would be prepared pursuant to the SEQRA regulations (6NYCRR Part 617), New York City Executive

Order 91 of 1977 as amended, and the Rules of Procedure for CEQR. Public scoping sessions and preparation of the final scope for the Draft EIS were completed.

6.2 Out-of-City Landfill Capacity

In the past, the City's relative abundance of disposal capacity has redounded to its economic benefit by assuring relatively low cost waste disposal service to the City's residents and businesses. However, the trend from 1979 to the present has witnessed a radical decline in the City's waste disposal resources. During this period, the City has closed five landfills with a daily disposal capacity of approximately 14,500 tons and three incinerators with a daily disposal capacity of 2,750 tons.

The City is severely constrained in its ability to replace these resources within its geographical boundaries. New landfill capacity in the City and outside of the Fresh Kills landfill is impossible because of lack of available space. Although historically the Fresh Kills landfill has provided disposal capacity for most of the City's residential and commercial waste, it is no longer the primary disposal resource for City-generated waste. At least 10,000 tons per day of commercially generated waste is now exported out-of-City.

The City's current projections are that the Fresh Kills landfill has approximately 100 million cubic yards of capacity remaining. At current fill rates, which reflect utilization for disposal for predominantly residential waste (most commercial waste is disposed of by private carters out of the City), the Fresh Kills landfill will have capacity for another 15 to 20 years of disposal.

The availability of capacity reserves at the Fresh Kills landfill provides the City with limited capability to handle contingencies, such as efforts by other political jurisdictions through legislation and regulation to prevent or limit the importation of waste or sudden changes in the market prices of out-of-City landfill capacity now used by private haulers. Either event, if it were to occur, could dramatically increase the tonnage delivered to Fresh Kills and severely strain the City's capacity reserves. Alternatively, the utilization of Fresh Kills could be constrained by unanticipated permit limitations or operational constraints arising from operations at higher

elevations. Any of these possibilities could force a sudden and unplanned reliance on out-of-City disposal and could be very disruptive to the City's economic security with unanticipated impacts on the City's budget and the pocketbooks of residents and taxpayers.

Sections 3 and 4 of this Compliance Report have documented the City's plans and substantial efforts to reduce and recycle solid waste. Notwithstanding these efforts, the City must have substantial waste disposal resources available under conditions which are not a crisis response. The program element and milestones for developing this out-of-City capacity are presented in Table 6-2.

6.2.1 Secure Capacity

The Plan provides the City with the flexibility to export solid waste. The Plan identified the following milestones for this program element. The Department's efforts to achieve these milestones have focused on securing an out-of-City landfill as a back-up contingency.

- **Initiate efforts to secure out-of-City landfill capacity (FY 1993).**

- **Issue RFP for out-of-City capacity (FY 1994).**

- **Issue RFP for additional out-of-City landfill capacity (FY 2001).**

In 1992, the City began gathering data on arrangements made by other political jurisdictions in the region to secure disposal capacity. At that time, the City was also seeking capacity for out-of-City disposal of incinerator ash to service the needs of the City's existing incinerator and to satisfy the permit requirements of a permit condition of the Brooklyn Navy Yard waste-to-energy facility. The City proceeded to the point of preparing an RFP which was issued in September of 1992. This procurement extended through the evaluation of proposals received in response to the RFP. Changes in the permit process and the movement toward closure of its three remaining incinerators obviated the immediate need to acquire this capacity.

TABLE 6-2
OUT-OF-CITY LANDFILL CAPACITY
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Secure Capacity			
Initiate efforts to secure out-of-City landfill (FY 1993)	✓		
Issue RFP for out-of-City capacity (FY 1994)		✓	Deviation from the Plan
Issue RFP for additional out-of-City capacity (FY 2001)			

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

In FY 1993, the City revisited the need to acquire contingent export capacity for MSW as a limited short-term waste management option to be used during refurbishment of the Bronx MTS. The refurbishment program is progressing with design work underway. The City continued to monitor the economics of export over the period FY 1993 through FY 1994.

The City has deferred further action on out-of-City landfill acquisition which is a deviation from Plan milestones.

7.0 BIOSOLIDS MANAGEMENT

Pursuant to the Ocean Dumping Ban Act of 1988, the City entered into a Consent Decree and Enforcement Agreement with USEPA and NYSDEC to phase out and end ocean dumping of biosolids. Biosolids, as defined in 40 Code of Federal Regulations (CFR) 503, are a solid, semisolid, or liquid residue generated during the treatment of domestic sewage in a treatment works. The City's Biosolids Management Plan to meet the terms of the agreement consists of three phases, referred to as the Immediate, Intermediate and Long-Term Plans.

The Immediate Plan involved the construction of dewatering facilities at eight of the City's existing water pollution control plants. The Intermediate Plan involved the operation of the dewatering facilities and the selection and contracting with private companies to manage the City's biosolids until the Long-Term Plan is operational. Private companies were selected to manage the City's biosolids under the Intermediate Plan due to the Consent Decree requirement to end ocean dumping by 1992 and the City's need to evaluate various technologies and address siting issues for the Long-Term Plan. Under the Long-Term Plan, the dewatering facilities would continue to operate and biosolids management would be provided either through the extension of existing beneficial use contracts, the execution of new beneficial use contracts, or a combination of these two options.

The City's Intermediate Biosolids Management Plan, whose implementation began on January 1, 1992 with the execution of contracts with three firms to provide land-based disposal services, will be continued through June 30, 1998. These service contracts include application of dewatered biosolids to semi-arid grassland in the southwest United States; thermal drying of biosolids into pellets at a privately owned and operated facility for use in various land-application projects; and a transport and disposal contract for disposal of biosolids in a landfill in Virginia. The City currently (estimated for FY 1995) produces approximately 330 dry tons per day of biosolids.

The City, through its DEP, has been actively developing a City-wide program for the long-term management of biosolids. The City is committed to emphasizing beneficial use technologies and processes. The Biosolids Management program and milestones are presented in Table 7-1.

- **Planning/development for long-term plan facilities (FY 1992).**

The DEP submitted a Long-Term biosolids management plan report for the City to the USEPA and the NYSDEC on May 1, 1991 in support of this milestone. The Long-Term biosolids management plan proposed to construct eight biosolids management facilities. The long-term biosolids management plan emphasized the development of beneficial use technologies and end uses for City-generated biosolids.

These biosolids management facilities were to be located within each of the five boroughs. The facilities were to be owned and operated by the City. Technologies proposed included composting and chemical stabilization. In addition, the plan included the use of the thermal drying/biosolids pelletizing facility constructed in the Bronx under the Intermediate biosolids management plan. The thermal drying facility is owned and operated by a private contractor, however, utilization of this facility for the Long-Term biosolids management plan could either be accomplished by extending the service agreement or by the City buying out the contractor and operating the facility itself. The thermal drying facility reduces dewatered biosolids from DEP facilities into a pelletized form that can be beneficially used as a soil amendment or a bulking agent fertilizer type product.

The Long-Term biosolids management plan for the City was subsequently modified in May of 1993. This modification of the plan was primarily a result of activities associated with ULURP, implementation of a successful land application component under the Intermediate Plan, and the schedule revisions associated with the proposed upgrade of the Newtown Creek Water Pollution Control Plant located in the Greenpoint section of Brooklyn. The modified May of 1993 Long-Term biosolids management plan included the proposed construction of four biosolids processing facilities within the City. These facilities were to be located in Manhattan, Queens,

TABLE 7-1
BIOSOLIDS MANAGEMENT
MILESTONE STATUS

Program Element and Milestone (FY)*	Milestone Accomplished?		Highlights
	YES	NO	
Biosolids Management			
Planning/development for long-term plan facilities (FY 1992)	✓		
Start facility operation - substantial completion of construction for dewatering facilities capable of processing 100% of the City's biosolids (FY 1992)	✓		Eight dewatering facilities are operational City-wide.
Start facility construction of long-term plan facilities (FY 1994) - Phase I	✓		

FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

and Staten Island. The proposed facilities consisted of three composting facilities and one chemical stabilization facility. In addition to these four facilities, the proposed plan included the continued operation of the pelletizing facility in the Bronx and the export of biosolids outside of the City for land application. The modified Long-Term biosolids management plan was approved by the USEPA and NYSDEC in August 1993.

- **Start facility operation - substantial completion of construction for dewatering facilities capable of processing 100 percent of the City's Biosolids (FY 1992).**

As specified in the Consent Decree between the City, the USEPA, and the NYSDEC, substantial completion of the construction for the Wards Island Dewatering Facility was achieved on December 31, 1991 and dewatering operations were commenced by DEP. The operation of the Wards Island Dewatering Facility allowed DEP to dewater 20% of the City's biosolids production and to manage these biosolids through land-based alternatives.

By June 30, 1992, substantial completion of the construction of the remaining seven dewatering facilities was accomplished by DEP. In addition to the Wards Island Dewatering Facility in Manhattan, these seven dewatering facilities were located at the Tallman Island and Bowery Bay Water Pollution Control Plants in Queens; at the Hunts Point Water Pollution Control Plant in the Bronx; the Red Hook and 26th Ward Water Pollution Control Plants in Brooklyn; the Jamaica Water Pollution Control Plant in Queens; and the Oakwood Beach Water Pollution Control Plant in Staten Island. All eight dewatering facilities were operational as of June 30, 1992 and 100% of the City's biosolids production was dewatered and managed through land based alternatives. Ocean disposal of biosolids ceased on June 30, 1992.

- **Start facility construction of long-term plan facilities (FY 1994).**

The original Consent Decree between the City, the USEPA and the NYSDEC required that the City initiate the construction of long-term biosolids management facilities capable of handling and processing 50% of the current overall biosolids production for the City by February of 1994.

Since the privately owned and operated biosolids pelletization facility in the Bronx was included in the proposed Long Term biosolids management plan and this facility had a capacity of 300 dry tons per day, the state and federal governments agreed that the City had met this milestone when the pelletizing facility became fully operational in October of 1993.

- **Start facility operation - substantial completion of construction of long term plan facilities (FY 1998).**

Although the currently approved Long-Term biosolids management plan provides reliability through a combination of multiple technologies, sites and markets, the plan is inflexible. The plan depends upon the success of developing, maintaining, and then increasing the market share for the selected products for the full useful life of the facilities. A potential flaw exists in this Long-Term biosolids management plan because it is based on the assumption that markets can be developed and fully available to accept the entire production starting in June of 1998. A significant portion of the target market is other City agencies. Although the agencies are expected to have sufficient land for product application, their actual demand for product will depend on their budgets and staffing levels. In reality, the target agency's needs would influence the use of biosolids. Consequently, DEP's need to market biosolids would not influence the target agency's budget and staffing plans. Therefore, DEP's reliance on other City agencies for its biosolids market may be overly optimistic. Likewise, there are economic concerns associated with the existing approved plan as well. A large capital investment is required for the long-term program implementation. The current approved Long-Term biosolids management plan will also result in higher annual costs other than costs associated with the Intermediate Plan.

In addition to marketing and economic issues, new projections of biosolids production were developed which were lower than previous estimates, and a reassessment of production fluctuations resulted in the realization that a City-wide peaking factor of 1.3 is more appropriate than the previously used factor of 1.6. Also, efficient operation of the centrifuges has resulted in higher biosolids cake concentrations than previously used for program planning, therefore reducing the volume of biosolids cake to be managed.

Several factors are causing the DEP to consider further revisions to the Long-Term biosolids management plan. These include: the revised biosolids production estimates; marketing uncertainties due to regulatory review; demands for indemnification by agricultural users and their lending institutions; and several legal challenges which could set precedents concerning the plan. The DEP prefers to develop and manage a long-range program that could allow for evaluation of new opportunities and technologies as they are developed.

Ongoing negotiations are now taking place between the City, the NYSDEC, and the USEPA to revise the previously modified Consent Decree. If negotiations are successful, this revision would allow the City to replace the current consent order requirement for City-owned and operated biosolids management facilities with privatized biosolids management services for the long-term management of City-generated biosolids. Biosolids management services would be provided either through the extensions of existing beneficial use contracts, the execution of new beneficial use contracts, or a combination of these two options. These contracts, either renewed or new, would be required to be executed by June 30, 1998 (FY 1998).

Implementation of the Long-Term biosolids management plan, which is designed to manage all biosolids produced in the City through the year 2013, will begin on June 30, 1998. The City will have the option of continuing to use the 300 dry tons per day pelletizing facility (either through a 15-year contract extension, or through purchase of the facility). The remaining 271 dry tons per day of biosolids (571 dry tons per day is the City's projected peak biosolids production through 2013) will be handled through contracts for beneficial use, which may include processing the biosolids at private facilities outside of the City (in which case, the product may or may not be returned for use in the City), land application, or innovative technologies. Depending upon the available options, as previously discussed, the City may choose, at that time, to contract for additional beneficial use capacity or discontinue the use of the pelletizing facility. The City also has the option to extend the land application contract beyond June 30, 1998.

The service contracts for both the pelletizing facility and for any other beneficial use will require the vendor to provide back-up capacity for the full contract volume to allow redundancy in the case of temporary service interruptions in the primary biosolids management system. The contractors must commit to use "best efforts" to beneficially use any biosolids managed through this secondary system. And to provide a fail-safe system to guard against the possibilities that the City is unable to award suitable beneficial use contracts or that a beneficial use contractor defaults, as well as to provide for the disposal of out of specification biosolids, the City competitively bid a transport and landfill disposal contract in 1994 which was awarded in October of 1994 and registered in January of 1995. This contract will have a nine-year term plus two five-year renewal options to allow the contract to be extended through 2013.

8.0 MEDICAL WASTE

Medical waste, as defined in the Plan, includes all waste generated by licensed health services providers, including but not limited to voluntary and proprietary hospitals, residential health care facilities, diagnostic and treatment centers, clinical laboratories, walk-in clinics, and physicians' and dentists' offices. This waste stream includes (1) pathological and infectious waste defined in state and federal regulations as Regulated Medical Waste (RMW) (also known as red-bag waste), and (2) other solid waste generated by health service providers, which is similar in composition to commercial and institutional waste, i.e., Non-Regulated Medical Waste, known as black-bag waste.

RMW definitions are contained in 42 U.S.C. 6992 et seq., and 40 C.F.R. Part 259, New York State Environmental Conservation Law 27-1501 et seq., and Public Health Law 1389 aa et seq., and regulations thereunder, and in the New York City Administrative Code 16-120.1 (Local Law 57 of 1985, as amended). In addition, New York City Local Law 75 of 1989, other federal, state, and local laws, including those cited above, address unique medical waste management issues. This regulatory framework establishes requirements applicable to the containment, transport, and disposal of both types of waste. The regulatory framework continues to evolve. Since 1991 there have been changes on the federal, state, and local levels concerning medical waste, and in general, these changes have been less, rather than more restrictive. For example, federal medical waste tracking regulations have expired, and the New York State Department of Health (DOH) has supported legislation to redefine medical waste.

Several events and trends in the New York region that predated the development of the Plan had important consequences on the approach encompassed by many of the Plan milestones for the management of medical waste. The City's Local Law 57 of 1985 effectively banned the disposal of black-bag waste at City landfills and the City's Local Law 75 of 1989 required all medical waste generators to file disposal plans with the Department. At that time and until 1994, the Department provided collection services for black-bag waste generated by the City Health and Hospitals Corporation (HHC) and other not-for-profit organizations and incinerated this material

at its Greenpoint or SW Brooklyn incinerators. Ash from these incinerators was disposed of at the Fresh Kills landfill.

Public concern over improper medical waste disposal practices and liability concerns of hospitals over the costs of disposing of improperly packaged medical waste (i.e., red-bag material erroneously put into black bags) in the late 1980s also precipitated change in disposal practices. As a short-term response, inordinate amounts of non-regulated medical waste were improperly placed in red bags. Prior to 1985, approximately 5% of all hospital waste was treated as red-bag. By the late 1980s, as much as 50% of hospital waste was being placed in red bags. This dramatic increase in volume inflated the disposal costs of red-bag waste and supported the presumption of a looming red-bag waste problem with respect to both the cost and availability of adequate red-bag waste disposal capacity.

The Plan recognized the need to revise existing regulations to ensure the proper management of medical waste and its integration into the City's overall solid waste management programs. Additionally, the Plan presumed the ongoing involvement of the Department in the collection and incineration of black-bag waste, and set forth a number of prescriptive milestones directed at these activities. However, the evolution of medical waste management practices within the HHC and the New York region, as well as other factors related to the involvement of the Department and private vendor companies in medical waste management, have obviated the need for many of the actions called for in the Plan.

This evolution can be summarized as follows:

1. The Department has closed its incinerators and no longer provides collection services for large-quantity generators of black-bag waste. The Department does provide collection services for source separated recyclables generated by HHC and other non-profit health service providers, and it collects some black-bag waste from small-quantity generators.

2. HHC has refined its waste management practices, in accordance with the HHC Plan requirements, through both the improvement of its procedures and by obtaining the involvement of private vendors of medical waste collection and disposal services. As a consequence, the quantity of red-bag waste generated by the HHC has declined to approximately 20% of total waste generation, and HHC has achieved approximately 80% of its target recycling rate. All of the black- and red-bag waste generated by the HHC is collected and disposed of by private vendors.

3. The NYSDEC has elected to discontinue its enforcement activities regarding medical waste. These regulatory components have been disseminated to other state agencies, including the DOH.

4. As a result of HHC's efforts to implement the Plan, private vendors of medical waste management services have worked to provide more cost-effective collection and disposal services for both red- and black-bag waste and have reduced the amount of material erroneously set-out as red-bag waste at HHC facilities. These medical waste management services also provide technical assistance on improving source separation of recyclables to medical facilities that generate solid waste. These services are provided in compliance with applicable local, state, and federal regulations.

5. The anticipated crisis in the cost and availability of red-bag disposal capacity has not materialized.

This recent evolution in medical waste management practices means that many of the milestones identified in the Plan are no longer relevant to current facts and circumstances. The Milestone Status tables identify these milestones as not applicable ("NA"). The Department views the creation of a separate regulatory regime for medical waste management within the City as duplicating state and federal regulatory agency responsibilities and ongoing functions. It is also an activity beyond the scope of the Department's current resources and expertise.

The two programs for medical waste are: City-wide regulation and policy initiatives and specific measures to be taken by the HHC facilities. These programs are discussed in the following sections.

8.1 City-Wide Regulatory and Policy Initiatives

The City-wide regulatory and policy initiative program elements and milestones are discussed below and summarized in Table 8-1.

8.1.1 Medical Waste Criteria

The following medical waste criteria milestones are specified in the Plan.

- **Establish a filing/regulatory system for non-incineration treatment and processing facilities (FY 1992).**

The primary goal of this milestone was to establish a filing and regulatory system to control the emissions from autoclaves, microwaves, chemical grinding/disinfection and other non-incineration technologies. The City has neither the expertise nor the resources to establish regulations for the non-incineration treatment of red-bag waste. Such regulatory activities are more appropriately a state or federal responsibility. The City suggests that the state evaluate the need for such regulations. The City will support reasonable state initiations to control the emissions from non-incineration thermal and chemical treatment technologies and facilities.

This milestone is no longer applicable.

- **Amend designations of recyclable materials (FY 1993).**

The plan recommends that compostable food waste; treated, ground, segregated plastic medical apparatus; dry cell batteries; dry recyclables, including corrugated cardboard and office paper; glass and metal; and bulk waste be segregated from the waste stream for recycling. Corrugated

TABLE 8-1
CITY-WIDE REGULATORY AND POLICY INITIATIVES
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Medical Waste Criteria			
Establish filing/regulatory system (FY 1992)	NA		
Amend designations of recyclable materials (FY 1993)	✓		
Establish medical waste acceptance criteria (FY 1993)	NA		
Modify current systems of fines and suspensions for violators of Local Law 75 (FY 1993)	NA		
Modify current filing requirements (FY 1993)	NA		
Extend licensing by the DCA (FY 1993)	NA		
Collection and Transport			
Modify and standardize containerization and internal transport mechanisms (FY 1993)	✓		
Allow the Department to collect medical waste from small quantity generators (FY 1993)	✓		
Discontinue Department services to non-permitted generators (FY 1994)	NA		
Education and Monitoring			
Form a medical waste advisory committee (FY 1992)	NA		
Provide funding for education and monitoring programs (FY 1993)	✓		

TABLE 8-1 (Cont'd)
CITY-WIDE REGULATORY AND POLICY INITIATIVES
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Emission Standards and Management			
Develop emissions data and evaluate management options (FY 1994)	NA		
Promote implementation of management techniques (FY 1994)	✓		
Promote development of emissions standards (FY 1994)	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.
NA = Not applicable.

cardboard, office paper, and glass and metals are designated for recycling by the City as part of its institutional and commercial source separation programs. Other materials are being voluntarily recycled by HHC and other health service providers. For example, HHC has entered into contracts with private contractors to collect and process segregated plastic medical apparatuses. The goal of this activity is to eventually recycle this material. The decisions to designate food wastes is being deferred pending the results of the Rikers Island pilot program (see Section 4.4.3).

This milestone was accomplished. Most of the materials recommended for designation in the Plan are either designated as part of the City's institutional and commercial recycling programs, or are being voluntarily recycled.

- **Modify the current Solid Waste Management Plan filing requirements and establish a medical waste generator permit system (FY 1993).**

- **Establish medical waste acceptance criteria for the Department (FY 1993).**

- **Modify the current systems of fines and suspensions for violators of Local Law 75 for permitted medical waste generators (FY 1993).**

- **Extend licensing by the DCA for the collection of the following medical wastes: wet waste; treated, ground, segregated plastic medical apparatus; dry recyclables; glass and metal; and pathological, hazardous, radioactive, and Regulated Medical Waste (FY 1993).**

The above set of milestones were predicated upon the City instituting a medical waste generator permit system. The objectives of the permit system were to: (1) monitor compliance with the Plan, (2) regulate black-bag waste collected and incinerated by the City, (3) establish a data base on medical waste generation in the City, and (4) promote recycling at health service facilities. As discussed above, the City has decided not to institute a City permitting system because the

City no longer collects, incinerates, or disposes of medical waste from large generators, and there is no need to supplement or duplicate existing federal and state regulations that affect the collection, processing, and disposal of medical waste. Furthermore, the City's institutional and commercial recycling programs, as well as HHC's recycling programs, are effectively promoting recycling at health service facilities.

For the above named reasons, these milestones are no longer applicable.

8.1.2 Collection and Transport

The following collection and transportation milestones are specified in the Plan.

- **Modify, integrate, and standardize infectious waste, recyclable, and Regulated Medical Waste containerization and internal-transport mechanisms (FY 1993).**

As discussed above, the City has neither the expertise nor the resources to establish regulations for red-bag medical wastes, including developing standards for containerizing and internal-transport of infectious and RMW. The City has and will continue to provide technical assistance to health service providers to facilitate the separation and storage of recyclables.

HHC has stipulated the use of reusable containers in hauling contracts. This action has motivated private haulers and the transportation industry to standardize the use and transport of reusable containers to reduce hazards and increase efficiencies.

This milestone is no longer applicable, however, the voluntary actions of the HHC have achieved the milestone goals.

- **Allow the Department to collect medical waste from certain small quantity private generators of Non-Regulated Medical Waste (FY 1993).**

The City currently collects and disposes of black-bag waste from small quantity private generators.

This milestone was accomplished.

- **Discontinue Department collection service to non-permitted generators (FY 1994).**

The intent of this milestone was to promote compliance with the Plan by limiting Department disposal services to Article 28 facilities (i.e., public hospitals regulated by the state) of black-bag waste that did not file for a City waste generator permit. Since the City has not implemented a waste generation permit system and no longer collects, incinerates, or disposes of medical waste from these facilities, this milestone is no longer applicable.

8.1.3 Education and Monitoring

The following education and monitoring milestones have been identified in the Plan.

- **Form a medical waste advisory committee (FY 1992).**

The purpose of this milestone was to create an advisory committee made up of the public, health care workers, and health care providers to assist the City in drafting recommended changes to local laws regulating medical waste. This milestone assumed the creation of a City regulatory regime for medical waste. For reasons already stated, it is no longer appropriate. However, HHC continues to work with the SWAB and the City-wide Recycling Advisory Board (CRAB) in matters concerning medical waste.

- **Provide funding for educational and monitoring programs (FY 1993).**

Funding for education and monitoring was to be derived from the City's medical waste generator permit application fees. Because this permit system was not implemented, the revenues for this milestone are not available.

The purpose of the education and monitoring programs was to promote waste reduction and recycling at health care facilities. The City is accomplishing these goals through its institutional and commercial recycling programs, in particular, the extensive outreach and education program described in Sections 3 and 4. Furthermore, the waste prevention and recycling programs being pursued by the HHC, as discussed in Section 8.2 below, provide examples for implementation of similar programs by educating other health care providers throughout the City.

The goal of this milestone is being accomplished through a deviation from the Plan.

8.1.4 Emission Standards and Management

The following milestones have been identified in the Plan.

- **Develop pathological waste generation and emissions data, and evaluate management options (FY 1994).**

This milestone was predicated upon the City obtaining these data through the medical waste generator permit system. Pathological waste is either collected and disposed of by private licensed operators or in hospital incinerators. Most HHC incinerators are out of service, and at the few remaining in operation, only carbon-based pathological waste, without any packaging or plastic wrapping, is incinerated. NYSDEC's Air Pollution Control Regulations, Subpart 219-3 of 1993, established emissions standards for pathological waste generation. The City is relying on the state and federal regulatory agencies to properly regulate this waste stream.

Because this permit system was not implemented, this milestone is not applicable.

- **Promote implementation of the recommended management techniques (FY 1994).**

The principle objective of this milestone is to promote the waste reduction and recycling in health care facilities. The City is accomplishing this through its outreach and education programs as discussed in Sections 3 and 4. Furthermore, the waste prevention and recycling programs being pursued by the HHC, as discussed in Section 8.2 below, provide examples for implementing similar programs by other health care providers throughout the City.

This milestone was accomplished.

- **Promote the development of emissions standards by the NYSDEC (FY 1994).**

NYSDEC's Air Pollution Control Regulations established emission standards in 1993.

This milestone was accomplished.

8.2 HHC Waste Reduction, Reuse, and Recycling Measures

The milestones discussed in this section are specific to HHC facilities. Because of the size and number of HHC facilities in the City and the ability of the HHC through the implementation of its programs to set examples for other health care facilities, the accomplishments of HHC have a synergistic effect in the health care industry in the region. These activities relate to waste reduction, reuse, and recycling and as such, are a part of the City's institutional recycling programs.

Program elements and milestones are presented in Table 8-2.

TABLE 8-2
HHC WASTE REDUCTION, REUSE, AND RECYCLING MEASURES MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Continue medical waste audits (FY 1993)	✓		
Control unused product discards (FY 1993)	✓		
Institute accountability for waste generation costs (FY 1993)	✓		Facilities divided into zones
Develop product purchasing evaluation criteria (FY 1993)	✓		Currently evaluating options
Coordinate collection (FY 1993)	✓		
Implement facility waste education programs (FY 1993)	✓		
Set-up corrugated baling equipment (FY 1993)	✓		Goal of milestone achieved through other means
Establish office paper recycling programs (FY 1993)	✓		
Establish separate collections (FY 1993)	✓		
Implement battery exchange programs (FY 1993)	✓		
Establish separate collection for PVC items (FY 1993)	✓		Currently in place at two facilities
Replace containers for collecting disposable sharps (FY 1993)	✓		

TABLE 8-2 (Cont'd)
HHC WASTE REDUCTION, REDUCE AND RECYCLING MEASURES MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Replace paper towels by air drying (FY 1993)	✓		
Replace disposable food service cookware (FY 1993)	✓		
Replace disposable linens (FY 1993)	✓		
Set-up grinding equipment at each facility (FY 1993)	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

- **Continue medical waste audits (FY 1993).**

No medical waste audits have been performed since FY 1992. However, HHC regularly monitors its waste stream patterns through evaluating data provided by private hauling services which accomplishes the intent of the audit program.

This milestone was accomplished with a deviation from the Plan.

- **Control unused product discards (FY 1993).**

HHC recognizes that the wasteful practice of discarding unused products adds to a facility's disposal cost. There are two origins of this type of waste: improper storage of materials (i.e., dispersed storage in patient rooms, hoarding of supplies) and improper purchasing methods (i.e., oversupply of perishable items, hasty replacement of usable stock by slightly newer or redesigned products). To address these practices, HHC identifies those facilities with higher rates of product waste, determines the causes of these higher rates and, on a case-by-case basis, takes appropriate action to eliminate the disposal of unused products.

This milestone was accomplished and is an ongoing activity.

- **Institute departmental accountability for waste-generation costs (FY 1993).**

HHC has divided each of its facilities into waste generation zones (i.e., administration, food service), thereby making it easier for management to track the recycling rates for different zones, and to make the responsible departments accountable for recycling rate improvement.

This milestone was accomplished and is an ongoing activity.

- **Develop product purchasing evaluation criteria (FY 1993).**

The criteria for product selection and evaluation normally is based on price, quality, and service. Although price is often the overriding factor, product pricing often does not relate to the cost of using or disposing of the product. The HHC continues to evaluate how it can take into account the cost of using and disposing the products it purchases and to use its purchasing power to promote waste prevention.

The milestone is being implemented by HHC.

- **Coordinate collection between Materials Management and Housekeeping (FY 1993).**

HHC has promoted such coordination between Materials Management and Housekeeping, and has encountered no resistance by staff. Important efficiency improvements have been realized by redefining some job descriptions, adding minor duties, and adjusting pay rates.

This milestone was accomplished and is an ongoing activity.

- **Implement waste-education programs in each facility (FY 1993).**

Education programs administered by each HHC facility have been complemented by corporation-wide programs, and by programs required by the private contractors, where all parties are interested in increasing recycling rates. The sponsoring facilities, HHC, and the contractors are monitoring the effectiveness of these programs by measuring the quantity of material being recovered for recycling.

This milestone was accomplished and is ongoing.

- **Set-up equipment for baling corrugated cardboard at each facility (FY 1993).**

Some hospitals lack the space for baling facilities, while some haulers will not accept bales of corrugated cardboard. Some haulers use trash compactors. Corrugated cardboard is, however, being separated and recycled (either compacted or uncompacted) at HHC facilities. Since bales occupy less space and require fewer pick-ups, HHC will continue to assess the feasibility of baling corrugated at some of its facilities.

The goal of this milestone was accomplished.

- **Establish office paper recycling programs (FY 1993).**

HHC facilities have been encouraged to design and operate office paper recycling programs. These programs aim to separate all high-grade paper, including computer print-out, white bond paper, and other high-grade office paper for recycling. For the 12-month period beginning in April 1993, HHC recovered 1,824 tons of paper, including corrugated, for recycling. HHC recognizes that the program's success is due, in part, to favorable market conditions. HHC will continue to monitor and encourage these programs.

This milestone has been accomplished.

- **Establish separate collection programs for glass and metal, and for kitchen and food-service waste (FY 1993).**

HHC facilities have been encouraged to design and operate separate collection programs for glass and metal, and for kitchen and food-service waste. For the 12-month period beginning April 1993, HHC recovered 103 tons of metal, glass, and plastic and 331 tons of bulk waste (i.e., wood and metal) for recycling. Overall, HHC is doing well, as private contractors are working with facility managers to increase recycling rates in response to favorable market forces.

This milestone was accomplished.

- **Implement battery exchange programs (FY 1993).**

HHC has encouraged facilities to use rechargeable batteries instead of implementing a battery recycling program, thereby reducing battery disposal rates.

This milestone was accomplished through a deviation from the Plan.

- **Establish separate collection of I.V.s and other tubing, sharps, apparatus, and other PVC items (FY 1993).**

After years of developing, evaluating, and testing methods for separate collection, a contract was awarded for the separate collection of plastic medical apparatuses. The contractors are required to seek beneficial reuses of these materials. This achievement is the result of a very aggressive effort by HHC to accomplish this milestone. HHC believes this separation practice will become widespread among medical waste generators nationwide.

This milestone is being accomplished and is expected to be phased in over the next three years. The delay in accomplishing this milestone is a deviation to the Plan.

- **Replace containers for collecting disposable sharps (FY 1993).**

With the development of methods for the separate collection of disposable sharps, the need for disposable sharps containers will be reduced. The successful implementation of this milestone follows the progress of the previous milestone.

This milestone was accomplished.

- **Replace paper towels by air dryers (FY 1993).**

Due to limitations in the capital budgets of most HHC facilities, the replacement of towels with air dryers is being implemented in coordination with scheduled facility renovations. HHC's goal is to install electric hand dryers in public rest rooms and all staff locker rooms. Although paper towels are used throughout HHC facilities, public rest rooms and staff locker rooms account for an estimated 60% of all paper towel waste generation. In coordination with HHC's facility improvement program, electric air dryers will be installed in these facilities as part of scheduled renovation efforts.

This milestone is being accomplished with a deviation from the Plan.

- **Replace disposable food service cookware (FY 1993).**

The successful implementation of this milestone is contingent upon each facility's installation of new dishwashing equipment. Dishwashers were removed in the mid-1980s at a time when disposable food service cookware was considered more cost-effective. Funding for the replacement of dishwashing facilities is identified, and HHC facilities are being encouraged to make the necessary transformations as soon as practical. This change will also facilitate the segregation and removal of food wastes from HHC facilities that will be suitable for composting.

This milestone is in the process of being implemented. The delay in implementation is a deviation from the Plan.

- **Replace disposable linens (FY 1993).**

After extensive industry research, HHC facilities will partially phase-out the use of disposable linens. HHC's goal is to limit the use of disposable linens as much as practical. HHC currently is evaluating the feasibility of purchasing laundry equipment to facilitate the implementation of this milestone.

This milestone is being implemented. The delay in implementation is a deviation from the Plan.

- **Set up equipment at each facility for grinding and disinfecting I.V.s, sharps, and apparatus (FY 1993).**

Instead of setting up grinding and disinfecting equipment at each facility, HHC has executed a contract for the development of a regional processing facility to be located within the metropolitan area. This assures standardization of waste, which lowers costs for contracting with private haulers. Having all grinding and disinfecting equipment at one site also limits necessary environmental permitting and the potential for hazardous material emissions to one place, instead of dozens. This provides regulators with the opportunity to establish emissions standards and optimal control methods.

This milestone was accomplished through a deviation from the Plan.

9.0 DREDGE SPOILS

The Department currently operates 12 facilities in New York Harbor that require periodic dredging to maintain navigation depth for barges and tugboats. These facilities are:

MTSs

- West 135th Street
- West 59th Street
- East 91st Street
- Greenpoint Avenue
- Hamilton Avenue
- Southwest Brooklyn
- South Bronx
- North Shore

Barge Staging Facilities

- Pier 97 Barge Staging Facility
- Hamilton Avenue Barge Staging Facility
- 52nd Street Staging Pier

Fresh Kills Landfill Facility

- West Mooring Rack
- Marine Unloading Plant No. 1
- Marine Unloading Plant No. 2
- Super Boom
- Fresh Kills Main Channel

For many years, the dredged material, or "dredge spoils" had been disposed of in the "Mud Dump" site offshore of New Jersey along with most of the other dredge material from the New

York Harbor estuary. For the past four or five years, offshore disposal of the dredge spoils has become increasingly difficult due to changing regulatory requirements. At present, it is nearly impossible to obtain a Permit from the Army Corps for offshore disposal.

9.1 Dredge Spoils Technologies

The Department has active programs researching alternatives to ocean disposal of dredge spoils that long predated the development of the Plan. Specifically, the pilot program for development of drying basins was originally conceived in 1982. Four, one-acre basins were constructed on the north shore of the Fresh Kills landfill, across from Marine Unloading plant number 1. These basins have berms, liners, underbasin drains, catch basins, and dredge spoils sampling points. Over several years, programs were conducted to determine dredge spoils drying times, handling problems, and associated costs of using the pilot basins. Milestones have been identified in the Plan for the development of techniques by which dredge spoils can be managed. The program element and milestones are presented in Table 9-1.

- **Technology assessment (FY 1993).**

It is noted in the Plan that a technology assessment should be conducted during FY 1993. A technology assessment of dredge spoils disposal methods was conducted prior to and during 1993. Among others, the Department investigated passive drying of dredge spoils, active dewatering with screw presses, and thermal dewatering processes.

TABLE 9-1
DREDGE SPOILS TECHNOLOGIES
MILESTONE STATUS

Program Element and Milestone (FY)*	Milestone Accomplished?		Highlights
	YES	NO	
Technology assessment (FY 1993)	✓		
Start facility development (FY 1994)	✓		
Dredge spoils system operational (FY 1995)	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

This milestone has been accomplished.

- **Start facility development (FY 1994).**

- **Dredge spoils system operational (FY 1995).**

In FY 1994, as a result of the technology assessments, several design studies for a dewatering facility at the Fresh Kills landfill were initiated. This effort was aborted due to permitting, space and operational problems associated with building, and operating such a dewatering facility at Fresh Kills.

The Department has reviewed a number of alternative programs for dredge spoils disposal primarily through a consultant who performed a study during 1993 and 1994 entitled "DOS Dredging Program, Alternative Disposal Methods and Sites". As a result, a decision was made to export dredge spoils to a permitted facility. Bids were opened for dredging and disposal services on February 8, 1994. It is anticipated that the dredging at North Shore and 135th Street will take place during the summer of 1995 and the dredge spoils from these operations will be the first disposed of under the contract. This export solution will be utilized for all dredging operations performed at the remaining Department facilities.

The goal of these milestones has been met through a deviation from the Plan. A dredge spoils dewatering facility has not been constructed, however capacity for managing the dredge spoils is in place through the contract. The Department continues to evaluate new technologies.

10.0 PLANNING UNIT RESOURCES

To meet the goals detailed in the Plan, as well as current fiscal realities, many organizational changes have been made at the Department over the past two years. In the early stages of the Plan and while the recycling program expanded, resources increased considerably to support these efforts. For example, an Assistant Commissioner for Solid Waste Management Plan Implementation was named to coordinate the implementation of the Plan.

The Department also adjusted its administrative structure to fully integrate waste prevention and recycling efforts into its mission. Restructuring recognized recycling as a core Department service -- a key component of daily operations, and its long-term waste management plans. To this end, the Bureau of Waste Prevention, Reuse and Recycling (BWPRR) was established with a budget that increased from $46 million to about $60 million from FY 1993 to FY 1995. During recycling's peak expansion, BWPRR had 69 program personnel to implement the Plan's waste prevention and recycling components in FY 1993, and the Department planned for an increase in the number of recycling collection crews from almost 700 in July FY 1993 to almost 1870 in July FY 1995.

Further to the Plan's and recycling's integration into Department functions, the BWPRR, the office of the Assistant Commissioner for Solid Waste Management Plan Implementation, and the Bureau of Waste Management and Facilities Development, were recently combined under one Deputy Commissioner, creating the Bureau of Solid Waste Management and Planning, the center of strategic waste management planning efforts for the Department. By combining these bureaus, the Department achieves some savings in administrative costs for these functions while preserving critical service delivery resources.

Although the Department continues to adequately fund its efforts to carry out the Plan (largely through the City's general operating budget), fiscal prudence is key to providing any government services today. The Department strives for maximizing program efficiencies to meet these

demands. Overall, the City's waste management efforts seek to provide a sound, integrated approach that minimizes waste, maximizes recycling and reduces reliance on the Fresh Kills landfill. Concurrently, the City assesses the efficacy and economics associated with all of its waste management programs and future plans, adjusting its efforts and resources accordingly.

11.0 IMPLEMENTATION SCHEDULE

The tables which follow present an implementation schedule for Plan milestones in accordance with the following legend:

U - Plan milestones which were originally scheduled to occur after the date of this Compliance Report and are unchanged;

O - Plan milestones which are current activities and are continuing into the future;

R - Plan milestones which have deviated from the original Plan and are rescheduled; and

M - Plan milestones which will be modified and will therefore be addressed in a Plan modification.

The tables are organized by waste management option and within each waste management option by program. The milestones are listed under program headings and, in cases where there are many milestones in a program, under program element subheadings. Certain milestone statements are tagged with an asterisk "*", indicating that the milestone has been restated from the Plan. The restatement does not indicate a substantive change in the nature of the milestone but rather is intended to convey a more coherent statement of the activity. For example, there were several milestones in the Plan that addressed support for specific legislative measures. These measures have been addressed, as noted in the this Compliance Report. However, the City will continue to support certain types of recycling legislation and the milestone has been restated as "Continue support of reasonable federal and state waste reduction legislation".

The City intends to submit a Draft Plan Modification to the NYSDEC on June 1, 1995.

TABLE 11-1
COMPLIANCE REPORT
NEW IMPLEMENTATION SCHEDULE
WASTE REDUCTION AND REUSE

PROGRAM • Milestone	Fiscal Year(s)	U	O	R	M
RULES, REGULATIONS, AND LEGISLATIVE INITIATIVES					
• **Continue support of reasonable federal and state waste reduction legislation ***	1996-2002	X	X		
• **Evaluate, Develop and Promote City Rules and Local Laws to promote waste reduction practices ***	1996-2002	X	X		
QUANTITY BASED USER FEES					
• **Continue implementation of commercial QBUFs ***	1996-2002	X	X		
REUSE CENTER DEVELOPMENT					
• **Evaluate the feasibility of a reuse outlet listing through a telephone "hotline" ***	1996-1997		X	X	
• **Continue development of a materials exchange program ***	1995-1996		X	X	
BACKYARD COMPOSTING AND YARD WASTE REDUCTION					
• **Continue to promote voluntary home-composting and "leave it on the lawn" practices City-wide through demonstration sites and outreach programs ***	1995-1997	X	X		
MISCELLANEOUS PROGRAMS					
• **Continue to monitor and evaluate waste reduction and reuse with the Partnership for Waste Prevention ***	1995-1998	X	X		
• **Continue programs to reduce direct mail**	1995-1998	X	X		

U = Unchanged; O = Ongoing; R = Rescheduled; M = To Be Modified
* means milestone has been restated from the Plan

TABLE 11-2
COMPLIANCE REPORT
NEW IMPLEMENTATION SCHEDULE
RECYCLING

PROGRAM Program Element • **Milestone**	**Fiscal Year(s)**	**U**	**O**	**R**	**M**
RESIDENTIAL RECYCLING					
Implementation of Curbside Collection					
• **Continue residential curbside collection services to all 5 boroughs ***	1996-2002	X	X		
• **Continue Monitoring recycling rates, technologies and markets***	1995-2002	X	X		
• **Expand curbside collection program City-wide to include all the high quality recyclable materials and bulk metal** • **Expand curbside collection program to include nonmetal bulk materials**	(1995) (1996)				X
• **Continue contracts with existing drop-off centers**	1995-1998	X	X		
Material Processing Capacity Development					
• **Periodically re-assess need to construct City-sponsored MRFs ***	1996-2002	X	X		
• **Begin construction of Staten Island MRF. The anticipated construction period is approximately two years**	1996			X	
• **Continue use of self-help bulk recycling facilities ***	1995-1998		X		

U = Unchanged; O = Ongoing; R = Rescheduled; M = To Be Modified
* means milestone has been restated from the Plan

TABLE 11-2
COMPLIANCE REPORT
NEW IMPLEMENTATION SCHEDULE
RECYCLING (Cont'd)

PROGRAM Program Element • **Milestone**	**Fiscal Year(s)**	**U**	**O**	**R**	**M**
Program Evaluations					
• **Continue to evaluate efficiency improvement in the collection of recyclables. Implement economically and technically feasible improvements**	1995-1998	X	X		
• **Continue to evaluate efficiency improvement in the processing of recyclables. Implement economically and feasible improvements**	1995-1998	X	X		
• **Continue to evaluate the costs of and cost-saving measures for the recycling program ***	1995-1999		X		
Legislative and Policy Initiatives					
• **Continue to support reasonable legislative and policy initiatives for residential recycling ***	1996-2002	X	X		
COMMERCIAL RECYCLING					
Additional Materials for Commercial Recycling					
• **Continue to evaluate the feasibility of designating additional materials for commercial recycling ***	1996-2002	X	X		
Monitoring Programs for Commercial Recyclables					
• **Continue to develop and define methods to quantify commercial recycling activities ***	1995-2002		X	X	
Legislative and Policy Initiatives					
• **Continue to support reasonable legislative and policy initiatives for commercial recycling ***	1996-2002	X	X		

U = Unchanged; O = Ongoing; R = Rescheduled; M = To Be Modified
* means milestone has been restated from the Plan

TABLE 11-2
COMPLIANCE REPORT
NEW IMPLEMENTATION SCHEDULE
RECYCLING (Cont'd)

PROGRAM Program Element • **Milestone**	**Fiscal Year(s)**	**U**	**O**	**R**	**M**
INSTITUTIONAL RECYCLING					
• **Continue to promote institutional recycling in schools, hospitals, and other non-profit organizations ***	1995-2002	X	X		
• **Continue recycling programs in the Mayoral agencies ***	1995-2002	X	X		
• **Continue outreach and monitoring programs ***	1995-2002	X	X		
• **Evaluate feasibility of conducting a pilot polystyrene program ***				X	
HOUSEHOLD SPECIAL WASTE					
• **Continue household special waste drop-off programs ***	1995-1998	X	X		
COMPOSTING					
Seasonal Leaf and Yard Waste Composting					
• **Construct a leaf waste composting facility at the Edgemere site** • **Initiate City-wide leaf and yard waste collection**	(1994) (1996)				X
• **Continue leaf composting at Fresh Kills**	1995-1998	X	X		
• **Construct a new leaf waste composting facility at Fresh Kills to replace the existing facility**	1997	X			

U = Unchanged; O = Ongoing; R = Rescheduled; M = To Be Modified
* means milestone has been restated from the Plan

TABLE 11-2
COMPLIANCE REPORT
NEW IMPLEMENTATION SCHEDULE
RECYCLING (Cont'd)

PROGRAM Program Element • **Milestone**	**Fiscal Year(s)**	**U**	**O**	**R**	**M**
Evaluation of Organic Waste Capture Methods and Collection Economics					
• **Continue Park Slope Intensive Zone organic collection pilot program**	1995-1998	X	X		
• **Evaluate feasibility of continuing or expanding institutional composting at Fresh Kills**	need date			X	
Composting Technology Evaluation					
• **Complete construction of in-vessel composting program at Rikers Island ***	1997			X	
• **Initiate testing and evaluation of Rikers Island in-vessel composting operation ***	1997			X	
• **Continue to monitor developments in composting technology ***	1995-1998	X	X		
• **Based on the status of composting technology, the experiences with the Rikers Island composting facility and other relevant information consider proceeding with the development of two additional composting facilities**	(1995)				X
• **Issue RFP for two in-vessel composting facilities, if feasible**	(1996)				
• **Start construction of two in-vessel composting facilities, if feasible**	(1997)				
• **Start operations at two in-vessel composting facilities, if feasible**	(1999)				
• **Start collection of organics in low-density residential areas, if feasible**	(1999)				

U = Unchanged; O = Ongoing; R = Rescheduled; M = To Be Modified
* means milestone has been restated from the Plan

TABLE 11-3
COMPLIANCE REPORT
NEW IMPLEMENTATION SCHEDULE
WASTE-TO-ENERGY AND INCINERATION

PROGRAM Program Element • **Milestone**	**Fiscal Year(s)**	**U**	**O**	**R**	**M**
MODIFICATION OR CLOSURE OF EXISTING FACILITIES					
SW Brooklyn Incinerator					
• **Begin renovation of Southwest Brooklyn incinerator to provide the combustion and air-pollution controls required to meet the new Clean Air Act requirements**	(1993)				X
• **Issue RFP for installation of waste-to-energy capacity at Southwest Brooklyn incinerator**	(1997)				
• **Start construction of waste-to-energy equipment at Southwest Brooklyn facility**	(1999)				
• **Start operations of waste-to-energy equipment at Southwest Brooklyn facility**	(2001)				

U = Unchanged; O = Ongoing; R = Rescheduled; M = To Be Modified
* means milestone has been restated from the Plan

TABLE 11-3
COMPLIANCE REPORT
NEW IMPLEMENTATION SCHEDULE
WASTE-TO-ENERGY AND INCINERATION (Cont'd)

PROGRAM Program Element • **Milestone**	**Fiscal Year(s)**	**U**	**O**	**R**	**M**
CONSTRUCTION AND OPERATION OF NEW WASTE-TO-ENERGY FACILITIES					
Brooklyn Navy Yard Waste-to-Energy Facility					
• **Begin operations at Brooklyn Navy Yard facility**	(1999)				X
• **Start construction of Brooklyn Navy Yard facility**	(1996)				
Prior to the time that the company that will build the facility seeks financing for the construction of the Brooklyn Navy Yard facility, the Department will have fully implemented the City-wide curbside collection of recyclables on the accelerated schedule (specified in this plan), and will have established a pilot program to test "four-sort" collection in each of the five boroughs.					
Stack testing shall be done in compliance with all applicable federal and state laws and regulations and with all applicable permit conditions. At a minimum, stack testing shall be done on the facility, not later than 180 days and not later than 365 days after the date refuse firing is initiated prior to a certificate to operate and once every 18 months thereafter for the life of the facility. Stack tests shall be done for the following emissions: particulate matter, carbon monoxide, sulfur dioxide, oxides of nitrogen, hydrogen chloride, non-methane hydrocarbons, polychlorinated dibenzo-p-dioxins, polychlorinated dibenzo furans, polycyclic aromatic hydrocarbons, polychlorinated biphenyls, sulfuric acid, formaldehyde, arsenic, beryllium, cadmium, chromium, lead, mercury, nickel, antimony, cobalt, copper, manganese, scandium, selenium, vanadium, zinc. Continuous emission monitoring equipment shall be installed and operated for the following: nitrogen oxides, sulfur dioxide, oxygen, carbon monoxide, opacity and ammonia. Records of such monitoring and testing shall be available to the public. The Department will set up three air-quality monitoring devices in the community around the Brooklyn Navy Yard facility prior to the start of operations at the facility.					
For each ton of garbage delivered to the Navy Yard facility, a sum of two dollars shall be dedicated to a fund to be used for educational programs in the City designed to promote recycling and waste prevention and reduction.					

U = Unchanged; O = Ongoing; R = Rescheduled; M = To Be Modified
* means milestone has been restated from the Plan

TABLE 11-3
COMPLIANCE REPORT
NEW IMPLEMENTATION SCHEDULE
WASTE-TO-ENERGY AND INCINERATION (Cont'd)

PROGRAM Program Element • **Milestone**	**Fiscal Year(s)**	**U**	**O**	**R**	**M**
ASH MANAGEMENT					
Ash Disposal Capacity					
• **Enter into a contract for out-of-city ashfill capacity**					X
Beneficial Use of Ash					
• **If a waste-to-energy facility is to be constructed in the City, evaluate ash reuse technologies and examine feasibility of implementing such technologies ***	1996-1998			X	

U = Unchanged; O = Ongoing; R = Rescheduled; M = To Be Modified
* means milestone has been restated from the Plan

TABLE 11-4
COMPLIANCE REPORT
NEW IMPLEMENTATION SCHEDULE
LANDFILL

PROGRAM Program Element • **Milestone**	**Fiscal Year(s)**	**U**	**O**	**R**	**M**
FRESH KILLS LANDFILL					
Landfill Improvements					
• **Begin gas recovery from entire Fresh Kills Landfill**	1998			X	
• **Continue development of Leachate collection and treatment program**	1995-1997	X	X		
• **Continue landscaping and site improvement**	1995-1997	X	X		
Part 360 Permit Application					
• **Continue to pursue approval of permits for Fresh Kills landfill ***	1995-1998	X	X		
OUT-OF-CITY LANDFILL CAPACITY					
• **Continue to evaluate need for out-of-City capacity**	1996-2002	X	X		

U = Unchanged; O = Ongoing; R = Rescheduled; M = To Be Modified
* means milestone has been restated from the Plan

APPENDIX A

MILESTONE STATUS TABLES

FOR

COMPLIANCE REPORT

Milestone Status Tables For Compliance Report

The status of Plan milestones for each program and program element is summarized in Tables A-1 through A-21. The tables are similar to the milestone tables in Sections 3 through 9 of this Compliance Report and summarize the City's compliance with these milestones, important highlights, and the need for modifications of Plan programs. After grouping milestones of related program activities, only six program modifications are required.

TABLE A-1
WASTE REDUCTION AND REUSE
RULES, REGULATIONS, AND LEGISLATIVE INITIATIVES
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Lobby or Support Federal and State Regulations and Legislation			
Lobby for RCRA amendments to reduce excess products and packaging (FY 1993)	✓		The Department supported federal waste prevention legislation
Pursue legislation which mandates signs in stores to discourage use of bags (FY 1994)	✓		
Pursue state and local legislation for economic incentives to businesses that produce waste (FY 1994)	✓		Emblem regulations in place
Pursue legislation which requires companies to allow names to be removed from mailing lists (FY 1994)	✓		The Department sponsors the voluntary program
Work with other cities to establish a multiple cities coalition (FY 1993)	✓		
Evaluate, Develop and Promote City Rules and Local Laws			
Issue Mayoral Directive mandating office waste prevention (FY 1993)	✓		Issued on September 9, 1992
Propose that the Department of General Services review specifications (FY 1993)	✓		
Develop City guidelines to stipulate packaging restrictions (FY 1993)	✓		
Pursue legislation to promote durability and waste prevention (FY 1995)		✓	

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

TABLE A-2
WASTE REDUCTION AND REUSE
QUANTITY BASED USER FEES
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Feasibility Studies			
Evaluate feasibility of residential QBUF (FY 1993) Conduct pilot test of residential QBUF (FY 1995)	✓		Program not feasible in the City
Evaluate feasibility of institutional QBUF (FY 1993)	✓		Program not feasible in the City
Evaluate feasibility of government agency QBUF (FY 1993)	✓		
Promote commercial QBUF (FY 1993)	✓		Private hauler tip fees set at MTSs and Fresh Kills landfill

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

TABLE A-3
WASTE REDUCTION AND REUSE
REUSE CENTER DEVELOPMENT
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Reuse Programs			
Facilitate development of a pilot program for a reuse center (FY 1993)	✓		"Guide to Reuse" program developed; telephone "hotline" being investigated
Explore a materials exchange program between buy-back and drop-off centers (FY 1993)	✓		
Seek to involve non-profit and thrift organizations in an exchange program with buy-back centers (FY 1994)	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

TABLE A-4
WASTE REDUCTION AND REUSE
BACKYARD COMPOSTING AND YARD WASTE REDUCTION
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Public Information and Outreach Programs			
Issue RFP to develop home-composting sites and promote home-composting (FY 1993)	✓		Three-year inter agency agreement in place
Implement home-composting demonstration sites City-wide	✓		Home composting sites in each borough
Legislative and Policy Initiatives			
Adopt rules halting the municipal collection of grass clippings (FY 1993)	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

TABLE A-5
WASTE REDUCTION AND REUSE
MISCELLANEOUS PROGRAMS
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Waste Reduction Program Initiatives			
Expand the City's Partnership for Waste Prevention (FY 1993)	✓		Over 6,000 companies represented
Develop programs to reduce direct mail (FY 1993)	✓		Over 200 tons per year reduced
Expand the pilot "no bag" campaign (FY 1993)	✓		
Monitor status of "leave the packaging behind" initiatives (FY 1993)	✓		
Develop a plan to monitor the impact of waste prevention programs (FY 1993)	✓		Pilot programs conducted; consultant selected for long-term monitoring
Continue to expand and monitor the progress of waste prevention and reuse programs (FY 1994)	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

TABLE A-6
RESIDENTIAL RECYCLING
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Implementation of Curbside Collection			
Expand curbside to boroughs, then City-wide (FY 1993)	✓		Service to 2.9 million households is largest in the nation
Monitor recycling rates, technologies, markets (FY 1993)	✓		The Department continues research
Expand to all high quality recyclables and bulk metal (FY 1995) Expand to include non-metal bulk (FY 1996)		**MOD**	Delayed pending review of "economic market" assessment. Self-help bulk facilities accept bulk metals Self-help bulk facilities accept non-metal bulk
Issue RFPs (FY 1993) for and enter into contract with (FY 1994) one buy-back center in each borough		✓	
Continue contracts with existing drop-off centers (FY 1994)	✓		Three contracts are funded through local elected officials' discretionary funds.
Public Information and Outreach Programs			
Expand outreach and public information (FY 1993)	✓		$7.5 million dollar campaign advertised to all five boroughs
Material Processing Capacity Development			
Issue RFPs for publicly-owned MRF's in Brooklyn, Bronx, Manhattan, and Queens, or contract for private MRF capacity (FY 1993)	✓		Capacity through private contracts sufficient through the year 2000

TABLE A-6 (Cont'd)
RESIDENTIAL RECYCLING
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Begin construction of MRF's, if City issued RFP for publicly-owned MRFs	NA		
Begin construction of Staten Island MRF (FY 1993)		✓	
Develop six self-help bulk recycling facilities (FY 1993)	✓		
Pilot Recycling Programs			
Dual compaction/collection vehicle (FY 1993)	✓		30 prototype vehicles tested; vehicle not feasible
Alternative methods of collection and processing (FY 1993)	✓		The Department continues monitoring
Private collection of recyclables (FY 1993)		✓	
Battery collection (FY 1993)	✓		Began in December of 1993
Textile collection (FY 1993)	✓		Full scale program will not be implemented at this time
Mixed waste processing (FY 1994)		✓	
"Four bag sort" in each borough (FY 1994)		✓	
Contract for the Sale of Recovered Materials			
Expand market with long-term contract (FY 1993)	✓		The goal has been met through long-term processing and marketing contracts with MRF owners

TABLE A-6 (Cont'd)
RESIDENTIAL RECYCLING
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Enter into long-term contract for newspaper (FY 1993)	✓		The goal has been met through long-term processing and marketing contracts with MRF owners
Enter into long-term contract for an additional recyclable material (FY 1993)	✓		The goal has been met through long-term processing and marketing contracts with MRF owners
Legislative and Policy Initiatives			
Expand and improve Returnable Container Act (FY 1993)	✓		
Revise rules to allow bags and bins (FY 1993)	✓		Rules revised in September of 1993
Pursue building code changes (FY 1993)	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.
NA = Not applicable.
MOD = Plan modification required.

TABLE A-7
COMMERCIAL RECYCLING
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Targeting Additional Materials for Commercial Recycling			
Examine the economic feasibility of designating additional high quality materials for collection (FY 1994)	✓		Study completed. No additional materials added
Monitoring Programs for Commercial Recycling			
Prepare a description of efforts to recover recyclables by private carters and transfer station operators (FY 1994) .		✓	
Evaluate mandatory waste audits (FY 1993)	✓		
Legislative and Policy Initiatives			
Seek amendments to commercial recycling rules (FY 1993)	✓		Revised rules took effect on September 30, 1993

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

TABLE A-8
INSTITUTIONAL RECYCLING
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Public Information and Outreach Programs			
Improve recycling in City agencies (FY 1993)	✓		
Miscellaneous Institutional Recycling Programs			
Tire shredder at Fresh Kills landfill (FY 1993)	✓		Two shredders in operation at landfill
Pilot polystyrene recycling program (FY 1993)		✓	Pilot not started due to lack of space at schools participating in the program

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

TABLE A-9
RECYCLING
HOUSEHOLD SPECIAL WASTE
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Household Special Waste Collection			
Arrange for a drop-off household special waste collection day (FY 1993)	✓		
Continue program (FY 1994)	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

TABLE A-10
RECYCLING
COMPOSTING
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Seasonal Leaf Waste and Yard Waste Composting Program Implementation			
Continue leaf and yard waste collection in Staten Island (FY 1993)	✓		3,000 tons per year composted
Expand Christmas tree collection (FY 1994)	✓		1,300 tons of trees in FY 1994
Construct Edgemere leaf composting facility (FY 1994) City-wide leaf and yard waste collection (FY 1996)		**MOD**	Delayed but continuing and subject to Plan modification Subject of Plan modification
Evaluation of Organic Waste Capture Methods and Collection Economics			
Evaluate feasibility of organics collection program (FY 1994)	✓		Park Slope Intensive Recycling Zone organic collection pilot program in place
Institutional composting pilot (FY 1993)	✓		
Composting Technology Evaluation			
Rikers Island composting pilot (FY 1993)	✓		Technology selected
Submit ULURP - issue RFP for in-vessel composting facility (FY 1994)	✓		Not required
Begin construction of in-vessel composting facility (FY 1995)	✓		Design in progress
Biosolids and MSW out-of-city co-composting feasibility (FY 1993)	✓		No longer applicable
Mixed waste composting feasibility (FY 1994)	✓		
Issue RFP for two in-vessel composting facilities, if feasible (FY 1996) Begin constructing two in-vessel composting facilities, if feasible (FY 1997) Start operations of two in-vessel composting facilities, if feasible (FY 1999) Start collection of organics, if feasible (FY 1999)		**MOD**	Subject of Plan modification

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.
MOD = Plan modification required.

TABLE A-11
RECYCLING
MARKET DEVELOPMENT
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Develop New Industries			
Develop new industries in the City to use recyclables (FY 1993)	✓		The Department and EDC held two-day workshops for over 90 businesses
Legislation and Policy Initiatives			
Lobby for federal and state recycling and material market development legislation (FY 1993)	✓		
Seek changes in Local Law 19 to support material market development (FY 1993)	✓		Mayoral Directive issued which allows up to 15% premium be paid to market for recycled paper

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

TABLE A-12
WASTE-TO-ENERGY AND INCINERATION
MODIFICATION OR CLOSURE OF EXISTING FACILITIES
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
The Betts Avenue Incinerator			
Cease operation of two of the four lines (FY 1994)	✓		
Decide whether to proceed with renovation (FY 1995)	✓		The City decided to close the Betts Avenue incinerator ahead of schedule
Cease operation or renovate facility (FY 1995)	✓		
The Greenpoint Incinerator			
Decide whether to proceed with renovation (FY 1995)	✓		The City decided to close the Greenpoint incinerator ahead of schedule
Cease operation or renovate facility (FY 1996)	✓		
SW Brooklyn Incinerator			
Evaluate feasibility of front-end pre-processing (FY 1993)	✓		Infeasible because of insufficient space at site
Begin renovation of air pollution control system (FY 1993) Issue RFP for the installation of waste-to-energy capability (FY 1997) Start construction of waste-to-energy conversion (FY 1999) Start operation of waste-to-energy equipment (FY 2001)		**MOD**	Delayed, requires Plan modification

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.
NA = Not applicable.
MOD = Plan modification required.

TABLE A-13
WASTE-TO-ENERGY AND INCINERATION
CONSTRUCTION AND OPERATION OF NEW WASTE-TO-ENERGY FACILITIES
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Brooklyn Navy Yard Waste-to-Energy Facility			
Start construction of the Brooklyn Navy Yard facility (FY 1996) Begin operation of the Brooklyn Navy Yard facility (FY 1999)		**MOD**	Delayed, requires Plan modification

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.
MOD = Plan modification required.

TABLE A-14
WASTE-TO-ENERGY AND INCINERATION
ASH MANAGEMENT
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Ash Disposal Capacity			
Withdraw application for an ashfill at Fresh Kills (FY 1993)	✓		
Issue out-of-city ashfill capacity (FY 1993)	✓		
Enter into contract for out-of-city ashfill capacity (FY 1994)		**MOD**	Delayed, will require Plan modification
Beneficial Use of Ash			
Continue research on ash reuse and issue an RFP or RFI for the beneficial reuse of ash (FY 1994)		✓	Scope for continued research agreed to between City and NYSERDA; project now on hold.
Enter into a contract for the beneficial reuse of ash, if feasible (FY 1995)		✓	

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.
MOD = Plan modification required.

TABLE A-15
FRESH KILLS LANDFILL
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Landfill Improvements			
Complete gas migration control system (FY 1993)	✓		Gas migration system installed over entire landfill
Continue development of gas remediation/recovery program (FY 1993)	✓		Gas recovery system in sections 2/8 and 3/4
Begin gas recovery from entire Fresh Kills landfill (FY 1994)		✓	Concessionaire proposals non-responsive; RFP reissued January 1994
Continue development of leachate collection and treatment program (FY 1993)	✓		Installed leachate collection system for section 1/9
Complete stormwater control system (FY 1995)	✓		Installed stormwater collection system for developed sections
Ongoing landscaping and site improvements (FY 1993) Continue to develop Fresh Kills landfill infrastructure (FY 1994)	✓		
Close section 3/4 (FY 1993) Close section 2/8 (FY 1994)	✓		Landfill closure is under construction for these sections
Part 360 Permit Application			
Submit permit application to NYSDEC for Fresh Kills landfill (FY 1995)	✓		Draft permit has been prepared and submitted to the NYSDEC

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

TABLE A-16
OUT-OF-CITY LANDFILL CAPACITY
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Secure Capacity			
Initiate efforts to secure out-of-City landfill (FY 1993)	✓		
Issue RFP for out-of-City capacity (FY 1994)		✓	Deviation from the Plan
Issue RFP for additional out-of-City capacity (FY 2001)			

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

TABLE A-17
BIOSOLIDS MANAGEMENT
MILESTONE STATUS

Program Element and Milestone (FY)*	Milestone Accomplished?		Highlights
	YES	NO	
Biosolids Management			
Planning/development for long-term plan facilities (FY 1992)	✓		
Start facility operation - substantial completion of construction for dewatering facilities capable of processing 100% of the City's biosolids (FY 1992)	✓		Eight dewatering facilities are operational City-wide.
Start facility construction of long-term plan facilities (FY 1994) - Phase I	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

TABLE A-18
MEDICAL WASTE
CITY-WIDE REGULATORY AND POLICY INITIATIVES
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Medical Waste Criteria			
Establish filing/regulatory system (FY 1992)	NA		
Amend designations of recyclable materials (FY 1993)	✓		
Establish medical waste acceptance criteria (FY 1993)	NA		
Modify current systems of fines and suspensions for violators of Local Law 75 (FY 1993)	NA		
Modify current filing requirements (FY 1993)	NA		
Extend licensing by the DCA (FY 1993)	NA		
Collection and Transport			
Modify and standardize containerization and internal transport mechanisms (FY 1993)	✓		
Allow the Department to collect medical waste from small quantity generators (FY 1993)	✓		
Discontinue Department services to non-permitted generators (FY 1994)	NA		
Education and Monitoring			
Form a medical waste advisory committee (FY 1992)	NA		
Provide funding for education and monitoring programs (FY 1993)	✓		

TABLE A-18 (Cont'd)
MEDICAL WASTE
CITY-WIDE REGULATORY AND POLICY INITIATIVES
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Emission Standards and Management			
Develop emissions data and evaluate management options (FY 1994)	NA		
Promote implementation of management techniques (FY 1994)	✓		
Promote development of emissions standards (FY 1994)	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.
NA = Not applicable.

TABLE A-19
MEDICAL WASTE
HHC WASTE REDUCTION, REUSE, AND RECYCLING MEASURES
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Continue medical waste audits (FY 1993)	✓		
Control unused product discards (FY 1993)	✓		
Institute accountability for waste generation costs (FY 1993)	✓		Facilities divided into zones
Develop product purchasing evaluation criteria (FY 1993)	✓		Currently evaluating options
Coordinate collection (FY 1993)	✓		
Implement facility waste education programs (FY 1993)	✓		
Set-up corrugated baling equipment (FY 1993)	✓		Goal of milestone achieved through other means
Establish office paper recycling programs (FY 1993)	✓		
Establish separate collections (FY 1993)	✓		
Implement battery exchange programs (FY 1993)	✓		
Establish separate collection for PVC items (FY 1993)	✓		Currently in place at two facilities
Replace containers for collecting disposable sharps (FY 1993)	✓		

TABLE A-19 (Cont'd)
MEDICAL WASTE
HHC WASTE REDUCTION, REDUCE AND RECYCLING MEASURES
MILESTONE STATUS

Program Element and Milestone (FY) *	Milestone Accomplished?		Highlights
	YES	NO	
Replace paper towels by air drying (FY 1993)	✓		
Replace disposable food service cookware (FY 1993)	✓		
Replace disposable linens (FY 1993)	✓		
Set-up grinding equipment at each facility (FY 1993)	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

TABLE A-20
DREDGE SPOILS TECHNOLOGIES
MILESTONE STATUS

Program Element and Milestone (FY)*	Milestone Accomplished?		Highlights
	YES	NO	
Technology assessment (FY 1993)	✓		
Start facility development (FY 1994)	✓		
Dredge spoils system operational (FY 1995)	✓		

* FY refers to the City fiscal year (July 1 through June 30) in which the milestone was to be implemented, according to the Plan.

APPENDIX B

CROSS-TABULATION
OF
MILESTONES FROM THE SOLID WASTE MANAGEMENT PLAN

CROSS-TABULATION
OF
MILESTONES FROM THE SOLID WASTE MANAGEMENT PLAN

WASTE REDUCTION AND REUSE	
FY 1993	**Page(s)**
Promote volume-based fees for commercial garbage with the Department of Consumer Affairs.	3-10
Evaluate feasibility of residential and institutional volume-based user fees and seek Environmental Protection Agency funding for a pilot program in a residential area.	3-8 3-10
Evaluate the feasibility of charging government agencies for waste disposal costs.	3-10
Develop City procurement guidelines to stipulate packaging restrictions and the purchase of reusable products.	3-7
Develop programs to reduce direct mail. The Department is working with the Waste Prevention Partnership in seeking an agreement from the Direct Mail Association to set up procedures to enable recipients of direct mail to remove their names from mailing lists.	3-20
Facilitate development of pilot program for a reuse center. This program will build on the precedent set with Material for the Arts.	3-13
Develop programs for backyard composting of organics in low-density areas and community gardens. Set up demonstration projects.	3-15
Adopt rules halting the municipal collection of mown grass.	3-17
Monitor the progress of "leave the packaging behind" initiatives.	3-21
Develop a plan to evaluate impacts of waste prevention programs.	3-22
Lobby for state and federal waste reduction legislation, including all waste reduction legislation described in section 19.3 of this chapter.	3-2, 3-7
Issue Mayoral directive mandating office waste prevention in city agencies and designating a waste prevention coordinator in each administrative unit. The directive will address procurement practices and office procedures, such as two-sided copying.	3-6
Explore opportunities for incorporating a materials exchange program into recycling buy-back and drop-off centers.	3-14
Expand educational outreach on waste prevention in schools and with tenant and community groups. The Department has a staff of 24 persons who will speak at school assemblies and to other groups about waste reduction.	4-11
Expand the pilot "no bag" campaign and the program to reduce and reuse packaging at dry cleaning establishments to other retailers. There will be a particular focus on excess packaging provided at small businesses, such as green grocers, delis and bodegas.	3-21

CROSS-TABULATION
OF
MILESTONES FROM THE SOLID WASTE MANAGEMENT PLAN

WASTE REDUCTION AND REUSE (Cont'd)	
FY 1993 (Cont'd)	**Page(s)**
Pursue changes to the City building codes to encourage waste prevention and recycling.	4-27
Expand the City waste prevention partnership to include designers, manufacturers and distributors.	3-19
Focus educational outreach on low-income persons and on people for whom English is a second language. The Department has a bilingual community outreach staff and Department mailings are in Spanish and English. The Department's media efforts will target television programs, print media and radio programs that have non-English speaking audiences.	4-11
Work with other cities to establish a multiple cities coalition to develop model waste prevention legislation to be adopted by the legislatures of the cities in the coalition.	3-6
FY 1994	
Continue to expand and monitor progress of waste prevention and reuse programs.	3-22
Evaluate implementing waste audit requirements for commercial and institutional waste. If legislation authorizing the establishment of exclusive licensing districts for commercial refuse collection is enacted, develop an RFP for collection services that requires the provision of waste audit services.	4-32
Pursue the following local and/or state legislative initiatives:	
Mandating signs in certain retail stores discouraging the use of unnecessary bags or banning the provision of free bags and unnecessary packaging at retail establishments;	3-4
Providing economic incentives to businesses that produce and consumers who acquire products that prevent waste, such as refillable packaging, washable diapers and mulch mowers; and	3-4
Requiring companies that send direct mail to include a means by which addressees may remove their names from mailing lists.	3-5
FY 1995	
Conduct pilot testing of a residential volume-based user fee.	3-8
Pursue legislation to promote durability and waste prevention through product stewardship and requiring manufacturers through a deposit and/or leasing system, to take back specific products such as refrigerators, cars, toasters and televisions.	3-5
FY 1997	
Continue with all on-going waste reduction efforts.	11-2
Set new more ambitious targets for waste reduction.	11-2

CROSS-TABULATION
OF
MILESTONES FROM THE SOLID WASTE MANAGEMENT PLAN

RECYCLING	
FY 1993	**Page(s)**
Expand curbside collection program to all of Manhattan (in September 1992), the Bronx (in December 1992), and Brooklyn (in June of 1993) for all six currently designated materials (including telephone books).	4-6
Expand public information for recycling program by establishing telephone "hot line," sustained media program, and seminars for building owners and superintendents. The media program will include radio, television and print advertisements as well as Department mailings.	4-11
Expand outreach efforts to enhance participation rates. In addition to the 24 persons working in the Department recycling outreach effort, a part-time worker will be hired in each community district to coordinate recycling efforts, involve block associations in recycling, act as a liaison between Department and community groups, and educate community residents about recycling. Bilingual workers will be employed in areas where significant numbers of residents speak English as a second language.	4-11
Improve recycling rates of City agencies through aggressive outreach and monitoring programs. The Department monitors the recycling efforts of agencies, and the Mayor's Office of Operations participates in efforts to increase recycling. Study the feasibility of requiring agencies to use or acquire goods made of recyclable materials.	4-34
Conduct pilot test of dual-compartment/dual compacting collection truck and explore other truck technologies.	4-18
Research and develop strategies to encourage the growth of markets for the City's recyclables. The focus of this effort is to enter into long-term contracts for large quantities of each type of recyclable material collected by the City.	4-25
Conduct a battery collection pilot. Starting in FY 1995, batteries will be collected as part of the high-quality recycling program. The Department is also participating on a State task force, chaired by the Commissioner of Environmental Conservation, established pursuant to Section 27-0719 of the State Environmental Conservation Law, to develop a statewide action plan for a battery collection system. The Commissioner is required by law to issue the report by January 1, 1993. Evaluate the implications of this report for the City's battery collection programs.	4-21
Conduct a textile collection and processing pilot.	4-22
Conduct a polystyrene collection and processing pilot.	4-36
Arrange for a one-day drop-off of household special waste, including batteries, at a location in each borough. This program will be continued each year on an ongoing basis, unless an alternative approach to handling household special waste is developed. It is anticipated that service establishments in other facilities will continue to collect and arrange for re-refining of used oil, consistent with the provisions of 6NYCRR Part 360-14.4.	4-37

CROSS-TABULATION
OF
MILESTONES FROM THE SOLID WASTE MANAGEMENT PLAN

RECYCLING (Cont'd)	
FY 1993 (Cont'd)	**Page(s)**
Encourage development of new industries in the City that use the City's recyclables. The Department has already attracted a proposal from a company to develop a paper de-inking and reprocessing facility in the City to handle the newsprint and magazines collected by the City. The Department is working with the Port Authority and the Environmental Defense Fund on a study of what recycling industries have the greatest chance of developing in the City. The Department will coordinate this effort with the Economic Development Corporation and the State Department of Economic Development.	4-52
Award a long-term supply contract for newspaper.	4-25
Issue an RFP for a long-term contract for an additional recyclable material.	4-26
Develop pilot tests for alternative methods of collection and processing of recyclable materials.	4-20
Develop pilot for private collection of recyclables.	4-21
Revise residential recycling rules to permit use of bags as well as plastic containers for recyclables and to increase building signage requirements.	4-27
Seek amendments to Local Law 19 to conform to this plan.	4-54
Revise commercial recycling rules and transfer station rules to minimize contamination and maximize recovery of recyclable materials.	4-33
Begin construction of Staten Island MRF. The anticipated construction period for all MRFs is approximately two years.	4-16
Submit Uniform Land Use Review Procedure applications for Bronx, Brooklyn, Manhattan and Queens MRFs.	4-15
Issue RFPs to design and construct Bronx, Brooklyn and Manhattan MRFs. (Note: Uniform Land Use Review Procedure may be concurrent with issuance of the RFPs). The City will continue to rely on privately owned waste transfer stations to process recyclable materials to the extent that City-owned MRFs do not have sufficient capacity to process the recyclable materials collected by the Department. The City may issue an RFP for one or more long-term contracts for the use of privately owned MRFs.	4-15
Develop six self-help bulk recycling sites. Equipment to facilitate recycling of bulk materials will be installed at existing Department facilities.	4-17
Issue RFPs for one buy-back center in each borough.	4-9
Monitor participation rates, new collection and processing technologies and markets for recyclables.	4-8
Pursue enactment of all recycling legislation and regulations described in Section 19.3 of the Plan.	4-27, 4-54

CROSS-TABULATION
OF
MILESTONES FROM THE SOLID WASTE MANAGEMENT PLAN

RECYCLING (Cont'd)	
FY 1994	**Page(s)**
Expand the curbside recyclable collection program City-wide by September 15, 1993.	4-6
Examine the economic feasibility of designating additional high quality materials for collection in the commercial recycling programs.	4-30
Conduct five pilots in residential sections (one in each borough) designed to test the feasibility of recycling and composting materials in addition to those recyclable materials currently collected at the curbside, and of requiring residents to sort their waste into four bags or containers. These pilots will be conducted in a variety of neighborhoods, so that the feasibility of such programs is tested in high- and low-density areas and in areas with populations of varying income levels and ethnic backgrounds. The Park Slope intensive zone shall be used as a model for these pilots. If successful, the methods used in these pilots may be the basis for an expanded program in other parts of the City.	4-23, 4-43
Conduct a mixed-waste processing pilot using residential waste. (As a supplement to the curbside source-separation of recyclables to recover additional materials from the "refuse" component of the waste stream). Based on the experience with this pilot, evaluate whether additional mixed-waste processing pilots should be conducted and whether more extensive use of mixed-waste processing will produce significant tonnages of marketable recyclable materials.	4-23
Acquire a tire shredder for the Fresh Kills landfill. This shredder will be used for those tires that have not been recovered through other recycling programs. Attempts will be made to market the tires shredded by this equipment to end users.	4-36
If pilot tests of dual compartment/dual compacting trucks are successful, procure additional dual compartment/dual compacting collection trucks. If the pilot tests are not successful, conduct a pilot for other truck technologies, if appropriate.	4-18
Continue program for collection of household special waste.	4-37
Issue RFP to design and construct Queens MRF.	4-15
Begin design/construction of Bronx, Brooklyn and Manhattan MRFs.	4-15
Enter into contracts for five buy-back centers (one in each borough) and continue contracts with existing drop-off centers. Seek to involve non-profit, thrift organizations in a program to exchange and reuse goods collected at the buy-back centers.	4-9, 4-11, 3-14

CROSS-TABULATION
OF
MILESTONES FROM THE SOLID WASTE MANAGEMENT PLAN

RECYCLING (Cont'd)	
FY 1994 (Cont'd)	**Page(s)**
Based on data provided by private carters and private waste transfer stations, prepare a description of private efforts to recover recyclables, including the quantities and types of materials collected. This data will become available to the City as private carters and operators of private waste transfer stations comply with the requirements of the City's recycling and transfer station rules for the submission of data to the City and a critical mass of information is accumulated. This study will include construction and demolition debris, which is collected and processed by private companies at privately owned facilities, permitted by the Department. As with other materials, the City's rules require reporting on how much of the material is recycled and reused.	4-31
FY 1995	
Expand curbside collection program City-wide to include all the high-quality recyclable materials and bulk metal.	4-9
Begin design/construction of Queens MRF.	4-15
FY 1996	
Expand curbside collection program to include nonmetal bulk materials.	4-9
FY 1997	
Issue RFP for a second Queens MRF. Depending on the tonnage of recyclables collected at curbside, it may be necessary to develop additional MRFs or enter into contracts for the use of privately owned MRFs. On an ongoing basis the Department will determine what additional MRF capacity will be required. Current projections indicate that the City may need to contract out for additional capacity starting in FY 1997, but that the recycling diversion rate will then stabilize.	4-15
FY 1998	
Begin construction of second Queens MRF.	4-15

CROSS-TABULATION
OF
MILESTONES FROM THE SOLID WASTE MANAGEMENT PLAN

COMPOSTING	
FY 1993	**Page(s)**
Conduct institutional composting pilot at Fresh Kills composting facility.	4-44
Research and evaluate composting technologies, monitor facilities operations.	4-48
Conduct in-vessel composting pilot at Riker's Island.	4-46
Continue leaf and yard waste collection in Staten Island.	4-40
Issue RFP to develop home-composting demonstration sites and promote home-composting and grass mulching City-wide.	3-15
Examine feasibility of developing, out of the City, a co-composting facility combining sludge and compostable waste.	4-48
FY 1994	
Construct leaf and yard waste composting facility at the Edgemere Facility.	4-42
Submit Uniform Land Use Review application for and issue RFP for design and construction of an in-vessel composting facility.	4-46
Evaluate feasibility of developing a mixed-waste composting facility.	4-49
Implement home-composting demonstration sites and home-composting and grass mulching promotion City-wide.	3-15
Expand Christmas tree collection City-wide.	4-42
FY 1995	
Begin construction of an in-vessel composting facility.	4-46
Based on a review of the status of composting technology, the experience with the Riker's Island composting facility, and other relevant information, consider proceeding with development of two additional composting facilities. The size of these facilities will depend on whether they are designed to accommodate only commercial and institutional organic waste or also residential organic waste. For purposes of the composting section of this implementation schedule, it is assumed that residential (in low density areas), commercial and institutional composting are determined to be feasible, even though the final decision on whether to proceed with this course of action will not be made until, at the earliest, FY 1995.	4-49

CROSS-TABULATION
OF
MILESTONES FROM THE SOLID WASTE MANAGEMENT PLAN

COMPOSTING (Cont'd)	
FY 1996	**Page(s)**
Initiate citywide leaf and yard waste collection.	4-42
Issue RFPs for two in-vessel composting facilities, if feasible.	4-49
FY 1997	
Construct a new leaf and yard waste composting facility at the Fresh Kills landfill to replace the existing facility.	4-42
Start construction of two in-vessel composting facilities, if feasible.	4-50
FY 1999	
Start operations at two in-vessel composting facilities, if feasible.	4-50
Start collection of organics in low-density residential areas, if feasible.	4-50

CROSS-TABULATION
OF
MILESTONES FROM THE SOLID WASTE MANAGEMENT PLAN

WASTE-TO-ENERGY	
FY 1993	**Page(s)**
Evaluate front-end pre-processing systems for retrofitting the Southwest Brooklyn incinerator.	5-4
Begin renovation of Southwest Brooklyn incinerator to provide the combustion and air-pollution controls required to meet the new Clean Air Act requirements.	5-5
FY 1994	
Cease operations at two of the four furnace lines of the Betts Avenue incinerator.	5-3
Initiate efforts to secure out-of-city disposal capacity.	6-12
FY 1995	
If the permit for the Brooklyn Navy Yard waste-to-energy facility is denied by the NYSDEC or the permit application is withdrawn or the BNY waste-to-energy project is terminated, proceed with renovation of the existing Betts Avenue and Greenpoint incinerators to meet the new Clean Air Act requirements.	5-3
In case of emergency, decide whether to proceed with the renovation of the Greenpoint incinerator. Any decision to proceed with the renovation shall require approval by the City Council. An emergency would include events such as (a) governmental restrictions that curtail the export of commercial waste, (b) the NYSDEC restricting the loading capacity of Fresh Kills below its then-current use, or (c) denial of the permit for the renovation of the Southwest Brooklyn incinerator by the NYSDEC or the withdrawal of the permit application for that project.	5-4
Cease operations at the Betts Avenue incinerator by June 30, 1995, unless it is to be renovated as described in the preceding entry.	5-3
FY 1996	
Cease operations at the Greenpoint incinerator by November 15, 1995, unless it is to be renovated as described in the preceding provision.	5-4

CROSS-TABULATION
OF
MILESTONES FROM THE SOLID WASTE MANAGEMENT PLAN

WASTE-TO-ENERGY (Cont'd)	
FY 1996 (Cont'd)	**Page(s)**
Start construction of Brooklyn Navy Yard facility. Prior to the time that the company that will build the facility seeks financing for the construction of the Brooklyn Navy Yard facility, the Department will have fully implemented the City-wide curbside collection of recyclables on the accelerated schedule (specified in this plan), and will have established a pilot program to test "four-sort" collection in each of the five boroughs. Stack testing shall be done in compliance with all applicable federal and state laws and regulations and with all applicable permit conditions. At a minimum, stack testing shall be done on the facility, not later than 180 days and not later than 365 days after the date refuse firing is initiated prior to a certificate to operate and once every 18 months thereafter for the life of the facility. Stack tests shall be done for the following emissions: particulate matter, carbon monoxide, sulfur dioxide, oxides of nitrogen, hydrogen chloride, non-methane hydrocarbons, polychlorinated dibenzo-p-dioxins, polychlorinated dibenzo furans, polycyclic aromatic hydrocarbons, polychlorinated biphenyls, sulfuric acid, formaldehyde, arsenic, beryllium, cadmium, chromium, lead, mercury, nickel, antimony, cobalt, copper, manganese, scandium, selenium, vanadium, zinc. Continuous emission monitoring equipment shall be installed and operated for the following: nitrogen oxides, sulfur dioxide, oxygen, carbon monoxide, opacity and ammonia. Records of such monitoring and testing shall be available to the public. The Department will set up three air-quality monitoring devices in the community around the Brooklyn Navy Yard facility prior to the start of operations at the facility. For each ton of garbage delivered to the Navy Yard facility, a sum of two dollars shall be dedicated to a fund to be used for educational programs in the City designed to promote recycling and waste prevention and reduction.	5-10
FY 1997	
Issue RFP for installation of waste-to-energy capacity at Southwest Brooklyn incinerator.	5-5
FY 1999	
Begin operation at the Brooklyn Navy Yard Facility.	5-10
Start construction of waste-to-energy equipment at the Southwest Brooklyn facility.	5-5
FY 2001	
Start operations of waste-to-energy equipment at Southwest Brooklyn facility.	5-5

CROSS-TABULATION
OF
MILESTONES FROM THE SOLID WASTE MANAGEMENT PLAN

LANDFILL	
FY 1993	**Page(s)**
Complete gas migration control system.	6-5
Continue development of gas remediation/recovery program.	6-6
Close Section 3/4.	6-9
Continue development of leachate collection and treatment program.	6-7
Ongoing landscaping and site improvements.	6-8
Issue RFP for out-of-City ashfill capacity seeking a minimum of five years of capacity for the ash from the Southwest Brooklyn and Brooklyn Navy Yard facilities.	5-11
Initiate efforts to secure out-of-City landfill capacity.	6-12
Withdraw the NYSDEC application for an ashfill at Fresh Kills concurrently with the submission of this plan to the Department. Any development of an ashfill at Fresh Kills in the future shall require Council approval.	5-8 (text)
FY 1994	
Close Section 2/8 (Note: this will be done in calendar year 1993).	6-9
Begin gas recovery from entire Fresh Kills landfill.	6-6
Continue to develop Fresh Kills landfill infrastructure improvements. This work will extend through FY 1996.	6-8
Continue research on ash reuse and issue an RFP or request for information for the beneficial reuse of ash.	5-13
Enter into a contract for out-of City ashfill capacity.	5-11
Issue an RFP for out-of-City landfill capacity.	6-12
FY 1995	
Enter into contract for beneficial re-use of ash, if feasible.	5-13
Complete a storm water control system for Fresh Kills landfill.	6-8
Submit permit application to the NYSDEC for Fresh Kills landfill.	6-10
FY 2001	
Issue an RFP for additional out-of City landfill capacity, if necessary.	6-12

CROSS-TABULATION
OF
MILESTONES FROM THE SOLID WASTE MANAGEMENT PLAN

BIOSOLIDS FACILITIES	
FY 1992	**Page(s)**
Planning/development for long-term-plan facilities.	7-2
Start facility operation - substantial completion of construction for dewatering facilities capable of processing 100% of the City's sludge.	7-4
FY 1994	
Start facility construction of long-term-plan facilities.	7-4
FY 1998	
Start facility operation - substantial completion of construction of long-term-plan facilities.	7-5

CROSS-TABULATION
OF
MILESTONES FROM THE SOLID WASTE MANAGEMENT PLAN

MEDICAL WASTE FACILITIES	
FY 1992	**Page(s)**
Establish a filing/regulatory system for non-incineration treatment and processing facilities.	8-4
Form a medical-waste advisory committee.	8-9
Amend designations of recyclable materials.	8-4
Establish waste-acceptance criteria for the Department.	8-7
Modify the current systems of fines and suspensions for violators of Local Law 75 for permitted waste generators.	8-7
Modify the current State solid-waste-management-plan filing requirements and establish a waste-generator permit system.	8-7
Modify, integrate, and standardize infectious waste, recyclables, and regulated-medical-waste containerization and internal-transport mechanisms.	8-8
Extend licensing by the DCA for the collection of these wastes: wet waste, treated, ground, segregated plastic medical apparatus; dry recyclables; glass and metal; and pathological, hazardous, radioactive, and regulated medical waste.	8-7
Allow Department collection of waste from certain small-quantity private generators of non-regulated medical waste.	8-9
Provide funding for education and monitoring programs.	8-10
FY 1994	
Discontinue Department collection service to non-permitted generators.	8-9
Develop pathological-waste generation and emissions data, and evaluate management options.	8-10
Promote implementation of the recommended management techniques.	8-11
Promote the development of emissions standards by the NYSDEC.	8-11
FY 1993	
Continue waste audits.	8-14
Control unused product discards.	8-14
Institute departmental accountability for waste-generation costs.	8-14
Develop product-purchasing evaluation criteria.	8-15
Coordinate collection between Materials Management and Housekeeping.	8-15

CROSS-TABULATION
OF
MILESTONES FROM THE SOLID WASTE MANAGEMENT PLAN

MEDICAL WASTE FACILITIES (Cont'd)	
FY 1993 (Cont'd)	**Page(s)**
Implement waste-education programs in each facility.	8-15
Set-up equipment for baling corrugated cardboard at each facility.	8-16
Establish office-paper recycling programs.	8-16
Establish separate collections programs for glass and metal and for kitchen and food-service waste.	8-16
Implement battery-exchange programs.	8-17
Establish separate collection of I.V. - and other tubing, sharps, apparatus, and other PVC items.	8-17
Replace containers for collecting disposable sharps.	8-17
Replace paper towels by air dryers.	8-18
Replace disposable food-service cookware.	8-18
Replace disposable linens.	8-18
Set-up equipment at each facility for grinding and disinfecting I.V.s, sharps, and apparatus.	8-19

CROSS-TABULATION
OF
MILESTONES FROM THE SOLID WASTE MANAGEMENT PLAN

DREDGE SPOILS	
FY 1993	**Page(s)**
Technology assessment.	9-2
FY 1994	
Start facility development.	9-4
FY 1995	
Dredge spoils system operational.	9-4

APPENDIX C

EXAMPLES OF OUTREACH PUBLIC EDUCATION MATERIAL

RECYCLING EXPANDS IN BROOKLYN

Starting Tuesday, June 1, 1993

- Recycle:
  plastic bottles and jugs
  glass bottles and jars
  metal cans
  aluminum *foil* wrap and trays
  newspapers, magazines, catalogs, phone books,
  and flattened *corrugated cardboard*
- Your recyclables will be collected ***every week***
- Blue bags are coming

Se expande el programa de reciclaje en Brooklyn

Comenzando el martes, 1° de junio de 1993

- Deberá reciclar: artículos de *plástico, vidrio, metal,* y papel y bandejas de *aluminio; periódicos, revistas, catálogos, guías telefónicas* y *cartón corrugado* aplanado
- Sus artículos reciclables serán recogidos ***todas las semanas***
- Llegarán las bolsas azules

RECYCLING EXPANDS IN THE BRONX

Starting Tuesday, December 1, 1992

- Your recyclables will be collected ***every week***
- Recycle:
  plastic bottles and jugs
  glass bottles and jars
  metal cans
  aluminum *foil*
  newspapers, magazines, catalogs, phone books,
  and *corrugated cardboard*
- Blue bags are coming

Se Expande el Programa de Reciclaje en el Bronx

Comenzando el 1 de diciembre de 1992

- Sus artículos reciclables serán recogidos ***todas las semanas***
- Deberá reciclar: artículos de plástico, vidrio, metal, papel de aluminio; periódicos, revistas, catálogos, guías telefónicas, cartón corrugado
- Llegarán las bolsas azules

RECYCLING EXPANDS IN QUEENS

Starting Monday, September 13, 1993

- **Recycle:**
  ***plastic* bottles and jugs**
  ***glass* bottles and jars**
  ***metal* cans**
  aluminum *foil* wrap and trays
  newspapers, magazines, catalogs, phone books,
  and flattened *corrugated cardboard*
- **Your recyclables will be collected *every other week***
- **Blue bags are coming**

Se expande el programa de reciclaje en Queens

Comenzando el lunes, 13 de septiembre de 1993

- **Deberá reciclar: artículos de *plástico, vidrio, metal,* y papel y bandejas de *aluminio; periódicos, revistas, catálogos, guías telefónicas* y *cartón corrugado* aplanado.**
- **Sus artículos reciclables serán recogidos *cada dos semanas***
- **Llegarán las bolsas azules**

MANHATTAN RECYCLING EXPANDS

- **All Manhattan Residents Recycle:**
  Plastic, glass, metal, foil
  Newspapers, magazines, catalogs,
  corrugated cardboard
  Phone books
- **Some Recycling Days Change**
- **Blue Bags Are Coming**

Starting September 14, 1992

Se Expande el Reciclaje en Manhattan

Comenzando el 14 de Septiembre de 1992

- **Todos los residentes de Manhattan deberán reciclar:**
  Plástico, vidrio, metal, papel de aluminio
  Periódicos, revistas, catálogos, cartón corrugado
  Guías de teléfonos
- **Cambiarán algunos de los días de reciclaje**

STATEN ISLAND RECYCLING UPDATE

Starting November 2, 1992

- **Leaves, brush, and pumpkins will be collected for composting**
- **Blue bags are coming**
- **Plastics: recycle only plastic bottles and jugs**

Compost Your Leaves, Brush, and Pumpkins

From the beginning of November through mid-December, your leaves and other yard waste will be collected for composting.

Last Fall, 2,100 tons (336 truckloads) of Staten Island leaves were diverted from the City's landfill – a 21.3% increase over the previous year! Tons of rich compost produced by the Department of Sanitation are made available to NYC residents, non-profit organizations, and community gardens.

This Fall, in addition to leaves, you can also compost your brush, yard trimmings, and Halloween pumpkins.

CHECK TO SEE WHAT MATERIALS THE NYC RESIDENTIAL RECYCLING PROGRAM ACCEPTS

NEWSPAPERS

YES

MAGAZINES

YES

DETERGENT CONTAINERS

YES

MILK JUGS

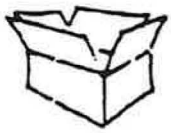
YES

ALUMINUM PRODUCTS

YES

METAL CANS


YES

CORRUGATED BOXES

YES

PHONE BOOKS

YES

SHAMPOO BOTTLES

YES

LOTION BOTTLES

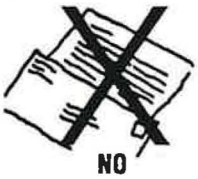

YES

BATTERIES

NO

WIRE HANGERS

NO

WHITE PAPER/ENVELOPES

NO

COMPUTER PAPER

NO

KETCHUP CONTAINERS

YES

SODA BOTTLES

YES

AEROSOL CANS

NO

PAINT CANS

NO

PIZZA BOXES

NO

DETERGENT BOXES

NO

PEANUT BUTTER JARS (GLASS ONLY)

YES

WAX PAPER CONTAINERS

NO

SODA BOTTLES

YES

LIGHT BULBS

NO

SHIRT CARDBOARD

NO

CEREAL BOXES

NO

SALAD BOXES

NO

DELI CONTAINERS

NO

JAM JARS (GLASS ONLY)

YES

CERAMICS

NO

CHINESE TAKE-OUT BOXES

NO

EGG CARTONS

NO

COAT HANGERS

NO

PLASTIC WRAP

NO

PICKLE JARS

YES

MIRRORS

NO

PAPER OR PLASTIC BAGS

NO

SHOE BOXES

NO

BOTTLE TOPS

NO

PLASTIC RINGS

NO

YOGURT CONTAINERS

NO

Rinse bottles, jars, and jugs; remove caps and lids. Labels are OK.

Department of Sanitation, City of New York, Rudolph W. Giuliani, Mayor

Help Reduce New York's Waste. Reduce, Reuse, Recycl

¡SEGÚRESE DE LOS MATERIALES ACEPTADOS POR EL PROGRAMA DE RECICLAJE RESIDENCIAL DE LA CIUDAD DE NUEVA YORK

PERIÓDICOS

SÍ

REVISTAS

SÍ

ENVASES DE DETERGENTES

SÍ

ENVASES PLÁSTICOS DE LECHE

SÍ

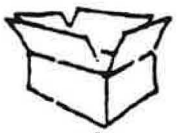
PRODUCTOS DE ALUMINIO

SÍ

LATAS

SÍ

S DE CARTÓN CORRUGADO



SÍ

GUÍAS TELEFÓNICAS

SÍ

BOTELLAS DE CHAMPÚ

SÍ

BOTELLAS DE LOCIÓN

SÍ

BATERÍAS

NO

PERCHAS DE ALAMBRE

NO

APEL BLANCO/SOBRES

NO

PAPEL DE COMPUTADORA

NO

ENVASES DE SALSA DE TOMATE

SÍ

BOTELLAS DE REFRESCO

SÍ

ENVASES DE AEROSOL

NO

LATAS DE PINTURA

NO

CAJAS DE PIZZA

NO

CAJAS DE DETERGENTES

NO

JARRAS DE MANTEQUILLA DE MANÍ (DE VIDRIO)

SÍ

ENVASES DE PAPEL ENCERADO

NO

BOTELLAS DE REFRESCO

SÍ

BOMBILLAS

NO

CARTÓN DE CAMISAS

NO

CAJAS DE CEREAL

NO

ENVASES DE ENSALADA

NO

ENVASES FIAMBRERÍA

NO

JARRAS DE MERMELADA (DE VIDRIO)

SÍ

OBJETOS DE CERÁMICA

NO

AJAS DE COMIDA CHINA

NO

CAJAS DE HUEVOS

NO

PERCHAS

NO

ENVOLTURA PLÁSTICA

NO

JARRAS DE ENCURTIDOS

SÍ

ESPEJOS

NO

AS DE PAPEL O DE PLÁSTICO

NO

CAJAS DE ZAPATOS

NO

TAPAS DE BOTELLA

NO

AROS PLÁSTICOS

NO

ENVASES DE YOGUR

NO

Ayude a reducir
la basura de Nueva York.
Reduzca, Reuse, Recicle.

ıage las botellas, los envases y jarras; quite las tapas y los tapones. No es necessario quitar las etiquetas.

amento de Sanidad. Ciudad de Nueva York. Rudolph W. Giuliani, Alcalde

回收物品及CHECK TO SEE WHAT MATERIALS不回收物品
THE NYC RESIDENTIAL RECYCLING PROGRAM ACCEPTS

NEWSPAPERS 報紙

YES

MAGAZINES 雜誌

YES

DETERGENT CONTAINERS 洗衣精瓶

YES

MILK JUGS 牛奶瓶

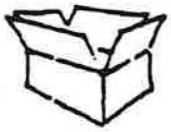
YES

ALUMINUM PRODUCTS 鋁製物品

YES

METAL CANS 鉄罐

YES

CORRUGATED BOXES 硬紙皮盒

YES

PHONE BOOKS 電話本

YES

SHAMPOO BOTTLES 洗髮精瓶

YES

LOTION BOTTLES 潤膚劑瓶


YES

BATTERIES 電池

NO

WIRE HANGERS 鉄衣架

NO

WHITE PAPER/ENVELOPES 白信紙信封

NO

COMPUTER PAPER 電腦紙

NO

KETCHUP CONTAINERS 茄汁瓶

YES

SODA BOTTLES 汽水瓶

YES

AEROSOL CANS 噴髮劑瓶

NO

PAINT CANS 油漆罐

NO

PIZZA BOXES 比薩盒

NO

DETERGENT BOXES 皂粉盒

NO

PEANUT BUTTER JARS (GLASS ONLY) 花生醬瓶(玻璃)

YES

WAX PAPER CONTAINERS 蠟質紙盒

NO

SODA BOTTLES 汽水瓶

YES

LIGHT BULBS 電灯泡

NO

SHIRT CARDBOARD 襯衫盒

NO

CEREAL BOXES 穀片盒

NO

SALAD BOXES 沙律盒

NO

DELI CONTAINERS 熟食盒

NO

JAM JARS 果醬瓶

YES

CERAMICS 瓷器

NO

CHINESE TAKE-OUT BOXES 中餐外賣盒

NO

EGG CARTONS 雞蛋盒

NO

COAT HANGERS 膠木衣架

NO

PLASTIC WRAP 膠質包物紙

NO

PICKLE JARS 腌菜瓶

YES

MIRRORS 鏡

NO

PAPER OR PLASTIC BAGS 紙袋或膠袋

NO

SHOE BOXES 鞋盒

NO

BOTTLE TOPS 蓋

NO

PLASTIC RINGS 膠環

NO

YOGURT CONTAINERS 乳酪盒

NO

Rinse bottles, jars, and jugs; remove caps and lids. Labels are OK.

Help Reduce New York's Waste. Reduce, Reuse, Recycle.

City of New York, Rudolph W. Giuliani, Mayor.

What To Recycle

Plastic Bottles & Jugs | **Glass Bottles & Jars** | **Metal Cans** | **Aluminum Foil Wrap & Trays**

Yes

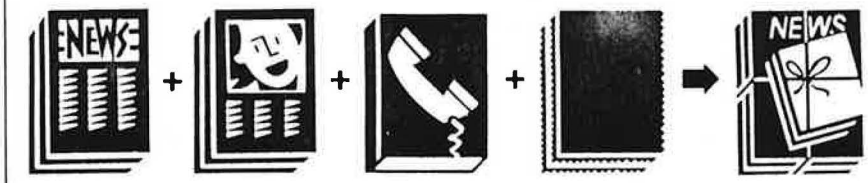
- Plastic bottles and jugs *(detergent, soda, juice, milk, water, etc.)*
- Glass bottles *(juice, wine, etc.)*
- Glass jars *(mayonnaise, jam, etc.)*
- Metal cans *(tuna, soup, pet food, etc.)*
- Aluminum foil wrap and trays *(pie pans, take-out tins)*

No

- ✖ Styrofoam *(cups, egg cartons, etc.)*
- ✖ Plastic-coated paper *(milk cartons, candy wrappers)*
- ✖ Plastic bags, wrap or film *(sandwich wrap, grocery or dry cleaning bags)*
- ✖ Plastic trays or tubs *(take-out, microwave, yogurt, etc.)*
- ✖ Utensils, plates, cups, bowls, trays
- ✖ Appliances, toys, furniture
- ✖ Aerosol cans or pump sprays
- ✖ Paint cans or chemical containers
- ✖ Ceramics, lightbulbs, mirrors
- ✖ Caps or lids

Rinse clean. Place ***TOGETHER*** in the same recycling bag or container.

5¢ deposit: *Bring deposit bottles and cans back to the store for refunds.* Otherwise, place them in your recycling container.



Newspapers | **Magazines & Catalogs** | **Phone Books** | **Corrugated Cardboard**

Yes

- Newspapers
- Magazines
- Catalogs
- Telephone books
- Corrugated cardboard *(flattened boxes)*

No

- ✖ Hardcover or paperback books
- ✖ Smooth gray cardboard *(cereal or shoe boxes; shirt cardboard)*
- ✖ Mail, white paper, or envelopes
- ✖ Shopping bags

You (or building maintenance staff) must tie these together with sturdy twine into bundles no more than 18 inches high. *(Please don't place in paper or plastic bags!)* Recycle old Yellow and White Pages.

Help Reduce New York's Waste.

Qué Reciclar

Botellas y Jarras Plásticas | **Botellas y Envases de Vidrio** | **Latas** | **Papel y Bandejas de Aluminio**

Sí

- Botellas y jarras plásticas *(limpiadores, soda, jugos, leche, agua, etc.)*
- Botellas de vidrio *(jugo, vino, etc.)*
- Envases de vidrio *(mayonesa, mermelada, etc.)*
- Latas *(atún, sopa, alimento para mascotas, etc.)*
- Papel y bandejas de aluminio *(platos para pastel y para comida que se lleva a casa)*

No

- ✖ "Styrofoam" ***(vasos, cajas de huevos, etc.)***
- ✖ Papel plastificado ***(cajas de leche, envolturas de caramelos)***
- ✖ Bolsas de plástico y plástico de envolver ***(para envolver sandwiches, víveres, bolsas de lavado en seco)***
- ✖ Bandejas o cubetas de plástico ***(de comida para llevar, horno de micro-ondas, yogurt, etc.)***
- ✖ Utensilios, platos, tazas, tazones, o bandejas de plástico
- ✖ Electrodomésticos, juguetes, muebles
- ✖ Envases de aerosol o atomizadores
- ✖ Latas de pintura o envases de productos químicos
- ✖ Objetos de cerámica, bombillas, espejos
- ✖ Tapas o coberturas

Enjuáguelos hasta que queden limpios. Colóquelos <u>TODOS JUNTOS</u> en la misma bolsa o recipiente de reciclaje.

5¢ de depósito: ***Traiga las botellas y latas con derecho a depósito de vuelta a la tienda para obtener el reembolso.*** Si no, colóqueselas en su recipiente para reciclaje.

Periódicos | **Revistas y Catálogos** | **Guías Telefónicas** | **Cartón Corrugado**

Sí

- Periódicos
- Revistas
- Catálogos
- Guías telefónicas
- Cartón corrugado *(cajas aplastadas)*

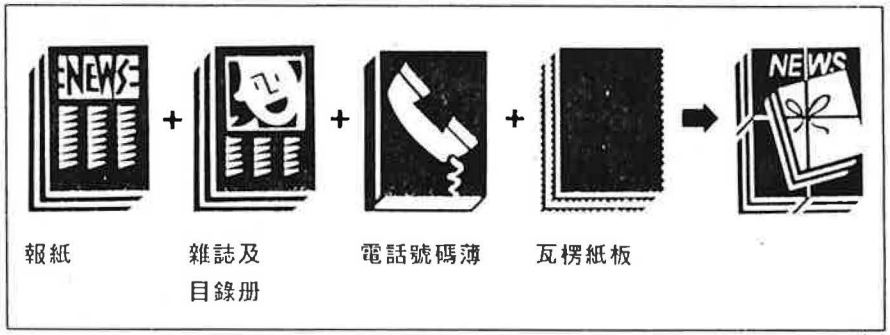
No

- ✖ Libros de pasta dura o blanda
- ✖ Cartón gris delgado ***(cajas de cereal o de zapatos; cartón de camisas)***
- ✖ Correo, papel blanco o sobres
- ✖ Bolsas de compras

Usted (o el personal de mantenimiento del edificio) debe atarlos con un cordón resistente en bultos de no más de 18 pulgadas de altura. ***(¡Por favor, no los coloque en bolsas de papel o de plástico!)*** Recicle las Páginas Blancas y las Páginas Amarillas viejas.

回收什麼

塑料瓶罐　玻璃瓶罐　金屬罐　鋁箔及鋁盤



報紙　雜誌及目錄册　電話號碼薄　瓦楞紙板

回收

- ■ 塑料瓶罐（洗滌劑、汽水、果汁、牛奶、水，等）
- ■ 玻璃瓶（果汁、酒，等）

  玻璃罐（蛋黃醬、果醬，等）
- ■ 金屬罐（金槍魚、湯、濕物食物，等）
- ■ 鋁箔及鋁盤（餡餅盤、外賣盒）

不回收

- ✖ 泡沫聚苯乙烯製品（杯、蛋盒，等）
- ✖ 塑料塗層紙（牛奶盒、糖果包裝紙）
- ✖ 塑料袋、包裝薄膜或膠片（三明治包裝、雜貨店或乾洗店塑料袋）
- ✖ 塑料盤或塑料桶（外賣、微波爐酸奶，等）
- ✖ 塑料用具、盤、杯、碗、盒
- ✖ 器械、玩具、家俱
- ✖ 煙霧劑罐或水泵噴霧器
- ✖ 油漆罐或化學容器
- ✖ 陶器、電燈泡、鏡子
- ✖ 蓋

沖洗淨。一同放入您的樓宇指定的廢品回收袋或回收箱裡。

五分錢退款：請把可退款的瓶罐退回商店，以獲退款。或者，把它們放進您的廢品回收箱裡。

回收

- ■ 報紙
- ■ 雜誌及目錄册
- ■ 電話號碼薄
- ■ 瓦楞紙板（拆開弄平）

不回收

- ✖ 精裝或平裝書籍
- ✖ 平滑的灰色板（裝谷類食物或鞋的紙盒；襯衫紙板）
- ✖ 信紙、白紙或信封
- ✖ 購物袋

您（或您樓宇維修人員）必須把它們用細繩捆緊，每捆高度不超過18英寸。（請不要裝在紙袋或塑料袋裡！）請回收黃色和白色舊電話號碼簿。

協助減少
紐約市垃圾。
減少、再用、回收。

Chin Recy 9/93

紐約市清潔局
當然印在再生紙上。

Co zbierać

Pojemniki i opakowania plastikowe | Butelki i sloje szklane | Puszki metalowe | Folia i tace aluminiowe

Tak

- Pojemniki i opakowania plastikowe *(po detergentach, napojach, sokach, mleku, wodzie itd.)*
- Butelki szklane *(po soku, winie itd.)*
- Słoje szklane *(po majonezie, dżemach itd.)*
- Puszki metalowe *(po konserwach, zupach, pokarmie dla zwierząt domowych itd.)*
- Folia i tace aluminiowe *(jednorazowe formy do pieczenia, opakowania produktów garmażeryjnych itp.)*

Nie

- ✖ Styropian *(kubki, kartony na jajka itd.)*
- ✖ Papier powlekany plastikiem *(kartony po mleku, opakowania słodyczy itd.)*
- ✖ Torebki i opakowania z plastiku i folii termokurczliwej *(opakowania kanapek, torebki ze sklepów spożywczych i worki z pralni chemicznych)*
- ✖ Plastikowe tace i kubki *(po wyrobach garmażeryjnych do odgrzewania w kuchniach mikrofalowych, po jogurtach itd.)*
- ✖ Sztućce, talerze, kubki, miski, tace
- ✖ Przybory, zabawki, meble
- ✖ Puszki po aerozolach i inne ciśnieniowe
- ✖ Puszki po farbach i pojemniki po środkach chemicznych
- ✖ Wyroby ceramiczne, żarówki, lustra
- ✖ Kapsle i pokrywki

Opłukać do czysta. Umieścić ***WSZYSTKO RAZEM*** w tym samym worku lub pojemniku na surowce wtórne.

Zastaw 5¢: *Odnieść butelki i puszki do sklepu w celu odzyskania zastawu.*

Gazety | Czasopisma i katalogi | Książki telefoniczne | Tektura falista

Tak

- Gazety
- Czasopisma
- Katalogi
- Książki telefoniczne
- Tektura falista *(rozłożone pudła)*

Nie

- ✖ Książki w oprawach twardych i papierowych
- ✖ Gładka szara tektura *(pudełka po produktach zbożowych, butach, koszulach)*
- ✖ Listy, biały papier, koperty
- ✖ Torby sklepowe

Mieszkańcy (lub obsługa budynku) muszą powiązać makulaturę mocnym sznurkiem w paczki wysokości najwyżej 18 cali (45 cm). *(Prosimy nie wkładać do środka toreb papierowych ani plastikowych!)* Oddawajcie na makulaturę stare książki telefoniczne, żółte i białe.

Pomóż zmniejszyć nowojorską górę śmieci.

ЧТО СОБИРАТЬ

Да

- Пластмассовые бутылки и банки *(от моющих средств, напитков, соков, молока, воды и т.п.)*
- стеклянные бутылки *(от сока, вина и т.п.)*
- стеклянные банки *(от майонеза, варенья и т.п.)*
- металлические банки *(от рыбных консервов, супов, пищи для домашних животных и т.п.)*
- противни или обертки из алюминиевой фольги *(противни для пирогов, контейнеры для упаковки еды на вынос)*

Нет

- × Пенопласт *(чашки, контейнеры для яиц и т.п.)*
- × Бумага с полиэтиленовым покрытием *(коробки из-под молока, обёртки от конфет)*
- × Целлофановые мешки, обёртки или плёнки *(обёртка для бутербродов, пакеты для переноски продуктов и упаковки одежды после химчистки)*
- × Пластмассовые подносы или контейнеры *(для упаковки еды на вынос, разогрева в микроволновых печах, стаканчики для кефира)*
- × Утварь, тарелки, чашки, миски, подносы
- × Принадлежности, игрушки, мебель
- × Контейнеры из-под аэрозолей и распылителей
- × Банки из-под красителей и химических веществ
- × Керамика, электрические лампочки, зеркала
- × Колпачки или крышки

Сполосните начисто. Сложите ***ВМЕСТЕ*** в один и тот же мешок или контейнер.

Посуда, за которую берется залог в 5 центов: Сдавайте бутылки или банки назад в магазины для получения залога, либо помещайте их в контейнеры для вторсырья.

ДА

- газеты
- журналы
- каталоги
- телефонные справочники
- гофрированный картон *(сплющенные коробки)*

Нет

- × Книги в твёрдых или мягких обложках
- × Гладкий серый картон *(коробки из-под кукурузных хлопьев или обуви, картон для упаковки рубашек)*
- × Письма, белая бумага или конверты
- × Бумажные сумки для упаковки покупок

Вы (или обслуживающий Ваш дом персонал) должны уложить макулатуру в плотные стопки высотой не более 45 см и туго завязать. *(Просьба не класть макулатуру в бумажные или целлофановые мешки.)* Сдавайте старые телефонные справочники.

Помогите снизить количество отходов Нью-Йорка. Пожалуйста.

Управление саночистки города Нью-Йорка.

Эта брошюра, конечно же, отпечатана на бумаге, произведенной из [illegible]

s Recy 9/93

Ki Sa Pou Recekle

Botile Plastik et Brok | **Botile Glas et Pot** | **Canette Ferblan** | **Papie Alumunum et Plato**

We

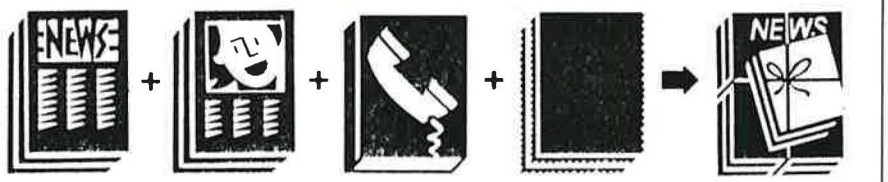
- Botile plastik et brok
  (detergen, soda, ju, let, dlo, etc.)
- Botile glas
  (ju, duven, etc.)
- Brok glas
  (mayonase, confitu, etc.)
- Canette ferblan
  (ton, soup, manje animal, etc.)
- Papie alumunum et plato
  (plat gato, plato manje deor)

Non

- ✖ Styrofoam
  (godai, katon zeuf, etc.)
- ✖ Papie plastik
  (katon let, papie bon bon)
- ✖ Sac plastik
  (papie sanwich, sac shopping)
- ✖ Plato plastik
  (manje deor, mikrowav, yogu, etc.)
- ✖ Plat, godai, bol, plato
- ✖ Apareil lakai, juwet, meub
- ✖ Vaprizateu ou arozeu
- ✖ Ferblan pentu ou resept kemik
- ✖ Seramik, enpole, miwa
- ✖ Kap ou kouvai

Lave you. Metei you ***ENSEM*** lan mem sac recekle ou resept.

5¢ deposit: *Reitoune botile pou deposit et ferblan lan magazin an pou renbousmen.* Autremen, mete yu lan resept pou recekle.



Jounal | **Magazin et Katalog** | **Liv Telefone** | **Katon**

We

- Jounal
- Magazin
- Katalog
- Liv telefone
- Katon
  (bwat katon)

Non

- ✖ Liv du ou papie
- ✖ Katon gri lis
  (boit cereyal ou soulye, katon chemise)
- ✖ Lapost, papie blan, envlop
- ✖ Sac shoping

Ou men (ou pesonel bilding lan) fau ou marei bagai sa you ensem avek kod lan paket juska 18" *(Sil vou plai metei you la sac papie ou plastik.)* Recekle vye Paj Jon et Blan.

Aydai redui fatra

재활용가능 폐품

플라스틱 병 & 통 | 유리병 & 용기 | 깡통 | 알루미늄 포일 랩 & 트레이

됩니다

- 플라스틱 병 및 통
  (세탁비누, 표백, 주스, 우유, 물통 등)
- 유리병
  (주스, 포도주 등)
- 유리 용기
  (마요네즈, 잼 등)
- 깡통
  (부니, 수프, 개밥 등)
- 알루미늄 포일 랩 및 트레이
  (파이 팬, 인스턴트 음식 용기)

안됩니다

- X 스타이로폼 (컵, 계란 카톤 등)
- X 플라스틱 코트된 종이
  (밀크 팩, 캔디 종이)
- X 플라스틱 백, 랩 또는 필름
  (샌드위치 랩, 그로서리 또는 세탁물 백)
- X 플라스틱 트레이 또는 작은 통
  (캐리-아웃 음식, 마이크로웨이브, 요구르트 등)
- X 주방용구, 접시, 컵 그릇, 트레이
- X 가전제품, 장난감, 가구
- X 에어러졸 캔 또는 스프레이
- X 페인트 캔 또는 화학용기
- X 세라믹, 전구, 거울
- X 용기 뚜껑 또는 마개

충분히 헹구시기 바랍니다. 같은 재활용 백이나 용기에 **함께** 넣으시기 바랍니다.

5센트 환불 : 병이나 캔을 마켓에 갖고가시면 환불을 받습니다. 아니면, 재활용기 안에 넣으십시오.

신문지 | 잡지 & 캐털로그 | 전화번호부 책 | 카드보드 박스

됩니다

- 신문지
- 잡지
- 캐털로그
- 전화번호부 책
- 카드보드 박스
  (납작하게 된 것)

안됩니다

- X 딱딱한 커버의 책이나 페이퍼 백
- X 매끄러운 표면의 회색 카드보드
  (시리얼 또는 구두 박스: 셔츠 카드보드)
- X 우편물, 흰종이 또는 봉투
- X 쇼핑 백

귀하가 (또는 건물관리인이) 이 폐품들을 튼튼한 끝으로 묶어 높이 18인치 이하의 덩어리로 만들어야 한다. (종이나 플라스틱 백 안에 넣지 마시오). 엘로우/화이트 전화번호부 책들을 재활용 하십시오.

뉴욕 쓰레기를 줄이고, 다시 사용하고

Kor Recy 9/93

뉴욕시 청소국

Τί Ανακυκλώνεται

Πλαστικά μπουκάλια και μπουκάλες | Γυάλινα μπουκάλια και δοχεία | Μεταλλικά κουτιά | Αλουμινόχαρτα και δίσκοι από αλουμίνιο

Ναί

- Πλαστικά μπουκάλια και μπουκάλες *(απορρυπαντικά, αναψυκτικά, χυμοί, γάλα, νερό, κ.λ.π.)*
- Γυάλινα μπουκάλια *(χυμοί, κρασιά, κ.λ.π.)*
- Γυάλινα δοχεία *(μαγιονέζα, μαρμελάδες, κ.λ.π.)*
- Μεταλικά κουτιά *(τόνος, σούπα, ζωοτροφές, κ.λ.π.)*
- Αλουμινόχαρτο και δίσκοι από αλουμίνιο *(πιάτα από γλυκίσματα, κουτιά από έτοιμα φαγητά)*

Όχι

- × Στάϊροφοουμ *(κύπελλα, κουτιά από αυγά, κ.λ.π.)*
- × Χαρτί με πλαστικό περίβλημα *(κουτιά από γάλα, περιτυλίγματα από γλυκίσματα)*
- × Πλαστικές σακούλες ή περιτυλίγματα *(περιτύλιγμα από σάντουϊτς, σακούλες του μπακάλη ή του καθαριστηρίου)*
- × Πλαστικοί δίσκοι ή δοχεία *(έτοιμα φαγητά, φούρνου μικροκυμάτων, γιαούρτι, κ.λ.π.)*
- × Σκεύη, πιάτα, φλιτζάνια, κύπελλα, δίσκοι
- × Ηλεκτρικά είδη, παιχνίδια, έπιπλα
- × Δοχεία αεροζόλ ή ψεκαστήρες
- × Δοχεία μπογιάς ή δοχεία με χημικές ουσίες
- × Κεραμικά είδη, λάμπες, καθρέφτες
- × Πώματα και καπάκια

Ξεπλύντε καλά. Τοποθετείστε όλα ***MAZI*** μέσα στην ίδια σακούλα ή στο ίδιο δοχείο ανακύκλωσης.

Επιστρέψτε τα μπουκάλια και τα κουτιά στο κατάστημα για να σας επιστραφούν τα 5 σεντς. Διαφορετικά, τοποθετήστε τα στον κάδο ανακύκλωσης.

Εφημερίδες | Περιοδικά και κατάλογοι | Τηλεφωνικοί Κατάλογοι | Χαρτόνια

Ναί

- Εφημερίδες
- Περιοδικά
- Κατάλογοι
- Τηλεφωνικοί Κατάλογοι
- Χαρτόνια

Όχι

- × Βιβλία (κάθε είδους)
- × Μαλακό γκρίζο χαρτόνι *(κουτιά από σήρηαλ, κουτιά παπουτσιών, χαρτόνια από πουκάμισα)*
- × Γράμματα, άσπρο χαρτί ή φάκελλοι
- × Σακούλες από ψώνια

Εσείς (ή το προσωπικό του κτιρίου σας) πρέπει να δένετε όλα αυτά τα πράγματα με δυνατό σπάγκο σε δέματα όχι ψηλότερα από 18 ίντσες (45 εκ). Παρακαλείστε να μη τα τυλίγετε με χαρτί και να μη τα βάζετε σε πλαστικές σακούλες!) Ανακυκλώνετε τους παλιούς τηλεφωνικούς καταλόγους με τις άσπρες και τις κίτρινες σελίδες.

Βοηθείστε να ελαττωθούν τα σκουπίδια της Νέας Υόρκης.

Сбор вторсырья — ЭТО ЗАКОН!

В зданиях должна быть вывешена информация о том, как собирать и где складывать вторсырьё. Если в Вашем здании такая информация отсутствует, обратитесь к суперинтенданту или к сотрудникам дирекции здания. При необходимости, уведомите Оперативный центр по саночистке.

Для того, чтобы получить плакаты на русском языке для размещения в зданиях или бесплатные ярлыки для контейнеров, предназначенных для сбора вторсырья, направьте письмо со списком требуемых наименований и их количества, а также с указанием Вашего имени, адреса и почтового индекса по следующему адресу:

RUSSIAN-BK RECYCLING
P.O. BOX 156
BOWLING GREEN STATION
NEW YORK, NY 10274-0156

или позвоните в Оперативный центр по саночистке
по телефону: (212) 219-8090
(семь дней в неделю с 7 утра до 11 вечера)

Мы благодарим Вас за участие в сборе вторсырья! Ваши усилия помогают сократить площадь свалок и сберечь ценное сырьё. Помните, что сбор отходов — это закон города Нью-Йорка, нарушение которого может повлечь за собой штраф.

Дэйвид Н. Динкинс, мэр города Нью-Йорка
Эмили Ллойд, начальник Управления саночистки

Эта брошюра, конечно же отпечатана на бумаге, произведенной из макулатуры.

Помогите снизить количество отходов Нью-Йорка. Пожалуйста, собирайте вторсырьё.

В БРУКЛИНЕ РАСШИРЯЕТСЯ ПРОГРАММА ПО СБОРУ ВТОРСЫРЬЯ

Начиная со вторника, 1 июня 1993 года

- **Собирайте:**
  ***пластмассовые* бутылки и банки**
  ***стеклянные* бутылки и банки**
  ***металлические* банки**
  сковородки, противни или обёртки из алюминиевой *фольги*
  газеты, журналы, каталоги, телефонные справочники
  сплющенный *гофрированный* картон
- **Собранное Вами вторчырьё будет забираться *каждую неделю***
- **Синие мешки скоро будут в наличии**

Уважаемые жители Бруклина:

Если ранее Вы не участвовали в сборе вторсырья — начинайте сейчас! Для того, чтобы узнать, в какой день будут забирать собранное Вами вторсырьё, посмотрите на карту, имеющуюся внутри брошюры.

Складывайте изделия из пластмассы, стекла, металла и фольги **ВМЕСТЕ** в один и тот же контейнер, предназначенный для сбора вторсырья, или в синие мешки (имеющиеся в продаже в Вашем местном супермаркете).

Газеты, журналы, каталоги, телефонные справочники и сплющенный гофрированный картон должны быть увязаны в связки.

Для того, чтобы узнать, что, когда и как собирать — внимательно прочтите эту брошюру. Жители многоквартирных домов: спросите о порядке сбора вторсырья в Вашем здании у суперинтенданта или у сотрудников дирекции.

Superintendent's Recycling Handbook
Guía Del Reciclaje Para Superintendentes

Correction — Page 3:
Enmienda — Página 3:

Buildings with <u>three</u> or more units must provide a recycling collection area.

Edificios con <u>tres</u> apartamentos o más han de proveer una área de recolección para el reciclaje.

New York City Department of Sanitation

Recycling is required by law for New York City residents. Every tenant and every apartment building in the five boroughs has a responsibility to make sure recyclable materials are kept separate from garbage and properly placed out for collection.

MATERIALS TO RECYCLE:

- ❑ PLASTIC BOTTLES & JUGS
- ❑ GLASS BOTTLES & JARS
- ❑ METAL CANS
- ❑ ALUMINUM FOIL & TINS

- ❑ NEWSPAPERS
- ❑ MAGAZINES & CATALOGS
- ❑ PHONE BOOKS
- ❑ FLATTENED CORRUGATED CARDBOARD

The Department of Sanitation Recycling Program has developed this handbook to assist your building with its recycling effort. Please read this handbook carefully. Additional assistance is available through the phone numbers listed at the end of this handbook.

La ley requiere que los residentes d de Nueva York reciclen. Cada inq cada edificio de apartamentos en cinco condados tiene la responsa asegurarse de que los materiales reciclables sean separados de la colocados afuera para se recolect

LOS MATERIALES QUE SER RECICLADOS

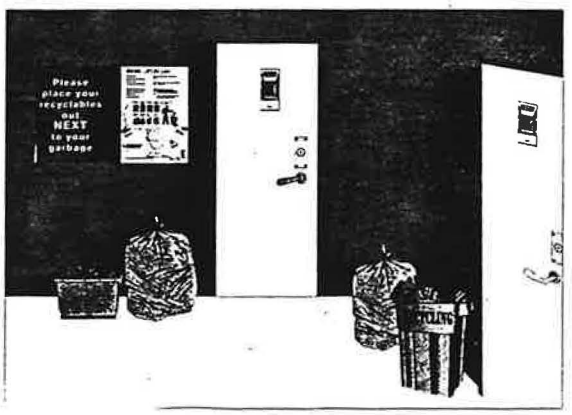
- ❑ BOTELLAS Y JARRAS PLÁSTI
- ❑ BOTELLAS Y ENVASES DE VID
- ❑ LATAS
- ❑ PAPEL DE ALUMINIO Y ESTAÑ

- ❑ PERIÓDICOS
- ❑ REVISTAS & CATÁLOGOS
- ❑ GUÍAS TELEFÓNICAS
- ❑ CARTÓN CORRUGADO APLAN

El Programa de Reciclaje del De mento de Sanidad ha desarrollc guía para ayudar a su edificio con el reciclaje. Por favor lea cu mente este guía. Para recibir m puede llamar a uno de los num encuentran al final de este guía

STEP 1:

DESIGNATE A RECYCLING AREA for collection of recyclable material. If tenants are required to bring materials to the collection area, this area must have a container to collect plastic bottles and jugs, glass bottles and jars, metal cans, and aluminum foil; and a place to stack newspapers, magazines, and catalogs. Signs must indicate what and how to recycle.



PASO 1:

DESIGNAR UN ÁREA DE RECI para la recolección de materia reciclables. Si los inquilinos d los materiales al Área de Recic área debe tener un recipiente p recoger botellas y jarras plást botellas y envases de vidrio, la papel de aluminio; y un lugar apilar periódicos, revistas, y c Los avisos deben indicar qué p reciclar.

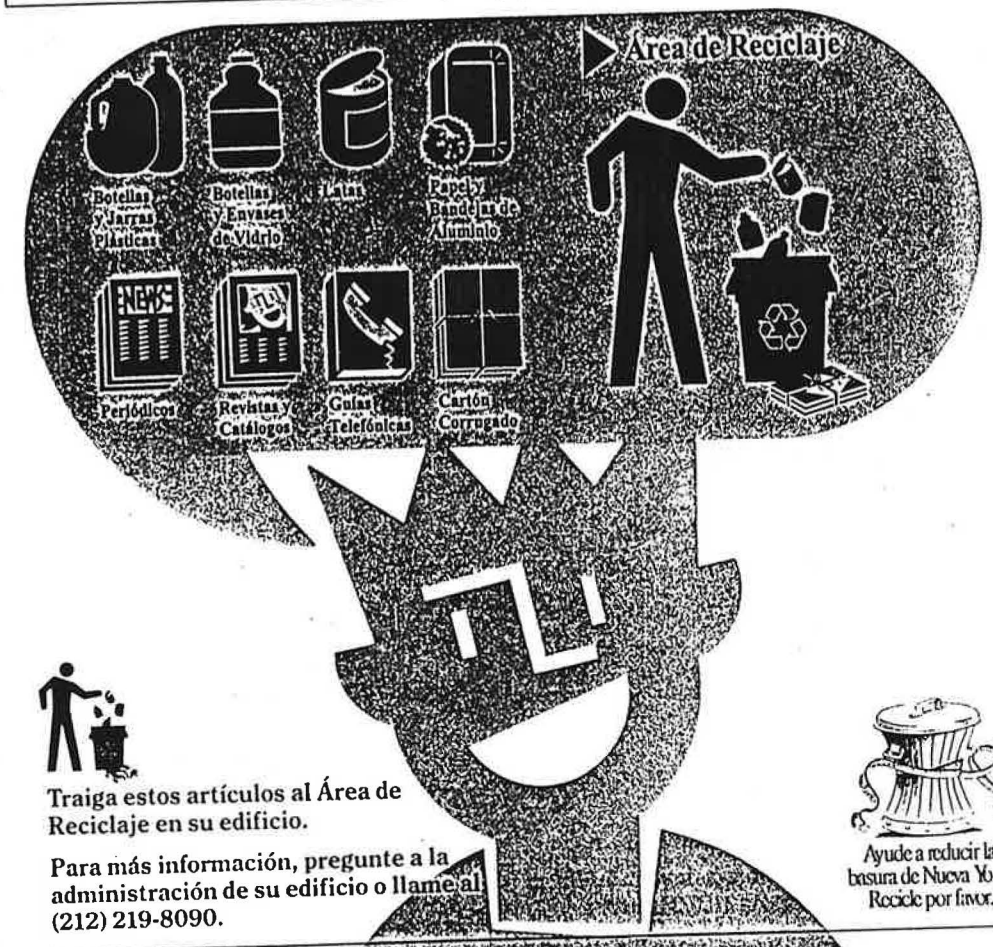
Recicle... ¡Es la Ley!

Botellas y Jarras Plásticas
Botellas y Envases de Vidrio
Latas
Papel y Bandejas de Aluminio

Enjuague y coloque **TODOS** en el recipiente de reciclaje o la bolsa azul de reciclaje.

Periódicos
Revistas y Catálogos
Guías Telefónicas
Cartón Corrugado

Átelos TODOS en bultos de no más de 18 pulgadas de altura. (Pregunte a su super dónde se han de colocar las cajas de cartón aplanadas.)



Traiga estos artículos al Área de Reciclaje en su edificio.

Para más información, pregunte a la administración de su edificio o llame al (212) 219-8090.

Ayude a reducir la basura de Nueva York. Recicle por favor.

Ciudad de Nueva York / Departamento de Sanidad

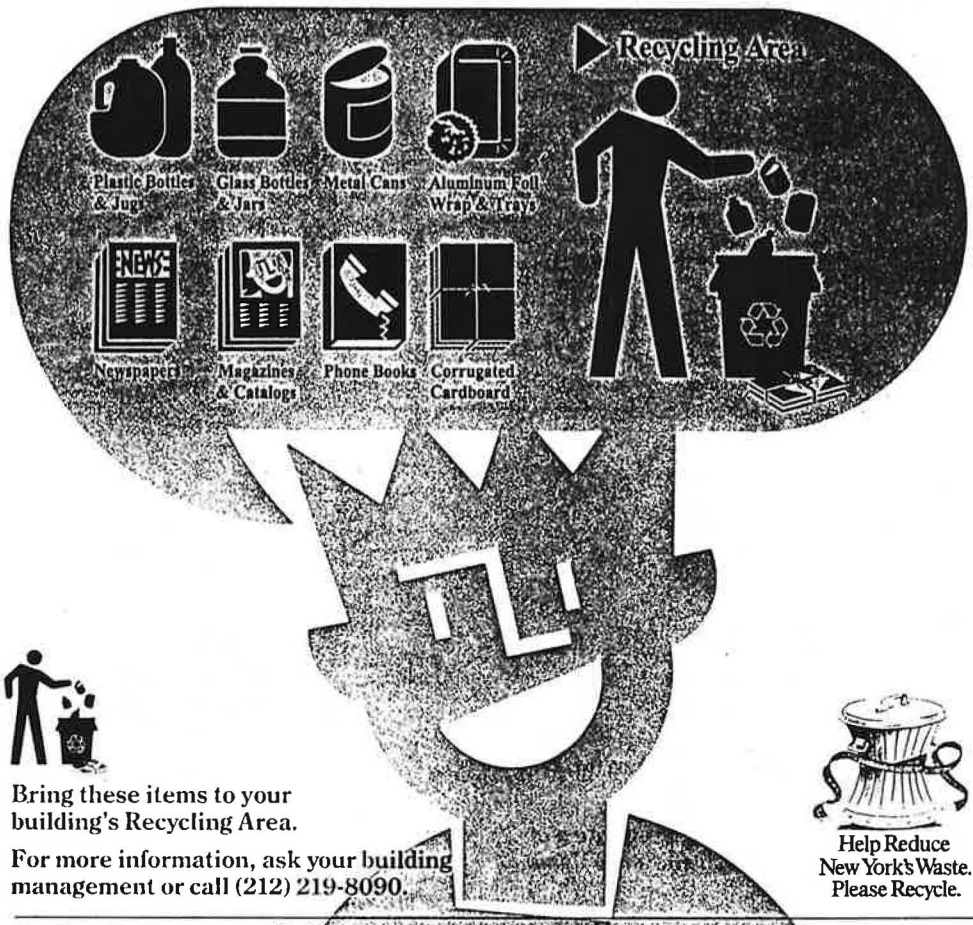
Recycle...It's the Law!

Plastic Bottles & Jugs
Glass Bottles & Jars
Metal Cans
Aluminum Foil Wrap & Trays

Rinse clean. Place these all **TOGETHER** in your building's designated recycling container or blue recycling bag.

Newspapers
Magazines & Catalogs
Phone Books
Corrugated Cardboard

Tie these TOGETHER into bundles up to 18" high. (Ask your Super where to place flattened cardboard boxes.)



Bring these items to your building's Recycling Area.

For more information, ask your building management or call (212) 219-8090.

Help Reduce New York's Waste. Please Recycle.

New York City Department of Sanitation
Printed on recycled paper, of course

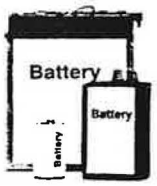
Mini Flyer 3/93

Reducing Hazardous Household Waste

How To Detoxify Your Home

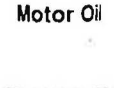
You might be surprised to discover how many common household products under your kitchen sink, or in your bathroom, closet, garage, and basement, could be hazardous to your health and 

to the environment.

When hazardous household waste is disposed in the trash or down the drain, it can pollute the ground, air, and water. These products can also injure children, 

pets—and sanitation workers.

You can help protect your family and the environment by reducing the number of hazardous products you buy and by substituting non-toxic solutions whenever possible. 

Read this brochure carefully to learn how to help reduce toxins in your home and in our landfill. 

Many common household products may be hazardous to your health and the environment.

WARNING!

ADVERTENCIA: Muchos productos caseros corrientes pueden ser dañinos a la salud y al medio ambiente.

Household Hazardous Waste
1994 Spring Collection Days

Días de Recolección de Desechos Caseros Peligrosos en Primavera del 1994

Sunnyside, Staten Island • Saturday, April 23
Manhattan Beach, Brooklyn • Sunday, May 1
Union Square, Manhattan • Sunday, May 15
Jamaica, Queens • Saturday, June 4
Morris Park, Bronx • Saturday, June 18

HELP REDUCE NEW YORK CITY'S WASTE

To reduce New York City's waste stream by more than 78,000 tons per year, the Department of Sanitation is asking City residents and institutions not to place grass clippings out for collection and disposal. Instead, New Yorkers are encouraged to leave clippings on the lawn, where they will decompose naturally and return nutrients and moisture to the soil.

Private landscapers are not permitted to place clippings at the curb for collection by the Department of Sanitation. Landscapers should work with their customers to adopt leave-it-on-the-lawn practices. Otherwise, landscapers are responsible for removing clippings and taking them to a waste disposal or composting facility.

New York City's *Leave It On The Lawn* Program is modeled after successful grass recycling programs on Long Island, in upstate New York, and throughout the U.S. Your cooperation helps reduce New York's waste. And at the same time, you will have a healthy, beautiful lawn.

FACT

Because grass clippings are mostly water and nitrogen, they contribute to gas and leachate problems when buried in a landfill.

FACT

Grass clippings account for 2% of the waste stream. Bagging and disposing of clippings takes up precious landfill space and adds millions of dollars to the City's disposal costs every year.

ADDITIONAL INFORMATION

For more information on grass recycling and small-scale composting contact:

BRONX
New York Botanical Garden
Bronx Green-up Compost Project
718/817-8543

BROOKLYN
Brooklyn Botanic Garden
Urban Compost Project
718/941-4044 ext. 246

MANHATTAN
Green Guerillas
Manhattan Compost Project
212/674-2816

QUEENS
Queens Botanical Garden
Queens Greening Compost Project
718/539-5296

STATEN ISLAND
Staten Island Botanical Garden
Staten Island Home Composting Project
718/273-0629

SANITATION ACTION CENTER
212/219-8090

Department of Sanitation
City of New York
Rudolph W. Giuliani, Mayor

Printed on recycled paper, of course.
6/94

Help Reduce New York's Waste. Reduce, Reuse, Recycle.

FOR A GREENER, CLEANER NEW YORK CITY

Leave It On The Lawn!

SAVE time,
SAVE money,
SAVE natural resources.

CLIPPINGS ARE GOOD FOR YOUR LAWN

For a healthy lawn and more money in your pocket, leave grass clippings on the lawn. Just follow these simple steps:

- Mow grass when it is between 3" and 4" tall. Never cut it shorter than 2-1/2" to 3". This gives your lawn a healthier root system.
- Never cut off more than 1". As a general rule, don't cut off more than 1/3 of the grass blade in any one mowing.
- If grass gets too high, mow over clippings a second time to further shred them, or raise mower height and gradually lower it over a span of several mowings.
- Cut grass when it is dry. Avoid mowing wet grass, since wet clippings mat together.
- Use a sharp mower blade. Dull mowers use more gasoline and can give the lawn a frayed appearance. Generally, mower blades should be sharpened every year.

DID YOU KNOW?

- Any mower can recycle grass clippings; **you do not need to purchase a special mower**. Simply remove the grass catcher. If you have trouble using your mower without the catcher, contact your dealer for assistance.
- Kits are available to convert some bagging mowers into mulching mowers. Contact your dealer for information.
- There are "recycling" or "mulching" mowers manufactured specifically for leaving clippings on the lawn. Contact your dealer for information.

GENERAL LAWN CARE TIPS

- Aerating your lawn once a year will open up the soil and permit greater movement of water, nutrients, and air. This increases the speed of grass clipping decomposition.
- Don't water the lawn unless it really needs it. If you choose to water, water thoroughly and less frequently.
- Water in the morning to minimize evaporation. Avoid watering in the evening, because a lawn that remains damp during the night is more prone to disease.
- Use a slow release or natural organic fertilizer and do not over fertilize.
- As a general rule, apply 1/3 of your fertilizer around Memorial Day, 1/3 around Labor Day, and 1/3 before Thanksgiving. Late season fertilization will promote healthy root growth.

FACT

Lawn chemicals, such as pesticides and fungicides, can kill beneficial earthworms and micro-organisms which are important to the health of your lawn.

FACT

Grass clippings left on the lawn reduce water evaporation and keep the soil cooler during hot weather.

OTHER EASY ALTERNATIVES

If you don't want to leave clippings on the lawn, use one of the following options:

Mulch: Use clippings as mulch around plants and shrubs. Apply a 1" layer of clippings to reduce water evaporation, eliminate weeds, and enrich the soil.

Backyard Compost: Add clippings to your compost pile; they are an excellent source of nitrogen. Clippings should be mixed thoroughly with leaves or old compost. *For more information on composting, contact one of the organizations listed on the back panel.*

Drop-off: Bring clippings to a Department of Sanitation Self-Help Facility to be composted. For information on Self-Help facilities, call the Sanitation Action Center: (212) 219-8090.

FACT

Grass clippings are 85% water and 5% nitrogen. When left on the lawn, they return water and nutrients to the soil. Grass clippings can provide up to 30% of your fertilizer requirement.

FACT

Grass clippings left on the lawn do not cause thatch. Thatch is caused by rapid and excessive growth due to over-fertilization and improper watering.

HOME COMPOSTING

Did you know that the leaves, weeds, hedge or grass clippings, fruit peelings, and vegetable scraps you usually throw away are good food for the earth?

Organic waste constitutes as much as a quarter of New York City's trash. We are discarding a valuable resource which can be used as a nutritional soil conditioner for City gardens, lawns, flowers, and trees.

This brochure explains how you can turn your own organic waste into rich fertilizer in your yard or local community garden.

What Is Compost?

Compost is a dark, crumbly, and earthy-smelling form of decomposing organic matter.

Why Should I Make Compost?

Composting is the most practical and convenient way to handle your yard wastes. It can be easier and cheaper than bagging these wastes or taking them to the transfer station. Compost also improves your soil and the plants growing in it. If you have a garden, a lawn, trees, shrubs, or even planter boxes, you have a use for compost.

How to "Recycle" Your

Leaves, Yard Waste & Pumpkins

- Place leaves, yard trimmings, and pumpkins at the curb, *the night before* your Compost Collection Day, in one of the following receptacles:

FIRST AND BEST OPTION: NO BAG

Use clean, unlined garbage cans (such as your recycling bins!).

SECOND OPTION: PAPER LEAF BAGS

30 gallon paper bags, which can be composted along with leaves, are available through many garden supply and environmental product catalogs, or at some supermarkets, nurseries, and home improvement centers in your area.

THIRD OPTION: PLASTIC LAWN & LEAF BAGS

We will accept leaves in plastic bags, but these bags cannot be composted.

- Brush (up to 4 feet in length and 6 inches in diameter) should be bundled with twine and set out next to leaves.

Compost Collection: November 1 - December 12

To avoid confusion with garbage collection and to allow you to use your empty recycling bins as a receptacle for your leaves, we will collect leaves and yard waste THE DAY AFTER your Recycling Day.

There is no pick-up on Sundays or holidays. If the day after your Recycling Day is a Sunday or holiday, place leaves and yard waste out for collection **the next day**. If your Recycling Day is a holiday, place recyclables (and garbage) at the curb along with leaves and yard waste the day after your normal recycling day.

If you need help identifying your three Compost Collection Days, or would like free [illegible] or other recycling information, call the **SANITATION ACTION** [illegible] **219-8090.**

City of New York, Rudolph W. Giuliani
Department of Sanitation, John J. Doherty

Printed on recycled paper, of course. SI/Cpost 11/94

Help Reduce New York's Waste. Reduce, Reuse, Recycle.

Recycling *Fact Sheet*

SMALL-SCALE COMPOSTING & GRASS MULCHING PROGRAM

Recycling Programs and Planning Division
NYC Department of Sanitation

An important component of the City's Solid Waste Management Plan includes small-scale composting of yard and food waste and mulching of grass clippings. Did you know that by leaving clippings on the lawn to decompose, the City can reduce its waste by 78,500 tons a year?

Home composting is an option for anyone with a backyard. Private houses, institutions, and housing complexes that have yard waste and extra space on their grounds can also establish on-site composting.

The Department of Sanitation's Bureau of Waste Prevention, Reuse and Recycling is making it easier for you to learn about composting and mulching through contracts with the City's Botanical Gardens. The Brooklyn, Staten Island, Queens, and the New York Botanical Garden in the Bronx are receiving funds to establish compost hotlines, hire personnel, and develop literature, demonstration sites and outreach programs. For composting outreach and education in Manhattan, the New York Botanical Garden has enlisted the Green Guerillas.

Interested residents, maintenance personnel, school teachers, community gardens, or other groups or individuals should contact the numbers listed below for more information and assistance.

BRONX
New York Botanical Garden
Bronx Green-Up Compost Project
(718) 817-8543

QUEENS
Queens Botanical Garden
Queens Greening Compost Project
(718) 539-5296

BROOKLYN
Brooklyn Botanic Garden
Urban Compost Project
(718) 941-4044 extension 246

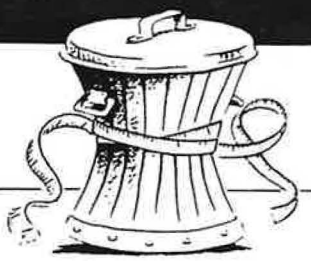
STATEN ISLAND
Staten Island Botanical Garden
Compost Project
(718) 273-0629

MANHATTAN
Green Guerillas
Manhattan Compost Project
(212) 674-2816

DEPARTMENT OF SANITATION
Bureau of Waste Prevention, Reuse & Recycling
(212) 837-8168 or 837-8167

Printed on recycled paper, of course.

Recycling *Fact Sheet*



FOR A GREENER, CLEANER NEW YORK CITY LEAVE IT ON THE LAWN!

Recycling Programs and Planning Division
NYC Department of Sanitation

CLIPPINGS ARE GOOD FOR YOUR LAWN

By leaving grass clippings on the lawn, you can reduce your fertilizer bill, and save the time spent bagging. Just follow these simple steps:

- Mow grass when it is 3" to 4" tall. Never cut it shorter than 2-1/2 " to 3". This gives your lawn a healthier root system.
- As a general rule, never cut off more than 1/3 of the grass blade in any one mowing. Don't cut off more than 1".
- If the grass gets too high, mow over clippings a second time to further shred them, or raise the mower height, and gradually lower it over a span of several mowings.
- Cut grass when it is dry. Avoid mowing wet grass, since wet clippings mat together.
- Use a sharp mower blade. Dull mowers use more gasoline and can give the lawn a frayed appearance. Generally, mower blades should be sharpened every year.

FACT: Grass clippings contain up to 85% water and 5% nitrogen. When left on the lawn, they return water and necessary nutrients to the soil.

DID YOU KNOW?

- Any mower can recycle grass clippings; **you do not need to purchase a special mower**. Simply remove the grass catcher. If you have trouble using your mower without the catcher, contact your dealer for assistance.
- Kits are available that will convert some bagging mowers into mulching mowers. Contact your dealer for information.
- There are "recycling" or "mulching" mowers manufactured specifically for leaving clippings on the lawn. Contact your dealer for more information.

FACT: In NYC, grass clippings are 2% of the waste stream, or 78,000 tons a year. Burying these clippings uses up precious landfill space and costs millions of tax dollars each year.

Printed on recycled paper, of course.

How to Stop *Unwanted* Mail

Catalogs and offers you get in the mail can save you time and energy shopping. But advertising mail you don't want goes straight into the garbage.

If you receive mail you don't want, let the sender know!

- Whenever you give out your name and address, remember to tell the company not to share your name with other firms.
- To remove your name from most national mailing lists for future mailings, send your full name and address to: MAIL PREFERENCE SERVICE, DIRECT MARKETING ASSOCIATION, P O BOX 9008, FARMINGDALE, NY 11735-9008. Or just fill out the postcard below, affix postage, and mail.

Don't forget to recycle your catalogs.
Do not recycle envelopes or correspondence.

City of New York, David N. Dinkins, Mayor
Department of Sanitation, Emily Lloyd, Commissioner

Please save paper! Remove my name from direct mail marketing lists; I do not shop by mail. I understand it may take a few months for this request to make a noticeable difference in my mailbox. Thank you.

¡Por favor ahorre papel! Favor de borrar mi nombre de las listas de promociones nacionales. Yo no compro por el correo. Gracias.

COMPLETE NAME
NOMBRE Y APELLIDO COMPLETO

Other ways my name or initials appear on mailing labels:
Otras formas en que mi nombre o mis iniciales aparecen en las etiquetas de las listas:

STREET ADDRESS *DIRECCIÓN/CALLE* APT # *APTO. #*

Variations:
Variaciones:

CITY *CIUDAD* STATE *ESTADO* ZIP *ZONA POSTAL*

Printed on recycled paper, of course. DMAMPS. 693

Cómo Evitar Recibir Correo Que *No Desea*

Los catálogos y ofertas que usted recibe por correo pueden ahorrarle tiempo y energía al hacer sus compras. Pero la correspondencia publicitaria que usted *no desea* va directamente a la basura.

Si usted recibe correo que no desea, ¡infórmeselo al remitente!

- Cuando dé su nombre y su dirección, acuérdese de decirle a la compañía que no comparta su nombre con otras firmas.
- Para quitar su nombre de la mayoría de las listas nacionales de direcciones en envíos futuros, envíe su nombre completo y su dirección a: MAIL PREFERENCE SERVICE, DIRECT MARKETING ASSOCIATION, P O BOX 9008, FARMINGDALE, NY 11735-9008. O simplemente llene la tarjeta que aparace al reverso, ponga una estampilla y envíela.

No olvide reciclar sus catálogos.
No recicle ni sus sobres ni su correspondencia.

Ciudad de Nueva York, David N. Dinkins, Alcalde
Departamento de Sanidad, Emily Lloyd, Comisionada

PLACE 19¢ STAMP HERE

MAIL PREFERENCE SERVICE
DIRECT MARKETING ASSOCIATION
P O BOX 9008
FARMINGDALE, NY 11735-9008

Recycling
Means
BUSINESS

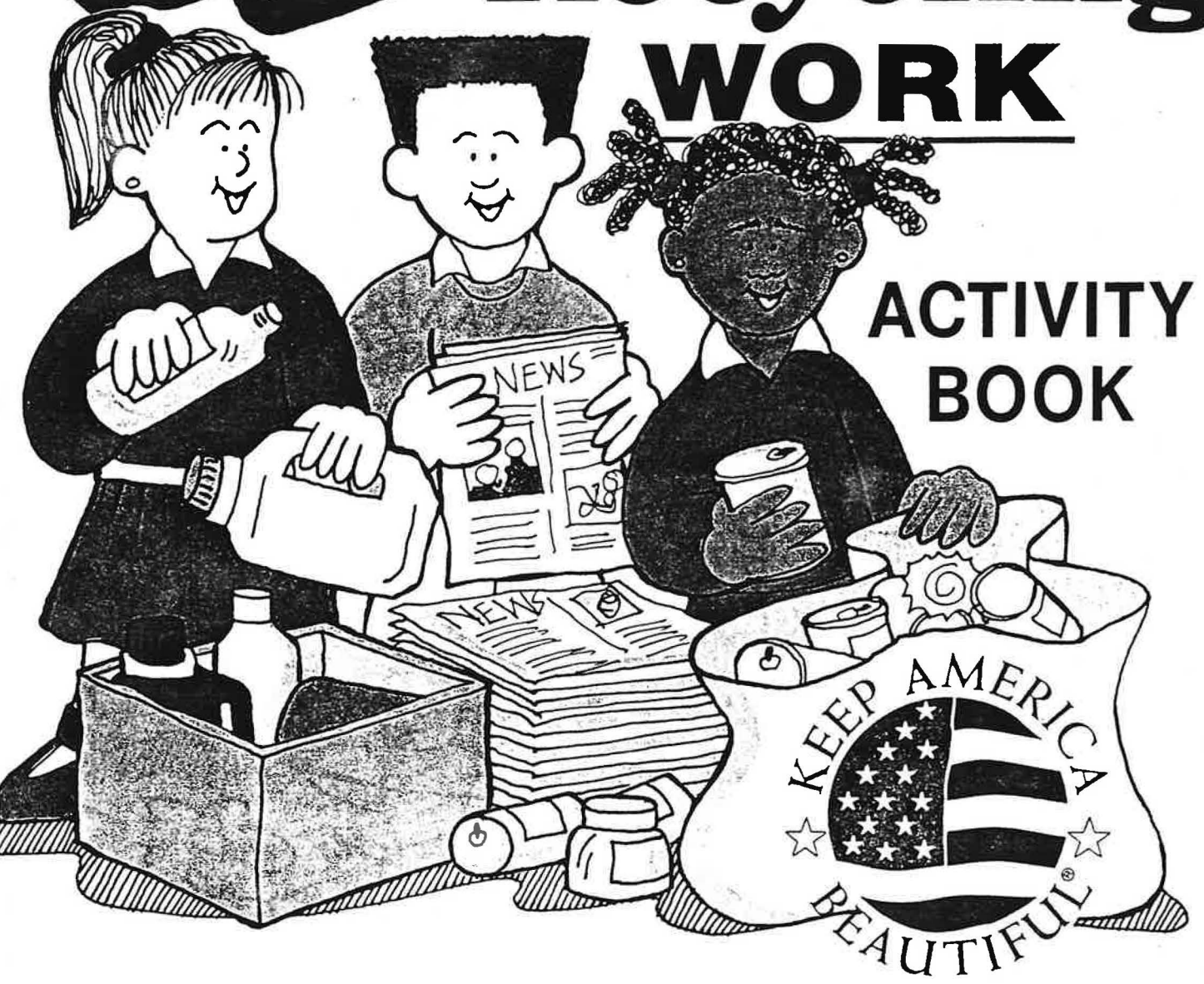
▶ How to Recycle or Reuse Almost Anything

NYC Department of Sanitation
Bureau of Waste Prevention, Reuse and Recycling

The Department of Sanitation Guide to Reuse in New York City

You can make Recycling WORK

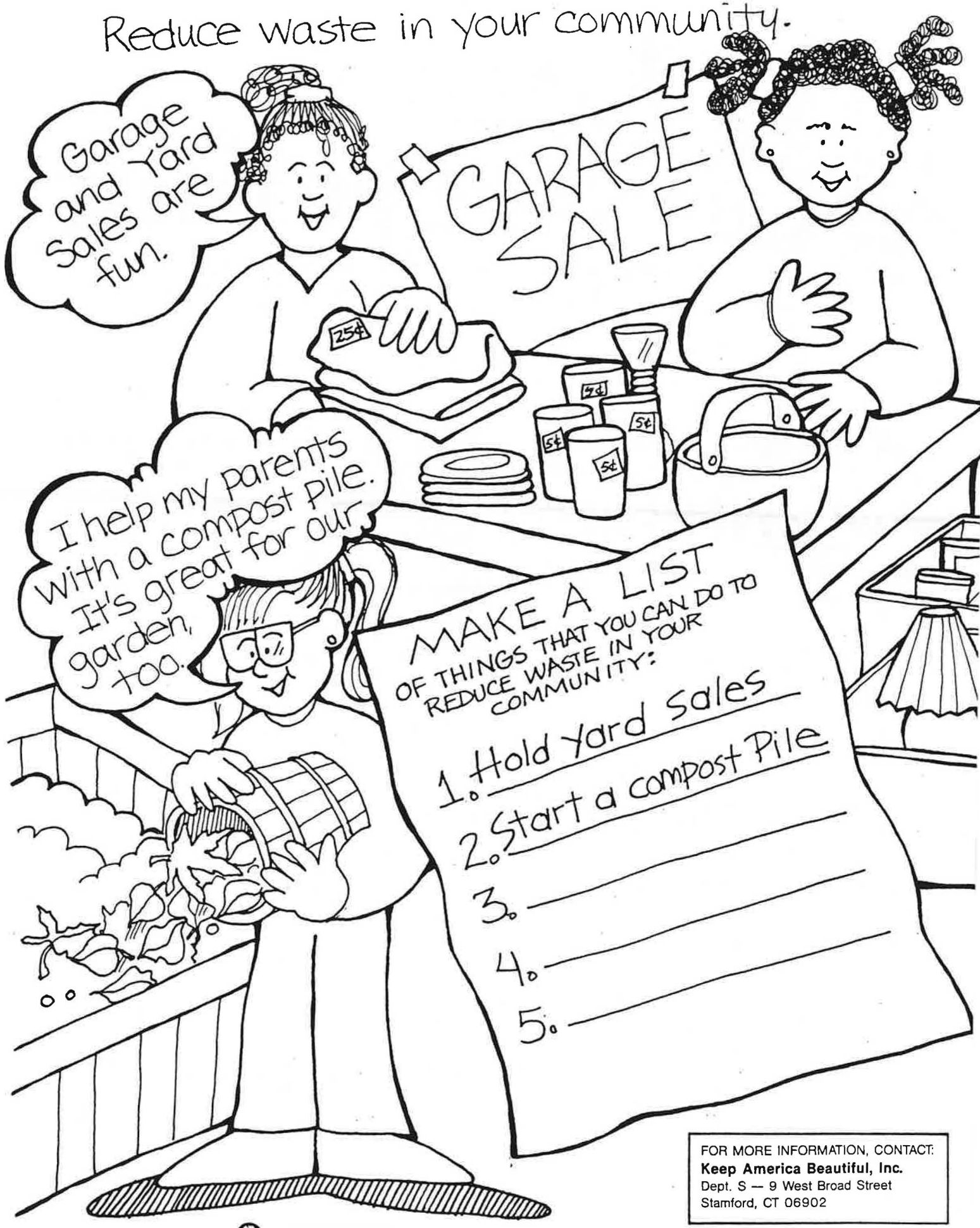
ACTIVITY BOOK



Reduce, Reuse, Recycle

The New York City Department of Sanitation
P.O. Box 156, Bowling Green Station, New York, NY 10274-0156
For more information, call 212/219-8090
Rudolph W. Giuliani, Mayor

Reduce waste in your community.

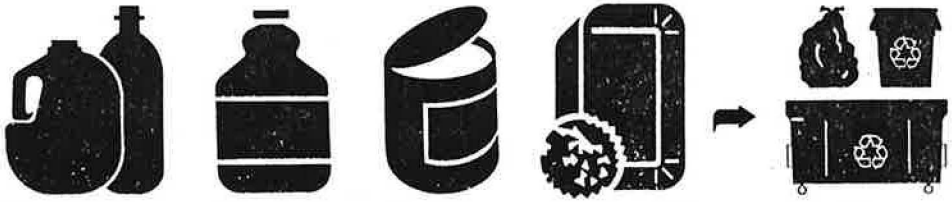


FOR MORE INFORMATION, CONTACT:
Keep America Beautiful, Inc.
Dept. S — 9 West Broad Street
Stamford, CT 06902

What To Recycle *in Public, Private, and Parochial Schools*

Only for schools serviced by the NYC Department of Sanitation.

Plastic, Glass, Metal, and Foil



Plastic Bottles and Jugs | Glass Bottles and Jars | Metal Cans | Aluminum Foil Wrap and Trays | Blue Bag, Container, or Dumpster

Yes

- Plastic bottles and jugs *(detergent, soda, juice, milk, water, etc.)*
- Glass bottles *(juice, etc.)*
- Glass jars *(mayonnaise, jam, etc.)*
- Metal cans *(tuna, soup, etc.)*
- Aluminum foil wrap and trays *(pie pans, take-out tins, etc.)*

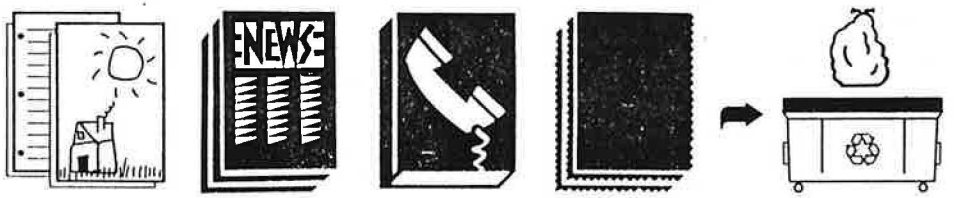
No

- ✖ Styrofoam *(cups, egg cartons, etc.)*
- ✖ Plastic-coated paper *(milk cartons, candy wrappers)*
- ✖ Plastic bags, wrap or film *(sandwich wrap, dry cleaning or grocery bags, etc.)*
- ✖ Plastic trays or tubs *(take-out, microwave, yogurt, etc.)*
- ✖ Utensils, plates, cups, bowls, trays
- ✖ Appliances, toys, furniture
- ✖ Aerosol cans or pump sprays
- ✖ Paint cans or chemical containers
- ✖ Ceramics, lightbulbs, mirrors
- ✖ Caps or lids

Rinse plastic bottles and jugs, glass bottles and jars, metal cans, and aluminum foil wrap and trays. Then place together in your school's blue plastic recycling bag, designated container, or dumpster.

5¢ **deposit:** *Bring deposit bottles and cans back to the store for refunds.* Otherwise, place in your recycling container.

Paper



Mixed Paper* | Newspapers, Magazines, Catalogs | Phone Books | Corrugated Cardboard | Clear Bag** or Dumpster

Yes

- All white paper*
  - ✓ Looseleaf paper
  - ✓ Unbound reports
- All mixed paper*
  - ✓ Colored paper *(bond paper, yellow legal paper, pink phone message slips, etc.)*
  - ✓ Manilla file folders
  - ✓ Index cards
- Computer print-outs and tab cards*
- Newspapers
- Magazines
- Catalogs
- Telephone books
- Corrugated cardboard (flattened boxes)

Staples and paper clips are OK.

No

- ✖ **Hardcover or paperback books**
- ✖ Construction paper
- ✖ Carbon paper
- ✖ Anything with glue:
  - × Envelopes
  - × Self-stick notes
  - × Labels
  - × Paper ream wrappers
  - × Collages or craft projects
- ✖ Tissues, napkins, paper towels
- ✖ Paper bags or cups
- ✖ Hanging file folders
- ✖ Smooth gray cardboard *(cereal or shoe boxes; shirt cardboard)*
- ✖ Shopping bags

Place paper items together in your clear plastic recycling bag** or dumpster. Bundle large pieces of corrugated cardboard with sturdy twine.

* For schools only. Residents are not recycling these items.

** For schools only. Residents do not have the option of using clear bags; they must tie paper in bundles and place beside their recycling containers.

Help Reduce New York's Waste.

Recycling Means BUSINESS

The Business Guide to

Buying Recycled Paper and Other Recycled Products

NYC Department of Sanitation
Bureau of Waste Prevention, Reuse and Recycling

Recycling Means **BUSINESS**

▶ How to Start an Office Paper Recycling Program

NYC Department of Sanitation
Bureau of Waste Prevention, Reuse and Recycling

Recycling Means **BUSINESS**

All businesses in New York City must now set up their own on-premises recycling programs. This guide is designed to help your company comply with the ***new*** commercial recycling law.

▶ The Guide to Mandatory Recycling in the Workplace

Waste Prevention Means **BUSINESS**

▶ It Makes Business Cents to Prevent Waste

A Business Guide to Waste Prevention

NYC Department of Sanitation
Bureau of Waste Prevention, Reuse and Recycling



PLEASE



TAKE A BAG ONLY IF YOU NEED IT, OR

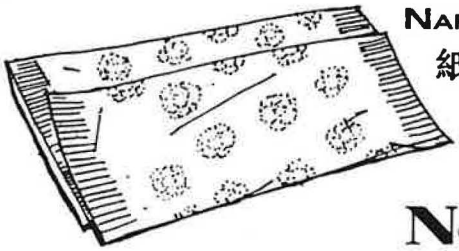
BRING YOUR OWN BAG

WE'LL BE HAPPY TO PACK YOUR PURCHASES IN IT TO HELP

PREVENT WASTE

IN COOPERATION WITH THE NEW YORK CITY DEPARTMENT OF SANITATION WASTE PREVENTION AND RECYCLING PROGRAMS

减少垃圾　人人有責



NAPKINS
紙巾

TEA BAG
AND
FORTUNE COOKIE
茶包或幸運餅

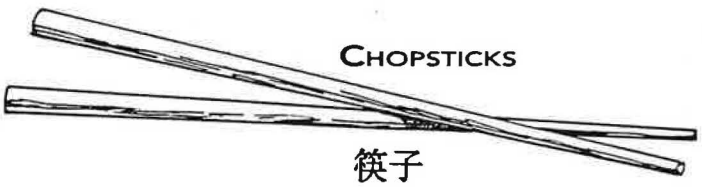
Help Reduce New York's Waste.

Do You Need...?

您需要...?

SAUCES
調味醬包

PLASTIC FORK,
KNIFE, SPOON
塑料刀、叉、匙



CHOPSTICKS
筷子

Please don't throw away our items.
Take only what you need.

請勿浪費物品　只取您需要的

A message from:
以上訊息是由：

PARTNERSHIP FOR WASTE PREVENTION

紐約市廢物防止伙伴計劃帶給您的
NYC Department of Sanitation
Bureau of Waste Prevention, Reuse, and Recycling
紐約市清潔局廢品防止、回收、利用處
Chinese American Restaurant Association of Greater New York, Inc.
紐約華僑餐館同業會

This poster was made possible by:
NYC Chinatown Senior Citizen Center • East Broadway Mall, Inc. • Fukien American Association, Inc.
Ding Wong Commercial Services • Mr. William Chan • Brooklyn Chinese-American Association
Oriental Pearl Restaurant

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• 福臨門大酒樓 •

Printed by: China Printing Company　印刷：真善美印刷公司

APPENDIX D

NYSDEC INVENTORY FORMS
DISPOSAL AND DIVERSION CATEGORIES
AND CONVERSIONS

ATTACHMENT 2

DIVISION OF SOLID WASTE
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 WOLF ROAD
ALBANY, NEW YORK 12233-4010

SOLID WASTE GENERATION/MANAGEMENT INVENTORY (1)(2)

New York City
Planning Unit Name Department of Sanitiation

	Base* Fiscal Year - 1992	Report Fiscal Year - 1994
TOTAL MUNICIPAL SOLID WASTE**		
Amount Imported (I)		
Amount Generated (G)		
Amount Reduced (R)		
Amount Managed - Total = (I)+(G)-(R)		
o Reused/Recycled Diverted	679,530	926,580
o Compost Facility	2,710	5,730
o Waste-to-Energy	306,400	82,800
o Landfill	3,981,540	3,819,080
o Exported and Recycled		
o Exported and Disposed		
o Other (Specify)		
SEWAGE SLUDGE		
Amount Imported (I)		
Amount Generated (G)		
Amount Reduced (R)		
Amount Managed - Total = (I)+(G)-(R)		
o Reused/Recycled		
o Compost Facility		
o Waste-to-Energy		
o Landfill		
o Exported and Recycled		
o Exported and Disposed		
o Other (Specify)		

: Report amounts in tons unless you indicate otherwise
(1) All quantities are in tons. (2) Fiscal year is city fiscal year (July 1 through June 30
s established in your local solid waste management plan or 1988

OTAL MUNICIPAL SOLID WASTE = (Residential, commercial, and institutional waste materials)

SOLID WASTE GENERATION/MANAGEMENT INVENTORY

New York City

Planning Unit Name Department of Sanitation

	Base* Fiscal Year - 1992	Report Fiscal Year - 1994
CONSTRUCTION AND DEMOLITION (C&D) DEBRIS		
Amount Imported (I)		
Amount Generated (G)		
Amount Reduced (R)		
Amount Managed - Total = (I)+(G)-(R)		
o Reused/Recycled		
o Compost Facility		
o Waste-to-Energy		
o Landfill		
o Exported and Recycled		
o Exported and Disposed		
o Other (Specify)		
NON-HAZARDOUS INDUSTRIAL WASTE		
Amount Imported (I)		
Amount Generated (G)		
Amount Reduced (R)		
Amount Managed - Total = (I)+(G)-(R)		
o Reused/Recycled		
o Compost Facility		
o Waste-to-Energy		
o Landfill		
o Exported and Recycled		
o Exported and Disposed		
o Other (Specify)		

Note: Report amounts in tons unless you indicate otherwise

7-15-5.A (2/95)

DIVISION OF SOLID WASTE
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 WOLF ROAD
ALBANY, NEW YORK 12233-4010

RECYCLABLES INVENTORY

New York City

PLANNING UNIT Department of Sanitation (1) REPORT YEAR 1994 (2)

MATERIAL	1	2	COLLECTED FROM: RESIDENTIAL (3)	COMMERCIAL INDUSTRIAL	INSTITUTIONAL	SUBTOTAL	RECOVERED (FOR REUSE/RECYCLING): OTHER	RECYCLABLES HANDLING FACILITY	SUBTOTAL	DISPOSED: WASTE-TO-ENERGY FACILITY	LANDFILL	SUBTOTAL
MUNICIPAL SOLID WASTE												
PAPER												
Newsprint												
Corrugated												
Magazines												
Office Paper/CPO												
White												
Paperboard												
Telephone Dir.												
Junk Mail												
Other/Mixed												
Total Paper			288,800		5,240	294,040		294,040				
METALS: BULK												
Ferrous												
Aluminum												
White Goods												
Other (4)					56,820	56,820						
Total Metals: Bulk					56,820	56,820	56,820					

Note: Report amounts in tons unless you indicate otherwise

1. Type of Program: M = Mandatory, V = Voluntary 2. Type of Collection: C = Curbside, D = Dropoff

(Revised 2/95)

PAGE 1 OF 4

ATTACHMENT 3

(1) All quantities are in tons.

(2) Report year is City Fiscal Year 1994 (July 1, 1993 through June 30, 1994).

(3) Includes all residential and Department-collected non-profit institutional.

(4) Derelict Vehicles Collected from City streets and taken to scrap yard dealers.

MATERIAL (1)	1	2	COLLECTED FROM: RESIDENTIAL	COLLECTED FROM: Bottle Bill COMMERCIAL INDUSTRIAL	COLLECTED FROM: INSTITUTIONAL	COLLECTED FROM: SUBTOTAL	RECOVERED (FOR REUSE/RECYCLING): MANUFACTURER	RECOVERED (FOR REUSE/RECYCLING): RECYCLABLES HANDLING FACILITY	RECOVERED (FOR REUSE/RECYCLING): SUBTOTAL	DISPOSED: WASTE-TO-ENERGY FACILITY	DISPOSED: LANDFILL	DISPOSED: SUBTOTAL
METALS: CONTAINERS												
Ferrous												
Aluminum												
Other												
Total Metals: Containers												
PLASTICS												
PET												
HDPE												
PVC												
LDPE												
Polypropylene												
Polystyrene												
Other/Mixed												
Total Plastics												
GLASS												
Clear (Flint)												
Brown (Amber)												
Green												
Other/Mixed Colors												
Total Glass												
Commingled Containers (glass, metals, plastic)			173,140	90,600		263,740		263,740				

Note: Report amounts in tons unless you indicate otherwise

1. Type of Program: M = Mandatory, V = Voluntary 2. Type of Collection: C = Curbside, D = Dropoff

(Revised 3/29)

(1) All quantities are in tons and all footnotes are on page 1 of 4.

MATERIAL (1)	COLLECTED FROM				RECOVERED (FOR REUSE/RECYCLING)			DISPOSED		
	RESIDENTIAL	COMMERCIAL INDUSTRIAL	INSTITUTIONAL	SUBTOTAL	Composted	RECYCLABLES HANDLING FACILITY	SUBTOTAL	WASTE-TO-ENERGY FACILITY	LANDFILL	SUBTOTAL
ORGANICS										
Food Waste			430	430	430					
Other Organics (2)	5,300			5,300	5,300					
Total Organics	5,300		430	5,730	5,730					
TEXTILES										
WOOD/BRUSH/YARD WASTE										
HOUSEHOLD HAZARDOUS WASTE										
USED OIL										
WASTE TIRES										
REGULATED MEDICAL WASTE										
OTHER SPECIAL WASTES										
Lead Acid Batteries										
Dry Cell Batteries										
Other (Specify)										
Other (Specify)										
Other (Specify)										
Other (Specify)										
TOTAL MUNICIPAL SOLID WASTE										
SEWAGE SLUDGE										

Note: Report amounts in tons unless you indicate otherwise

1. Type of Program: M = Mandatory, V = Voluntary 2. Type of Collection: C = Curbside, D = Dropoff

(Revised 2/87)

(1) All quantites are in tons and all footnotes are on page 1of 4.

(2) Category includes department-collected yard waste and leaf waste, Christmas trees and residential yard waste taken to the Fresh Kills Compost Facility.

47-15-51A (2/95)

MATERIAL (1)	1	2	COLLECTED FROM: RESIDENTIAL	COMMERCIAL INDUSTRIAL	INSTITUTIONAL	SUBTOTAL	RECOVERED (FOR REUSE/RECYCLING): Other XXXXXXXXXX	RECYCLABLES HANDLING FACILITY	SUBTOTAL	DISPOSED: WASTE-TO-ENERGY FACILITY	LANDFILL	SUBTOTAL
CONSTRUCTION & DEMOLITION (C&D) DEBRIS												
Asphalt (2)					105,220	105,220	105,220					
Concrete												
Gypsum												
Wood												
Other C&D (Specify) (3)			5,520		200,800	206,320	206,320					
Total C&D Debris			5,520		306,020	311,540	311,540					
NON-HAZARDOUS INDUSTRIAL WASTE (NHIW)												
Metals												
Plastics												
Wood												
Sludges												
Other (Specify)*												
Other (Specify)												
Other (Specify)												
Total NHIW												
Miscellaneous (4)					440	440	440					

1. Type of Program: M = Mandatory, V = Voluntary 2. Type of Collection: C = Curbside, D = Dropoff

(Revised 2/95)

*e.g., Harbor Debris, Agricultural Waste, Dredge Spoils, etc.

Note: A) Report amounts in tons unless you indicate otherwise
B) TOTAL MUNICIPAL SOLID WASTE = Paper + Metals: Bulk + Metals: Containers + Plastics + Glass + Organics + Textiles + Wood/Brush/Yard Waste + Household Hazardous Waste + Used Oil + Waste Tires + Regulated Medical Waste + Other Special Wastes
C) Do not enter values in shaded areas

(1) All quantities are in tons and all footnotes are on page 1 of 4.
(2) Includes asphalt from DOT reused for roadway construction and road millings used in Fresh Kills landfill operations.
(3) Includes department lot cleaning (metal and dirt), residential drop-off (metal, wood and dirt) at the department's self-help facilities, and dirt and stone from the crushing and screening plant at Fresh Kills.
(4) Includes material reused through the city's Material for the Arts program.

DISPOSED AND INCINERATED CATEGORIES (TABLE 2-1)

Curbside	Waste set out at the curb and collected by the Department.
Containerized	Waste set out in containers and collected by the Department.
Bulk	Residential bulky material collected curbside from some districts and material dropped off at all self-help sites except for Fresh Kills.
Household Waste	Residential bulky material dropped off at the Fresh Kills self-help site.
Housing Authority	Residential waste collected by the housing authority from public housing.
Lot Cleaning	Residue of screened waste material from the Department's lot cleaning sites.
Miscellaneous	Waste from PEST control operations and derelict vehicle operations.
Street Dirt	Street sweepings from the Department's operations.
Institutions	Waste collected by non-profit institutions (in addition to the Department).
City Agencies	Waste collected by City agencies such as the Parks Department, DOT, and the Transit Authority.
State Agencies	Waste collected by State agencies from State agencies.
U.S. Government	Waste collected by private haulers from U.S. government agencies.
DEP Collected	Grits and screenings from wastewater treatment plants owned and operated by the City DEP.
PH Collected	Commercial waste collected by private haulers.

DIVERSION CATEGORIES
(TABLE 2-1)

Curbside	Recyclables set out at the curb and collected by the Department. Weights are from vendor receipts manually input into the Department's database.
Containerized	Recyclables set out in containers and collected by the Department. Weights are from vendor receipts manually input into the Department's database.
Organics yard and leaf waste Christmas Trees	Yard and leaf waste and Christmas trees collected by the Department from Staten Island. Weights are scale weights of vehicles taken at the Fresh Kills Landfill.
Organics food self-help yard waste	Food from the Department's institutional pilot program at Rikers Island and yard waste dropped off by residents at the Fresh Kills self-help site. Weights are estimates based on volume.
Bulk self-help lot cleaning	Bulk material dropped off by residents at the Department's self-help sites (weighed at MTSs or vendor) and dirt and metal from the Department's lot cleaning operations.
Millings	DOT road millings weighed at MTSs and taken to Fresh Kills.
Mobile Drop-Off	Recyclables collected from the Department's mobile collection program which was in place prior to the full-scale program.
Derelict Vehicles	Abandoned vehicles which are tagged by the Department and taken by either the Department or a private contractor to a scrap metal dealer. Quantities are based on the tagging system with verification by the scrap yards prior to processing and were converted to weight based on average car weight. See "Conversions" in this Appendix D.
City Agency	White paper from City Agencies collected by a private hauler. Weights are scale weights from the haulers.
Asphalt from DOT	Asphalt from DOT demolition roadwork reused by the DOT on-site for paving. Numbers are estimates based on volume.

DIVERSION CATEGORIES (Cont'd)
(TABLE 2-1)

Material for the Arts	Materials donated to art schools such as fabrics, computers, and supplies.
Crushings & Screenings	Loads from City excavation jobs that are taken to the Fresh Kills landfill crushing and screening plant by either the Department or by a private contractor. Clean loads of dirt from these jobs are taken to the landfill and used for cover application. The loads taken to the crushing and screening plant are estimated by the Department to be approximately 1/3 small stone, 1/3 dirt, and 1/3 rip rap. Quantities are converted based on average material densities. See "Conversions" in this Appendix D.
Bottle Bill	Glass, plastic, and aluminum containers returned for deposit refund .

CONVERSIONS

DERELICT VEHICLES

Abandoned vehicles which are tagged by the Department and taken by either the Department or a private contractor to a scrap metal dealer. Quantities are based on the number of tags.

Fiscal Year	Department Collected Quantity	Private Contractor Collected Quantity	Vehicle weight (a) (tons)	Department Collected (tons)	Private Collected (tons)	Total (tons)
FY 1992	1,770	76,780	1.475	2,610	113,250	115,860
FY 1993	860	56,840		1,270	83,840	85,110
FY 1994	750	37,770		1,110	55,710	56,820
July-Nov 1994	300	10,820		440	15,960	16,400

(a) Based on an average of small cars at approximately 2,000 lbs and older cars at approximately 3,000 lbs. Average weight = (2,500 body+ 450 engine)lbs = 2,950 lbs/car
2,950 lbs/car x 1 ton/2,000 lbs = 1.475 tons/car

CRUSHING AND SCREENING PLANT AT FRESH KILLS

Loads come in from City construction jobs and are approximately 1/3 small stone, 1/3 dirt, and 1/3 rip rap. Quantities are from the Crushing and Screening Log Sheets for FY 1992 through December 1994 and are based on volume. Numbers are converted to tons, as shown below, using typical densities of excavated materials. Loads come in from private and Department haulers.

Fiscal Year	Volume (cubic yards)	Weight (tons)
FY 1992	133,330	166,320
FY 1993	118,120	147,340
FY 1994	114,000	142,200
July-Dec 1994	54,750	68,290

Material Densities (b)		Average Density Conversion (c)		
sand & gravel	100 lbs/cu ft	0.33x(100+85+95)lbs/cu ft=	92.4	lbs/cu ft
excavated earth	85 lbs/cu ft	92.4 x 27 cu ft/cu yd=	2,495	lbs/cu yd
rip rap	95 lbs/cu ft	2495 / 2000 lbs/ton=	1.25	tons/cu yd

(b) Source: Mark's Standard Handbook for Mechanical Engineers, 9th Edition pp 6-8 and 6-9 (averages for varying densities).
(c) Based on average of 1/3 sand & gravel, 1/3 excavated earth, and 1/3 rip rap.