



CITY OF MILPITAS

SOURCE REDUCTION AND RECYCLING ELEMENT

MILPITAS, CALIFORNIA

August 1991



EMCON
ASSOCIATES

Source Reduction and Recycling Element City of Milpitas, California

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Acronyms

Glossary of Terms

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

INTRODUCTION

Legislative Basis for the Plan

The California Integrated Waste Management Act of 1989 (Assembly Bill [AB] 939), mandates that by January 1, 1995, each California city and county must divert 25 percent of all solid waste generated within the jurisdiction from landfill or transformation facilities through source reduction, recycling, and composting activities. By January 1, 2000, the required waste diversion is 50 percent of the solid waste generated in each California city and county. AB 939 responds to the pressing need to divert materials from disposal in landfills in order to preserve decreasing site capacity and diminishing natural resources.

AB 939 and related legislation require that each city prepare, adopt, and submit to the county a source reduction and recycling element (SRRE) that includes the following:

- waste generation study (Section 2)
- source reduction component (Section 3)
- recycling component (Section 4)
- composting component (Section 5)
- special waste component (Section 6)
- education and public information component (Section 7)
- disposal facility capacity component (Section 8)
- funding component (Section 9)
- integration component (Section 10)

- household hazardous waste element¹

The integrated waste management hierarchy established by AB 939 consists of:

- Source reduction to reduce generation of wastes
- Recycling and composting of materials
- Environmentally safe transformation of wastes, such as incineration, destructive distillation, gasification and pyrolysis
- Environmentally safe landfilling

This hierarchy served as a planning tool in the selection of programs designed to meet the City's 25 and 50 percent diversion goals by 1995 and 2000, respectively.

Goals for SRRE

The primary goal of the City's SRRE is to meet the state-mandated waste diversion goals of 25 and 50 percent by 1995 and 2000, respectively.

The following goals have guided the development of the SRRE:

1. Meet or exceed state-mandated waste diversion rates through source reduction, recycling, and composting.
2. Maximize source reduction, recycling, and composting opportunities within the City of Milpitas.
3. Minimize adverse environmental impacts and ensure public health and safety.
4. Increase public awareness of the need to reduce and recycle the solid waste stream and provide information on how to participate in the local community programs.
5. Expand and develop a sense of community pride in order to maximize participation in source reduction, recycling, and composting programs.

¹ Following the enactment of AB 2707, the household hazardous waste component was elevated to the status of an element, to be prepared as a separate document. This element is therefore presented under separate cover.

6. Encourage and foster the participation of solid waste refuse collectors and the commercial sector in the solid waste management planning process and the implementation of necessary programs.
7. Develop and expand local and regional markets for diverted materials, including the City's purchase of products made from recycled materials.
8. Ensure proper disposal of wastes that cannot be reduced, reused, recycled, or composted.
9. Divert hazardous wastes from disposal in landfills.
10. Extend the lifetime of existing landfills in the County.

MANDATED FORMAT OF SRRE

Title 14, Chapter 9 of the California Code of Regulations (CCR) specifies the required substance and format of the SRREs to be prepared by each city and county in California. The components of the SRRE that address source reduction, recycling, composting, and special waste must contain the following sections:

- Objectives
- Existing Conditions Description
- Evaluation of Alternatives
- Program Implementation
- Monitoring and Evaluation

The regulations dictate that the alternatives considered for these four components must be evaluated in accordance with ten criteria that reflect a wide range of technical, economic, institutional, and socio-political issues.

The remaining four components of the City's SRRE—education/public information, disposal facility capacity, funding, and integration—deviate somewhat in format from the first four, as will be noted from a review of the SRRE. The apparent lack of consistency in the format is thus dictated by the regulations for Planning Guidelines and Procedures for Preparing

and Revising Countywide Integrated Waste Management Plan (Title 14, CCR, Division 7, Chapter 9, Articles 3, 6.1, 6.2, 7, and 8).

WASTE GENERATION STUDY

Waste Disposal Characterization

In compliance with AB 939, the City of Milpitas is required to identify quantities of solid waste that are currently being diverted or have the potential of being diverted from the Newby Island Landfill. In addition, the City is required to identify the composition and quantity of solid wastes disposed of in the landfill.

A summary of the City's waste quantities is presented in Table ES-1 and the composition of the wastestream is shown in Table ES-2. The results of the waste characterization study indicate that paper currently represents about 29 percent of the City's residential, commercial, industrial, and self-haul waste stream.

A total of 79,036 tons of solid waste were disposed of by the City of Milpitas in 1990 (or about 217 tons per day on a seven-day week basis).

Waste Diversion

In compliance with AB 939, the City also conducted a waste diversion study to estimate the quantities of materials diverted from the Newby Island Landfill through recycling, composting, and source reduction.

The diversion results were obtained from (1) City records, (2) the collectors of recyclable materials, and (3) a mailed survey of virtually all businesses in the City concerning their waste diversion activities.

The data from the City records and from the surveys were assumed to reflect the total diverted quantities (i.e., the data were not extrapolated). Thus, the study results reflect a conservative diversion estimate total of 7.5 percent.

Table ES-3 presents a summary of wastes disposed, diverted, and generated in Milpitas. Tables ES-4 and ES-5 present diversion by material for the residential and non-residential sectors, respectively.

Materials Targeted for Diversion

The following categories of materials currently disposed of in the City are targeted for diversion through programs identified in the source reduction, recycling, composting, and special waste components of the SRRE: paper, plastics, glass, metals, yard waste, other organics, and selected other wastes, including inert solids such as asphalt, concrete, and soil.

Overview of SRRE Components

Source Reduction

Source reduction activities reduce or prevent the generation of solid wastes that must otherwise be managed by recycling, composting, transformation, and disposal. Source reduction is achieved by changing production, packaging, and consumption practices, resulting in decreased consumption, reduced material weight and volume, and increased product durability. Production and packaging practices are changed at the state or national level, while consumption patterns are targeted locally.

The current estimated diversion from source reduction programs is 0.8 percent annually. This is a very conservative estimate that reflects the fact that source reduction efforts to a large degree occur on the national level. Manufacturers of products marketed nationally continue to reduce and modify their packaging, thereby impacting the generation of wastes within cities and counties.

The source reduction programs selected to help meet diversion goals for the City of Milpitas have the potential to effectively change consumption patterns. Specifically, the programs selected include (1) technical assistance, (2) education programs, (3) rate modifications and (4) procurement preferences and targets.

The City intends to emphasize implementing available national source reduction programs and educating the public concerning these programs. The success of the source reduction program will have positive impacts on consumption, production and packaging patterns that will ultimately contribute to a decrease in the quantity of wastes landfilled.

Recycling

As defined by the EPA-sponsored national Recycling Advisory Council (RAC), recycling is the result of "a series of activities by which materials that would become or otherwise remain waste are diverted from the solid waste stream for collection, separation, and processing and are used as raw materials or feedstocks in lieu of, or in addition to, virgin materials in the manufacture of goods sold or distributed in commerce, or the reuse of such materials as substitutes for goods made from virgin materials."

Milpitas initiated a curbside recycling program in January, 1991. In addition, the City has several drop-off and buy-back recycling centers, including the Recyclery at Newby Island Landfill. In 1990, prior to the implementation of the curbside program and the Recyclery, the City had a diversion rate of 7.5 percent. In order for the City to reach the diversion goals mandated by AB 939, the following recycling programs are proposed:

Short-term planning period (1991-1995)

- Continue source-separated recycling program for single-family dwellings (existing program)
- Develop source-separated recycling program for multi-family dwellings.
- Establish a source-separated curbside recycling program for non-residential sector.
- Develop a manual material recovery operation/mechanized material recovery operation.
- Develop non-residential recycling programs, including providing public education and technical assistance services.
- Divert inert solids generated by City public works projects to a materials processor².

Medium-term planning period (1996-2000)

- Separate additional waste types through the residential curbside program

² Examples of inert solids include concrete and asphalt.

The successful implementation of the recycling programs listed above is projected to divert an estimated 12.6 to 17.5 percent of the City's total solid waste stream by 1995. With the expansion of the residential curbside program in the medium-term planning period, recycling programs offered by the City will divert an estimated 13.6 to 19.5 percent of the waste stream by 2000.

Composting

Composting is a process of biological decomposition of solid organic debris, such as leaves, grass clippings, and other organic materials commonly found in the municipal waste stream. The end product of composting is a stable humus or soil-like material that can be used as a soil conditioner, mulch, or fertilizer, depending on its physical properties.

In Milpitas, yard wastes comprise approximately 12 percent by weight of the total wastestream. Composting therefore makes an important contribution to reducing the amount of the City's waste that is disposed of at the Newby Island Landfill.

The composting programs selected to help meet the City's waste diversion goals are the following:

Short-term planning period (1991-1995)

- Develop residential yard waste collection program
- Establish mechanized yard waste separation

Medium-term planning period (1996-2000)

- Windrow composting system

These composting programs are projected to divert an estimated 6.7 to 7.1 percent of solid waste from disposal by 1995. The windrow composting system to be implemented by 2000 will not contribute to additional diversion of waste, but will enhance the quality of the compost.

Special Waste

Special waste is solid waste requiring collection, processing, and disposal procedures that differ from those typically needed for other municipal solid wastes. Examples of special waste are sewage sludge, ash, asbestos, tires, white goods, mattresses, abandoned vehicles, and dead animals.

White goods and a limited number of tires are the only special wastes that are accepted for disposal at the Newby Island Landfill.

The special waste program selected to help meet Milpitas' diversion goals is the prohibition of the disposal of white goods at the Newby Island Landfill. Diverted white goods will be recycled for use as scrap metal following removal of their capacitors, cooling units, insulation and wiring. White goods are currently collected and stockpiled at the Newby Island Landfill, but are also still present in the waste being disposed of at the landfill. By prohibiting the disposal of white goods, the City can divert approximately 330 tons of these wastes annually. The City's Community Development Department will be responsible for monitoring the effectiveness of this program.

Education and Public Information

Education and public information are essential to the successful implementation of the recycling, source reduction, and composting components. To reach waste diversion goals of 25 and 50 percent, Milpitas will target the non-participating sectors of the community to promote the implementation of selected waste diversion programs. The City will also inform the entire community about expansions and modifications to existing programs so that the City can effectively reach its stated diversion goals.

A key contributor to the City's public information outreach efforts is the Solid Waste Reduction Advisory Committee (SWRAC). Formed in early 1991 to provide guidance to the City in the preparation of the SRRE, SWRAC has assisted in the development of the SRRE's goals and objectives and has contributed to the development of recommended programs. SWRAC will serve as advisors to the City for an indefinite period of time following the adoption of the SRRE. The Committee will provide input to the City during the implementation phase and will help monitor the progress of programs that have been selected to meet the diversion targets mandated by AD 939.

The education and public information component presented in the City's SRRE describes a wide variety of City programs that focus on educating and informing the community about solid waste issues. Education and public information programs promoted by businesses and community groups in the City are also described.

The education and public information activities selected to enhance existing programs are multi-faceted in scope, encompassing media, community outreach, campaigns, and school curricula.

Disposal Facility Capacity

The Integrated Waste Management Act of 1989 requires that jurisdictions identify their current and future solid waste disposal capacity needs in the SRRE. Specifically, the City of Milpitas is required to identify its disposal capacity over the 15 year period 1991 through 2006. In Milpitas, there are no permitted solid waste disposal facilities within the incorporated limits of the City; all of the City's solid waste destined for disposal is currently exported to permitted solid waste disposal facilities in the City of San Jose. (It should be noted, however, that Newby Island Landfill borders the City of Milpitas.) Currently no plans exists to establish a new disposal facility in Milpitas during the short-or medium-term planning periods.

Results of the solid waste disposal facility needs projection indicate that Milpitas will not require additional disposal capacity during the 15-year planning period.

Funding

Solid waste management programs in the City of Milpitas are funded by the City's General Fund. Revenue sources for this Fund include the City's franchise fee for refuse collection by BFI; in fiscal year 1990-1991, the franchise fee is estimated to account for approximately \$417,000 of the General Fund's revenues.

Programs selected by Milpitas to help meet mandated diversion goals will be funded by the City's General Fund.

Additional City staff will be required to help implement source reduction, recycling, composting, and public education programs. One staff position will be added in 1992; the need for an additional staff position will be reviewed by the end of calendar year 1992.

Integration

To reach the waste diversion goals mandated by AB 939, the City must integrate source reduction, recycling, composting and special waste programs and activities following the integrated waste management hierarchy

of (1) source reduction, (2) recycling and composting, and (3) environmentally safe transformation and disposal. A combination of existing waste diversion programs, planned expansions of existing programs, and new source reduction, recycling and composting programs and activities together will contribute to the City's achieving the diversion targets mandated by law.

Currently Milpitas diverts an estimated 7.5 percent of its solid wastes from the landfill. By 1995, the City projects a diversion rate of 26.1 to 31.5 percent. A range of diversion rates is presented in order to reflect the variables involved in implementing new programs.

Summary of Diversion Programs

Summarized in Table ES-6 are the source reduction, recycling, special waste, and composting diversion programs selected for the City of Milpitas. Included is (1) date of implementation; (2) percent diversion of the total waste stream that each program would achieve; (4) planning, development, and capital costs; and (5) annual operating and monitoring costs.

Table ES-1
SUMMARY OF WASTE DISPOSAL QUANTITIES (1990)
City of Milpitas

Source	Tons Per Day-7*	Tons Per Year	Percent
Residential	36	13,032	16
Commercial	37	13,473	17
Industrial/Roll-Off	83	30,371	38
Self-Haul	61	22,160	28
Total**	217	79,036	100

* Based on a 7-day week.
 ** Numbers are rounded. Data reflects quantities disposed of at the Newby Island and Zanker Road landfills, and through transformation.

Table ES-2 SUMMARY OF WASTE GENERATED COMPOSITION FOR THE CITY OF MILPITAS
(WEIGHT PERCENT)

	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	SELF	TOTAL
PAPER: (total)	44.28	49.61	28.69	6.61	28.99
corrugated containers	5.11	16.89	12.24	2.11	9.30
newsprint	14.15	3.73	1.86	0.13	3.69
high grade ledger paper	1.40	5.78	3.44	0.81	2.85
mixed paper	14.49	14.45	7.09	0.33	7.83
other paper	9.12	7.75	4.06	3.24	5.32
PLASTICS: (total)	9.26	8.77	9.53	4.75	7.61
HDPE containers	0.83	1.24	1.70	0.00	1.03
PET containers	0.39	0.13	0.02	0.14	0.13
film plastics	2.35	3.01	2.63	1.01	2.23
other plastics	2.69	4.39	5.17	3.60	4.22
GLASS: (total)	5.90	3.43	1.49	0.05	2.15
refillable bev. containers	0.96	0.53	0.10	0.00	0.29
CA Redemption Value	2.45	1.87	0.35	0.00	0.87
other recyclable glass	1.97	0.62	0.64	0.03	0.69
other non-recyclable glass	0.52	0.41	0.37	0.03	0.31
METALS: (total)	3.28	6.29	9.78	9.59	8.06
aluminum cans	0.48	0.26	0.14	0.01	0.18
bi-metal containers	0.05	0.08	0.00	0.00	0.02
tin cans	1.14	0.78	0.19	0.00	0.40
other ferrous	1.07	4.71	8.09	8.98	6.60
other aluminum	0.33	0.26	0.15	0.06	0.18
other non-ferrous	0.05	0.02	0.36	0.54	0.30
white goods	0.15	0.18	0.85	0.00	0.39
YARD WASTE: (total)	22.53	8.49	7.07	15.33	11.95
OTHER ORGANICS: (total)	16.40	21.28	27.48	28.43	24.84
food waste	8.91	11.54	1.14	0.55	4.12
tires/rubber	0.60	1.36	1.60	0.00	0.98
wood wastes	1.60	4.21	15.01	16.45	11.29
agricultural crop residues	0.00	0.14	0.00	0.00	0.03
manure	0.11	0.00	0.00	0.00	0.02
textiles/leather	1.33	0.74	3.81	11.07	4.77
other misc. organics	3.85	3.28	5.92	0.36	3.64
OTHER WASTES: (total)	1.35	3.12	15.99	35.23	16.38
inert solids	0.85	2.83	14.54	33.68	15.27
hazardous wastes	0.51	0.29	1.45	1.54	1.11
SPECIAL WASTES: (total)	0.00	0.02	0.00	0.00	0.00
ash	0.00	0.00	0.00	0.00	0.00
sewage sludge	0.00	0.00	0.00	0.00	0.00
industrial sludge	0.00	0.00	0.00	0.00	0.00
asbestos	0.00	0.00	0.00	0.00	0.00
auto shredder waste	0.00	0.00	0.00	0.00	0.00
auto bodies	0.00	0.00	0.00	0.00	0.00
other special waste	0.00	0.02	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00

* Numbers are rounded.

Table ES-3
SUMMARY OF WASTES DISPOSED, DIVERTED AND GENERATED (1990)
 City of Milpitas

Waste Category	DISPOSED		DIVERTED		GENERATED	
	Tons	%*	Tons	%*	Tons	%*
Paper	23,124	27.1	1,437	1.7	24,561	28.8
Plastics	6,058	7.1	346	0.4	6,404	7.5
Glass	1,473	1.7	338	0.4	1,811	2.1
Metals	6,482	7.6	304	0.4	6,786	7.9
Yard Waste	9,923	11.6	0	0	9,923	11.6
Other Organics	18,712	21.9	2,500	2.9	21,212	24.8
Other Wastes	13,263	15.5	1,455	1.7	14,718	17.2
Special Wastes	2	0	1	0	3	0
Total	79,036	92.5	6,381	7.5	85,418	100

*Percent of total waste stream.

** Numbers are rounded.

Table ES-4
DIVERSION RATES BY MATERIAL FOR RESIDENTIAL WASTE (Tons, 1990)
 City of Milpitas

COMPONENT	DISPOSED		DIVERTED		GENERATED		DIVERSION RATE (percent)
	Residential		Recycling	Source Reduction			
PAPER: (total)	5,887				6,057		
corrugated containers		679	0	0		679	0
newspaper		1,880	170	0		2,050	8
high grade ledger paper		186	0	0		186	0
mixed paper		1,928	0	0		1,928	0
other paper		1,214	0	0		1,214	0
PLASTICS: (total)	819				833		
HDPE containers		111	0	0		111	0
PET containers		38	14	0		52	27
film plastics		313	0	0		313	0
other plastics		357	0	0		357	0
GLASS: (total)	656				785		
refillable bev. containers		128	0	0		128	0
CA redemption value		212	114	0		326	35
other recyclable glass		247	15	0		262	6
other non-recyclable glass		70	0	0		70	0
METALS: (total)	413				437		
aluminum cans		40	23	0		64	37
bi-metal containers		7	0	0		7	0
tin cans		152	0	0		152	0
other ferrous		143	0	0		143	0
other aluminum		44	0	0		44	0
other non-ferrous		7	0	0		7	0
white goods		21	0	0		21	0
YARD WASTE: (total)	2,997	2,997	0	0	2,997	2,997	0
OTHER ORGANICS: (total)	2,119				2,183		
food waste		1,185	0	0		1,185	0
tires/rubber		80	0	0		80	0
wood wastes		213	0	0		213	0
agricultural crop residues		0	0	0		0	0
manure		15	0	0		15	0
textiles/leather		176	0	0		176	0
other misc. organics		450	0	64		514	12
OTHER WASTES: (total)	141				141		
inert solids		113	0	0		113	0
hazardous wastes		28	0	0		28	0
SPECIAL WASTES: (total)	0				0		
ash		0	0	0		0	0
sewage sludge		0	0	0		0	0
industrial sludge		0	0	0		0	0
asbestos		0	0	0		0	0
auto shredder waste		0	0	0		0	0
auto bodies		0	0	0		0	0
other special wastes		0	0	0		0	0
TOTAL		13,032	336	64		13,432	3
* Numbers are rounded.							

Table ES-5
DIVERSION RATES BY MATERIAL FOR NON-RESIDENTIAL WASTE (Tons, 1990)
 City of Milpitas

COMPONENT	DISPOSED			DIVERTED Recycling	GENERATED	DIVERSION RATE (percent)
	Commercial	Industrial	Self Haul			
PAPER: (total)	6,236	9,534	1,466	823	18,504	12
corrugated containers	1,784	4,066	467	10	7,141	1
newsprint	566	619	28	236	1,224	11
high grade ledger paper	656	1,143	179	198	2,214	4
mixed paper	2,033	2,356	73	0	4,660	0
other paper	1,196	1,350	719	0	3,265	25
PLASTICS: (total)	1,327	2,862	1,053	190	5,571	0
HDPE containers	191	377	0	0	758	0
PET containers	19	5	32	0	57	2
film plastics	443	858	223	37	1,561	3
other plastics	673	1,619	798	105	3,196	5
GLASS: (total)	321	483	11	0	1,026	32
refillable bev. containers	76	33	0	6	115	23
CA redemption value	158	115	0	130	404	0
other recyclable glass	23	213	6	73	315	0
other non-recyclable glass	63	124	6	0	193	20
METALS: (total)	948	2,997	2,126	17	6,350	87
aluminum cans	22	45	2	5	12	42
bi-metal containers	7	0	0	0	185	0
tin cans	121	64	0	0	5,406	5
other ferrous	727	2,434	1,991	254	105	0
other aluminum	40	51	13	0	243	1
other non-ferrous	2	119	120	1	313	1
white goods	28	281	0	4	6,925	0
YARD WASTE: (total)	1,178	2,349	3,398	0	6,925	0
OTHER ORGANICS: (total)	3,284	6,833	6,300	0	19,030	0
food waste	1,781	377	121	0	2,279	0
tires/rubber	387	533	0	139	1,060	13
wood wastes	650	2,689	3,645	2,298	9,283	25
agricultural crop residues	21	0	0	0	21	0
manure	0	0	0	0	0	0
textiles/leather	114	1,267	2,453	0	3,835	0
other misc. organics	507	1,966	80	0	2,552	0
OTHER WASTES: (total)	1	5,313	7,807	1,455	14,576	11
inert solids	1	4,833	7,464	0	13,752	0
hazardous wastes	0	482	342	0	824	0
SPECIAL WASTES: (total)	2	0	0	0	3	0
ash	0	0	0	0	0	0
sewage sludge	0	0	0	0	0	0
industrial sludge	0	0	0	0	0	0
asbestos	0	0	0	0	0	0
auto shredder waste	0	0	0	0	0	0
auto bodies	0	0	0	0	0	0
other special wastes	2	0	0	1	3	17
TOTAL	13,473	30,371	22,160	5,982	71,986	8

* Numbers are rounded.

Table ES-6
 Summary of New Diversion Programs Selected for the Short-Term Planning Period (1991-1995)

SRRE Selected Program	Program Implementation ¹	Estimated Percent Diversion of Total Waste Stream for Programs During Short Term (1991-1995)	Additional Costs to the City ²	
			Planning, Development and Capital (\$)	Annual Operating and Monitoring (\$)
Source Reduction				
• Public education and technical assistance	7/92	N/A	Included in Education and Public Information Component	
• Rate modifications	6/93	N/A	10,000 ³	2,500
• Regulatory programs	7/92	N/A	10,000 ⁴	2,000
Recycling				
• Residential curbside collection	Has been implemented	—		
• The Recyclery	Has been implemented	—		
• Develop multifamily recycling program	1/93	0.1 - 0.3	0 ⁵	0 ⁵
• Curbside collection program for businesses	1/93	1.5 - 2.5	TBD ⁶	TBD ⁶
• Divert inert solids to a materials processor	6/92	2.2 - 2.4		
• Establish City-wide commercial recycling programs	1/93	N/A	Included in Education and Public Information Component	
Composting				
• Residential yard waste collection	7/92	2.8 - 3.0	0 ⁵	0 ⁵
• Mechanized system	7/92	3.9 - 4.1	0 ⁵	0 ⁵
Special Waste				
• White goods salvaging at landfill	7/92	0.3 - 0.4	0 ⁵	0 ⁵
Education and Public Information				
	7/92	N/A	37,000	38,000
Total -- Based on New Programs Total Diversion, Existing Programs (1990) Diversion Due to Programs Recently Implemented⁷ Total Diversion, New and Existing Programs		10.8 - 12.7 7.5 7.8 - 11.3 26.1 - 31.5	\$57,000	\$42,500

1 Diversion due to two programs initiated in 1991 is included as a separate line item at the bottom of this column. These recently implemented programs are: residential curbside (1/91) and The Recyclery (3/91).
 2. Costs shown are in 1991 dollars; they reflect only those expenditures directly incurred by the City of Milpitas (e.g., exclude any costs to private haulers).
 3. Reflects City's planning and administrative costs for implementing a variable rate structure program.
 4. Reflects administrative costs associated with developing procurement program.
 5. No cost to City. Costs incurred by private sector (which is expected to eventually impact rate payers).
 6. To be determined.
 7. The Recyclery and curbside collection were implemented in 1991, leading to an increase in diversion rates over the 1990 rates; this additional diversion supplements the 1990 diversion rate of 7.5 percent.

INTRODUCTION

1 INTRODUCTION

1.1 Legislative Basis for the Plan

In September 1989, the California House and Senate passed Assembly Bill (AB) 939, the California Integrated Waste Management Act of 1989. This statute legislation was drafted in response to the need to divert materials from landfills in order to preserve decreasing landfill capacity and natural resources. AB 939 mandates that, by January 1, 1995, each California city and county must divert 25 percent of all solid waste generated in the jurisdiction from landfill or transformation facilities through source reduction, recycling, and composting activities. By January 1, 2000, the required diversion is 50 percent.

AB 939 replaces the existing County Solid Waste Management Plan (CoSWMP) process with a source reduction and recycling element (SRRE) for each city and county and an Integrated Waste Management Plan (IWMP) for each county. AB 939 dramatically restructures the solid waste management program in California with the objective of implementing an aggressive integrated waste management program, promoting, in order of priority, the following waste management practices.

- Source reduction
- Recycling and composting
- Environmentally safe transformation (incineration, pyrolysis, and biological conversion)
- Environmentally safe land disposal

1.1.1 City Requirements

By July 1, 1991, each city must prepare, adopt, and submit to the county an SRRE that includes a component focusing on each of the following areas for management of solid waste generated within the city.

- Waste generation

- Source reduction
- Recycling
- Composting
- Disposal facility capacity
- Education and public information
- Program funding
- Special wastes
- Program integration

1.1.2 County Requirements

By July 1, 1991, each county must prepare a SRRE for its unincorporated area with components identical to those required in the city elements. Each county must also prepare a county-wide integrated waste management plan and a county-wide siting element specifying areas for transformation or disposal sites to provide capacity needed for a 15-year period, so that solid wastes generated in the county that cannot be reduced or recycled will be handled safely.

1.1.3 General Requirements

The required waste diversion amounts will be based on the calculated amount of solid waste existing on the date of approval of the city or county SRRE.

To determine the base rate of solid waste from which these recycling levels will be calculated, "solid waste" includes only two categories:

- Materials that are normally disposed of at a landfill or transformation facility; and
- Solid wastes currently diverted from a landfill or transformation facility because of source reduction, recycling, or composting programs.

Agricultural wastes, and other wastes not normally disposed of at landfills are not included in this base rate calculation.

For any plan submitted after January 1, 1995, the 50 percent diversion may include up to 10 percent transformation, provided that the front-end removal of recyclable materials and other specified conditions are met.

1.1.4 Other Provisions of AB 939

Revisions to existing law in AB 939 include (1) replacement of the former Waste Management Board by the current Integrated Waste Management Board with six full-time members; (2) implementation of new requirements in the city and county waste management planning process; (3) recasting of the waste management framework; and (4) various funding mechanisms for the required programs and plans. There are six additional provisions of AB 939.

Solid Waste Facilities. AB 939 establishes a comprehensive statewide system of permitting, inspections, enforcement, cleanup, maintenance, and closure for solid waste facilities. While the system will continue to be implemented by local jurisdictions where applicable, the state's role has generally been strengthened. Specifically, local enforcement agencies (LEAs) will be subject to Board certification. The Board will prepare and adopt certification regulations specifying requirements that a local enforcement agency shall meet before being designated officially as an enforcement agency.

The Board will also adopt minimum standards for solid waste handling and disposal to protect air, water, and land from pollution. Owners or operators of solid waste landfills must also provide financial assurances for closure and postclosure maintenance.

Enforcement. AB 939 outlines a system of civil penalties, corrective actions, appeals, and judicial review for the enforcement of terms and conditions of solid waste facility permits. The Board may issue a cease and desist or cleanup and abatement order if (1) the LEA fails to issue such orders and (2) the Board agrees that such orders need to be imposed.

Solid Waste Disposal Site Cleanup and Maintenance. Every operator of a solid waste landfill required to have a permit will be assessed a fee, which will be placed in the existing Solid Waste Disposal Site Cleanup and Maintenance Account in the Solid Waste Management Fund. Money in the account will be controlled by the Board and allocated to cities and counties for uses regarding the safe operation, closure, and maintenance of solid waste landfills.

Household Hazardous Wastes. AB 939 requires the Board to develop and implement a public information program to provide information on source reduction, recycling, and proper disposal of household hazardous wastes, and technical assistance to local public agencies to establish household hazardous waste management programs.

Finances. Every operator of a solid waste landfill shall pay a quarterly fee to the Board of Equalization, based on all solid waste disposed of at each disposal site on or after January 1, 1990. The money will be used for administration and other purposes specified by the legislature, which will appropriate funds from the account.

Garbage and Refuse Disposal. AB 939 establishes criteria for (1) the formation of garbage disposal districts, funded by property taxes; (2) franchise waste management within a county; (3) contract waste management within a city; and (4) solid waste enterprises to operate within a community. It also contains restrictions on burning garbage.

1.1.5 Relationship of AB 939 to Other Legislation

Several pieces of legislation related to AB 939 have passed that modify the impact of the legislation, including the following four bills.

Senate Bill (SB) 1322. This bill establishes a comprehensive set of state programs to promote (1) integrated waste management, (2) source reduction, and (3) market development for recovered materials. SB 1322 will establish recycling market development zones with regulatory and fiscal incentives. In addition, the Board will be required to provide technical assistance to enable LEAs to conduct waste reduction evaluations and implement recovery of high-grade white office paper. A state-wide public information and education program will be initiated to encourage participation by the general public, business, government, and industry in all phases of integrated waste management.

Assembly Bill (AB) 1820. AB 1820 permits the use of pre-existing data or studies that accurately characterize the waste generated and disposed of within the jurisdiction. This bill allows for three basic changes to AB 939: (1) only the amount of seasonal sampling necessary to achieve the 25 percent diversion target for the 1995 deadline (rather than the "maximum extent possible"); (2) the constituent materials identified in the waste characterization to be representative of the solid waste generated (in contrast to the former language: to be representative "to the maximum

extent feasible;" and (3) waste quantities to be "as accurate as possible" to enable the Board to accurately measure the diversion requirements.

Assembly Bill (AB) 2707. This bill requires each city to submit a separate household hazardous waste element to the county by July 1, 1991. AB 939 had included a household hazardous waste component in the SRRE; as a result of AB 2707, this component was elevated to the status of an "Element."

Assembly Bill (AB) 3992. This bill defines "solid waste" for the purpose of determining the base amount from which diversion levels shall be calculated. It also requires the Board to consider only relevant circumstances in determining civil penalties for any city or county which fails to implement its SRRE.

1.2 Waste Diversion Efforts

The City of Milpitas disposes of its waste at the Newby Island Landfill in Santa Clara County. Residential waste collection is handled by an exclusive contract with Browning-Ferris Industries (BFI); commercial and multi-family collection is handled by several haulers under a competitive, variable rate system.

The City's contract with BFI, which expires in 2007, provides for unlimited curbside service, as well as a curbside residential recycling program initiated in early 1991.

Source Reduction

The City of Milpitas has a number of current source reduction activities ongoing within the community. These include efforts and programs by both the City government, as well as by private individuals, groups, and businesses.

The City's own source reduction program consists of a number of activities, including (1) making scratch paper tablets and two-sided copies at the City print shop; (2) and using reusable cloth shop rags and uniforms at the City garage. Additionally, there are thirty three businesses known to the City to be operating as thrift, salvage, or repair shops that refurbish or repair used items for reuse. A survey of businesses in Milpitas also revealed that a number of offices and businesses are actively pursuing source reduction activities.

Recycling

Milpitas has a weekly curbside residential recycling program collecting newspaper, glass, tin cans, aluminum cans, PET, motor oil, and HDPE. In addition, Milpitas sponsors a curbside Christmas tree collection program in conjunction with the Sierra Club¹. The City also has an informal office recycling program for aluminum cans and scratch paper through the print shop.

The City's primary waste hauler (BFI) conducts commercial and industrial recycling activities. There is also a materials recovery facility, the Recyclery, located at the Newby Island landfill that diverts from disposal items such as corrugated cardboard, mixed paper, wood and brush, and metals. This center also accepts aluminum, paper, copper and brass, plastics, and glass, as well as junk mail, polystyrene, and telephone books.

In addition, the City has several drop-off and buy-back centers for CA redemption value materials. The Boy Scouts maintain two newspaper drop-off bins in the City and there is a pilot program for old telephone directories with two drop-off bins in Milpitas.

The City offers a 5 percent purchase preference for goods with recycled content.

Composting

The City of Milpitas is poised to take part in the development of a composting program at the Recyclery located at the Newby Island landfill. Upon approval of the requisite permits, the Recyclery will include a wood waste processing and composting system, turning wood and yard waste into wood fuel and compost. The portion of the organic waste stream that is diverted in this manner through composting qualifies as diversion under AB 939. After 1995, up to ten percent of the material diverted as wood fuel will receive credit as diverted material under AB 939.

1.3 Goals for the SRRE

Definition of Goals and Objectives

The primary goal of the City of Milpitas SRRE is to meet the state-mandated waste diversion goals of 25 and 50 percent by 1995 and 2000, respectively.

Goals are stated in general terms and are not quantified by target dates, waste types, or volumes. Goals are general statements of policy and will be used to guide the overall direction of the solid waste management program within the City of Milpitas.

Goals for the City of Milpitas

1. Meet or exceed state-mandated waste diversion rates through source reduction, recycling, and composting.
2. Maximize source reduction, recycling, and composting opportunities within the City of Milpitas.
3. Minimize adverse environmental impacts and ensure public health and safety.
4. Increase public awareness of the need to reduce and recycle the solid waste stream and provide information on how to participate in the local community programs.
5. Expand and develop the sense of community pride in order to maximize participation in source reduction, recycling, and composting programs.
6. Encourage and foster the participation of solid waste refuse collectors and the commercial sector in the solid waste management planning process and the implementation of necessary programs.
7. Develop and expand local and regional markets for diverted materials.
8. Ensure proper disposal of wastes that cannot be reduced, reused, recycled, or composted.
9. Divert hazardous wastes from disposal in landfills.
10. Extend the lifetime of existing landfills in the County.

Objectives for the City's SRRE are more specific and serve to target certain aspects of the overall goals. Objectives are based in part on local considerations necessary to achieve state-mandated diversion rates. Generally, objectives are stated in measurable and quantifiable terms. Objectives for programs are presented in the respective components of the SRRE.

1.4 Mandated Format of SRRE

Title 14, Chapter 9 of the California Code of Regulations (CCR) specifies the required substance and format of the SRREs to be prepared by each city and county in California. The components of the SRRE that address source reduction, recycling, composting, and special waste must contain the following sections:

- Objectives
- Existing Conditions Description
- Evaluation of Alternatives
- Program Implementation
- Monitoring and Evaluation

The regulations dictate that the alternatives considered for these four components must be evaluated in accordance with ten criteria that reflect a wide range of technical, economic, institutional, and socio-political issues.

The remaining four components of the City's SRRE—education/public information, disposal facility capacity, funding, and integration—deviate somewhat in format from the first four, as will be noted from a review of the SRRE. The apparent lack of consistency in the format is thus dictated by the regulations for Planning Guidelines and Procedures for Preparing and Revising Countywide Integrated Waste Management Plan (Title 14, CCR, Division 7, Chapter 9, Articles 3, 6.1, 6.2, 7, and 8).

1.5 Evaluation of Alternatives in the SRRE

The Planning Guidelines and Procedures for Preparing and Revising Countywide Integrated Waste Management Plans, Section 18733.3, Chapter 9, Division 7, Title 14, California Code of Regulations, require certain criteria to be used in evaluating alternative programs that identified in the source reduction, recycling, composting, and special wastes components. These criteria reflect a broad range of technical, economic, and socio-political considerations. As presented in Section 18733.3 of Article 6.2 of Title 14, the evaluation criteria are as follows:

- Effectiveness
- Hazard

- Ability to Accommodate Change
- Consequences on the Waste Stream
- Implementation Period
- Facility Requirements
- Consistency with Local Plans and Policies
- Institutional Barriers
- Estimated Cost
- End Uses

As structured by the regulations governing AB 939, some of the criteria by which the alternatives are evaluated are positive in tone (e.g., effectiveness), while others are inherently negative (e.g., hazard). A high rating for a positive criterion implies a positive rating; a high rating for a negative criterion implies few or no impacts associated with the potential problem. A detailed discussion of the evaluation criteria and the method used to rank their impact on the alternatives is presented in Appendix A of this SRRE.

1.6 Organization of the SRRE

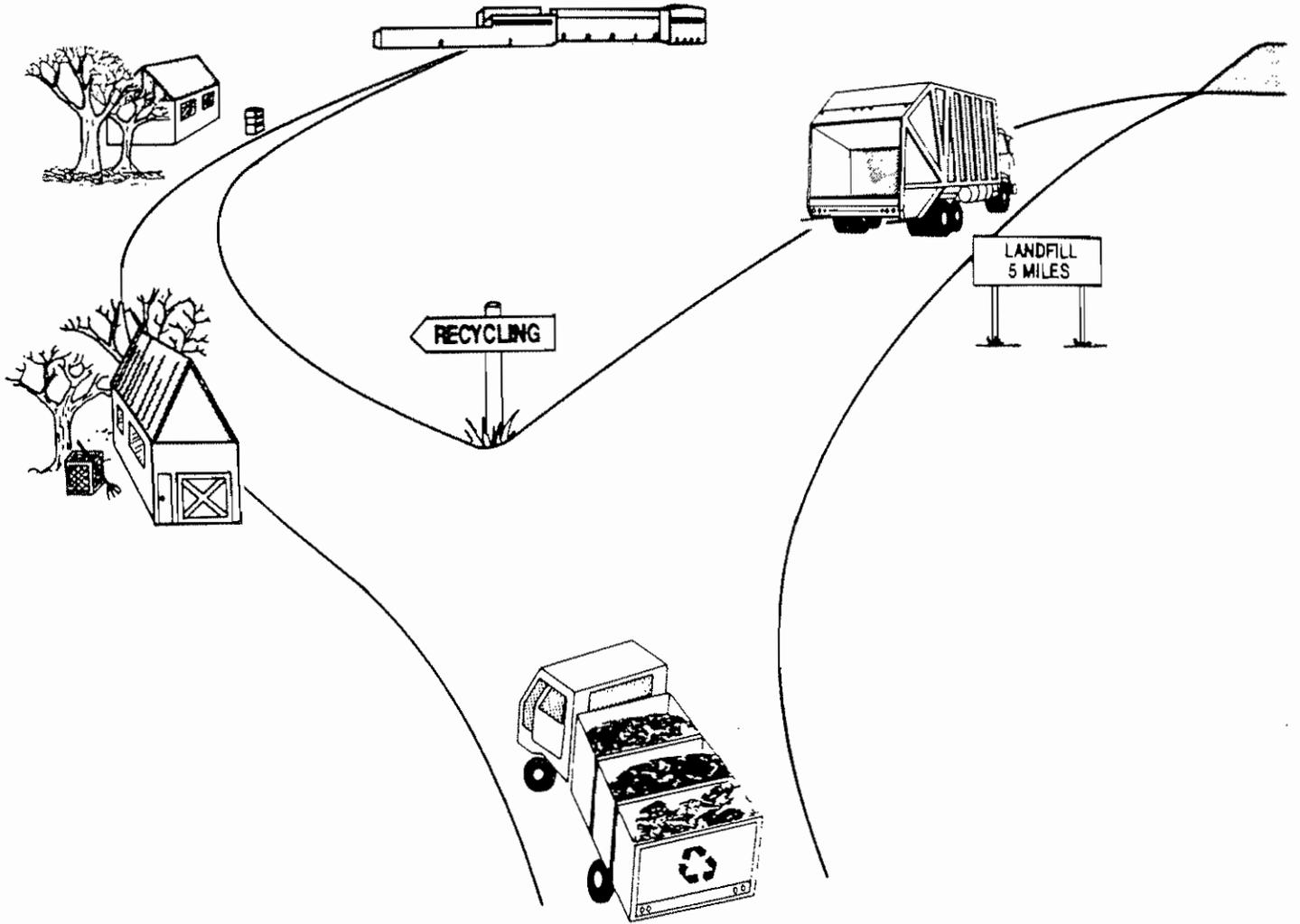
In accordance with the regulations implementing AB 939, the SRRE is presented in the following sections:

- Solid Waste Generation Study - **Section 2**
- Source Reduction Component - **Section 3**
- Recycling Component - **Section 4**
- Composting Component - **Section 5**
- Special Waste Component - **Section 6**
- Education and Public Information Component - **Section 7**
- Disposal Facility Capacity Component - **Section 8**
- Funding Component - **Section 9**
- Integration Component - **Section 10**

The organization of topics within each component generally follows the format presented below. The format deviates slightly for specific components.

- Introduction
- Objectives
- Existing Conditions Description
- Evaluation of Alternatives¹
- Selection of Programs
- Program Implementation
- Monitoring and Evaluation

¹ A description of the criteria used to evaluate the alternatives is included in Appendix A.



SOLID WASTE GENERATION STUDY

2 WASTE GENERATION STUDY

2.1 Introduction

This section presents the results of a waste disposal and diversion characterization study performed for the City of Milpitas. The waste characterization was conducted to satisfy the requirements of an AB 939 initial study. As required by AB 939, the study was divided into two parts: a waste disposal characterization and a waste diversion characterization. When combined, the results of the disposal and diversion characterization yield the total amount of solid waste generated in Milpitas according to the equation defined by AB 939:

$$\text{GEN} = \text{DISP} + \text{DIVERT}$$

where: GEN = the total quantity of solid waste generated within the jurisdiction

DISP = the total quantity of solid waste, generated within the jurisdiction, which is transformed or disposed in permitted solid waste facilities

DIVERT = the total quantity of solid waste, generated within the jurisdiction, which is diverted from permitted solid waste transformation and disposal facilities, through existing source reduction, recycling, and composting programs.

The waste disposal characterization was performed using comparable jurisdiction data for waste disposal composition and jurisdiction specific data for waste quantities. Waste diversion quantities were determined using a material accounting system that collected information from both the generators of diverted materials and from the collectors of those materials. When combined, the information from the two sources amounted to a comprehensive accounting of solid wastes diverted from the Milpitas

waste stream. Moreover, in many cases, the combined information provided a cross-check of reported quantities from two sources.

The waste generation study also attempted to measure the amount of source reduction occurring in Milpitas. As with the diversion study, a survey technique was developed to estimate the amount of source reduction occurring with several clearly defined materials or products. Details of the source reduction, waste disposal, and waste diversion studies are presented in the following sections. Using information from the waste generation study and the other components of the SRRE, a 15-year projection is included for the amounts and types of waste expected to be generated under the current solid waste management conditions as well as those proposed in the SRRE.

2.2 Demographic Information

The City of Milpitas is located 45 miles south of San Francisco in northern Santa Clara County, adjoining the City of Fremont to the north and the City of San Jose to the south. The City is 13.5 square miles in area and consists of a mixture of residential, commercial, industrial, and open-space land use. According to information provided by the City's Planning Department, the preliminary data from the 1990 Census shows 14,465 housing units and a population of 50,686.

The preliminary census data reports the density of the population to be about 3,680 persons per square mile. Approximately 18 percent of the population is Hispanic, 33 percent Asian, 5 percent black and 42 percent white. According to ABAG Projections '90, the estimated mean family income is \$51,200.

The Chamber of Commerce reports that the Milpitas business community is made up of numerous small businesses and 280 large manufacturing companies, including computer and semiconductor firms, the school district, a warehouse, City government, developers, and a large department store. Together these larger businesses employ approximately 16,000 workers. Also within City limits are a County park, a correctional facility, and two golf courses. ABAG Projection '90 estimates 37,820 jobs in the City in 1990.

2.3 Waste Stream Flow

In keeping with the requirements of AB 939, the City's waste stream has been segmented into the following sources:

- Residential: waste originating from single- and multiple-family dwellings.
- Commercial: waste originating from wholesale and retail distribution operations, institutions (e.g., hospitals and education facilities), service operations (offices and repair facilities), and governmental operations.
- Industrial/roll-off: wastes collected in roll-off containers and typically originating from industrial, commercial, construction/demolition, and other sources.
- Other: AB 939 allows other source categories to be defined. For this study, self-haul wastes were defined as a separate category; these are wastes self-hauled by residents or businesses directly to the Newby Island landfill.

Because Milpitas has a considerable amount of commercial/industrial activity, the residential waste segment is relatively small compared to the nonresidential segments (i.e., commercial, industrial, construction, demolition, and self haul). Residential waste accounts for approximately 16 percent of waste from Milpitas.

Solid wastes flow from the generators of Milpitas' wastes into disposal or recovery channels through a variety of flowpaths, including

- City-franchised residential and nonresidential garbage collection (via BFI)
- City-franchised curbside collection of selected recyclables, for all single-family dwellings in the City (via BFI)
- Refuse self-hauled to the landfill
- A landfill drop-off facility that accepts a variety of materials dropped off by self-haulers
- Several private collection programs that focus on nonresidential sources

- Numerous nonprofit and private collectors that collect a variety of recyclable materials

After collection, wastes generated in the City of Milpitas enter one of four channels: landfill disposal, transformation via incineration, composting, or recycling. Under the present regulations, channeling waste into recycling and composting qualifies as waste diversion. Details of the waste disposal and diversion studies are presented in the following subsections.

2.4 Solid Waste Disposal Characterization Study

The purpose of the solid waste disposal study was to estimate the quantities of materials that were generated by the residential and business segments within the City of Milpitas and are being disposed of by landfilling. Both waste quantity and composition information were collected during 1990 to provide baseline information for SRRE planning efforts.

2.4.1 Current Waste Collection and Disposal Practices

Most of the solid waste destined for disposal is collected by the City's franchised hauler, BFI. BFI collects both residential and non-residential garbage, including commercial, industrial, and construction/demolition wastes. All of the wastes collected by BFI for disposal are landfilled at the BFI-owned and operated Newby Island landfill, which is located nearby in San Jose. A small portion of industrial/roll-off waste is collected by other permitted haulers and is taken to the Zanker Road Landfill. A small amount of waste destined for landfilling is delivered by the City or other governmental agencies to the Newby Island Landfill, including the Elmwood correctional facility. Small haulers, residents, and contractors also self-haul wastes directly to the landfill. Self-haul wastes generally consist of bulky items that are not suitable for collection by conventional residential and commercial packer trucks.

There are no permitted waste disposal facilities located in Milpitas; all of the waste from the City that is destined for disposal is delivered to facilities located in San Jose.

2.4.2 Methodology

The waste disposal characterization consists of two elements of information that, when combined, yield the results required by AB 939. The first element is an estimate of the composition of each of the waste stream

segments defined in Section 2.3, which are residential, commercial, industrial/roll-off, and self-haul waste. Waste composition is a description of the proportions by weight of various materials in a waste stream.

The second element measures the total flow rate of each waste stream segment. Flow rate is based on scalehouse records and is expressed in units of weight per time, such as tons per day.

Multiplying the flow rate for a waste stream segment by the corresponding segment's composition yields an estimate of flowrate by material types for that segment, such as the number of tons per day of newspaper or aluminum cans.

Waste Quantity Investigations. The waste quantity investigation consisted of gathering scalehouse records from the various disposal facilities and soliciting quantity records from the private haulers. In some cases, particularly for commercial waste, quantities reported by the waste haulers were important for this study because collection routes commonly cross jurisdictional boundaries. In cases where collection routes pickup waste from more than one jurisdiction before being weighed at the disposal facility, jurisdiction specific waste quantities cannot be measured directly. As a result, the commercial waste hauler cooperated with the City and the study team by providing apportioned quantities for Milpitas, based on routing details. Similarly, waste quantities from those mixed commercial and residential routes were also apportioned by the hauler (BFI).

Quantities of industrial/roll-off and self-haul waste originating from the City were obtained from BFI - Newby Island Landfill records.

Waste Composition Investigation. Waste composition for the "disposed of" portion of the waste stream was obtained employing the use of comparable jurisdiction solid waste generation studies and data. Article 6.1, Section 18724 (Additional Requirements and Guidelines for the Initial Solid Waste Generation Study) states that a jurisdiction may use pre-existing solid waste generation studies that have been prepared subsequent to 1984, by the Board and/or by jurisdictions in California that have similar demographic, economic, and solid waste characteristics.

The following three data sources from north Santa Clara County were used for the Solid Waste Disposal Characterization for the City of Milpitas:

- *City of Santa Clara Initial Waste Characterization Study, December, 1990 [1]*

- *Solid Waste Generation Study for the City of Palo Alto*, August, 1990 [2]
- *City of Sunnyvale's Initial Waste Characterization Study*, October, 1990 [3]

Located in the north County, Milpitas is an integral part of the urban expansion that comprises Santa Clara County. Milpitas has residential, commercial, and industrial sectors similar in makeup to other cities in the north county; it is commonly referred to as the "Silicon Valley." Table 2-1 summarizes demographic data for the comparable jurisdictions included in this analysis.¹

The three studies used as a basis for estimating the City's waste composition encompass data from three neighboring cities. Each comparable study was conducted in compliance with AB 939 guidelines within the last year, and each employed the quantitative field analysis method.

The generated waste composition database developed from these three studies and used as a basis for the generated waste composition for Milpitas is detailed in Appendix Tables B-1 through B-3.

The waste generation habits in all the cities were assumed to be similar. However, each of the cities had different recycling rates. Therefore, the comparable data used in this analysis was based on the sum of disposal plus diversion. That is, the composition of waste generated, not disposed of, in the three comparable cities was used as a basis for determining the composition of waste generated in Milpitas. More specifically, to obtain the waste-generated composition for Milpitas, the waste-generated compositions from the three data sources were averaged. The average generated waste composition from these three jurisdictions is presented in Appendix B, Table B-4. Multiplying the average generated waste composition for residential, commercial, industrial, and self-haul segments by the total waste quantity for each segment yielded a list of annual waste quantities by material type and segment. [For example, percent aluminum cans (residential) x residential waste quantities generated = tons of aluminium cans generated (residential)].

Finally, the portion of the generated waste stream that was landfilled was computed by subtracting waste diversion quantities from the list of

¹ All tables are presented at the end of this component.

annually generated waste quantities. [For example: tons of aluminum cans generated (residential) minus tons of aluminum cans diverted (residential) = tons of aluminum cans disposed of (residential)].

Waste diversion quantities are discussed below in Section 2.5. Waste disposal quantities were also expressed as a "disposed of" waste composition by dividing the annual quantity of the material component by the total annual quantity of the respective wastestream and then multiplying by 100. [For example: 700 tons/year of aluminum cans disposed of, divided by 70,000 tons/year of all waste disposed of (residential) equals percent aluminum cans disposed of (residential)/year].

2.4.3 Results

Table 2-2 summarizes "disposed of" waste quantities for the City of Milpitas from residential, commercial, industrial/roll-off, and self-haul wastes: together these waste types totaled 79,036 tons in 1990. Expressed in terms of landfill volume, assuming an in-place density of 1,200 lbs/yd³, the 79,036 annual tons is equivalent to 131,727 yd³. (The source of the in-place density value is EMCON's Landfill Engineering Group, June, 1991).

Regarding the seasonal variation in disposed of waste quantities, landfill records for the Newby Island Landfill indicate that the total flow rate of waste received at the landfill varies from month to month. Compared to the average monthly flow rate, the total disposed of waste flow rate is highest in October, at 22 percent more than average month, and lowest in December, at 39 percent less than the average monthly rate. The total disposed of flow rate includes the combined effect of waste flow from residential, commercial, industrial, and self-haul sources. The usually low flow in December appears to result from the combined effect of the holiday and plant shutdowns, and a seasonal low in yard waste generation.

The average weight percentages for component materials in residential, commercial, industrial/roll-off, and self-haul wastes are presented in Table 2-3. The composition data are presented on a net (wet weight) basis. Table 2-4 presents the annual waste flow for residential, commercial, industrial/roll-off, and self-haul wastes in terms of tons.

2.5 Solid Waste Diversion Characterization

2.5.1 Objective of the Study

The objective of the waste diversion characterization study is to determine the quantity and types of materials that are currently being diverted from permitted solid waste disposal facilities. The diversion quantities reflect the amount of materials that are generated in the City and diverted from the landfill via source reduction, recycling, and composting. Only those materials normally disposed of at permitted solid waste landfills, representing at least 0.001 percent of the waste stream, count towards diversion. It is essential to document the existing level of waste reduction in order to determine what type of programs need to be implemented to reach state mandated diversion rates of 25 percent by 1995 and 50 percent by 2000.

2.5.2 Solid Waste Diversion Flow Process

The flow of materials diverted from the waste stream is more complex than that for materials destined for disposal at a landfill. This complexity occurs because the various materials follow many different paths from generators to collectors to intermediate processors to final processors end users. Collected materials must be separated and processed (e.g., contaminants removed, material baled) to meet market specifications, and the processing is often done in facilities dedicated to only one type of material. Several processors might be involved between the generator and the end user.

Much of the collected materials in the City follows a similar path, flowing from the generator to a collector, who may sell the material to a dealer. In turn, the dealer processes the material before it is ultimately sold to an end user; in some cases the dealer also acts as a collector.

2.5.3 Current Solid Waste Diversion

The following recycling programs were available to waste generators in the City in 1990. These programs were in the solid waste diversion study:

- four California certified redemption centers
- a City - sponsored source reduction program
- one non-profit program that collects newspapers

- commercial/industrial collection of inert solids, wood waste, tires and rubber
- private collectors diverting paper, plastic, glass, metals, organic material and special waste (e.g., white goods and tires).

In 1991 two recycling programs were implemented by City's hauler, BFI, that are expected to contribute significantly to diversion rates in future years. In January 1991, a residential curbside collection program for recyclables was implemented, and in March 1991, a material recovery facility (the Recyclery) went on line.

Also initiated in 1991 was a Christmas tree collection sponsored by BFI and the Loma Prieta chapter of the Sierra Club. This program will not count toward diversion until after 1995 because the waste trees are used as fuel. Pursuant to section 41783 of the Public Resources Code, incineration (transformation) can be counted toward diversion only after 1995. Another program initiated in 1991 was a drop-off program for telephone books, co-sponsored by Pacific Bell. Two telephone book drop-off bins were made available for this pilot program.

The City government and businesses within the City employ source reduction practices, as described in Section 3, Source Reduction Component. In addition, repair and reuse businesses operate within the City, including at least one diaper service.

2.5.4 Methodology

The solid waste diversion characterization used a multi-prong approach to estimate the quantity and types of materials that were diverted from disposal in the City in 1990. Waste diversion data was obtained by the following: (1) a mail survey of commercial and industrial businesses, (2) a mail survey of collectors and processors of recyclable materials, (3) City data, (4) commercial hauler data, and (5) telephone and fax communications (to clarify and supplement, whenever possible, incomplete data collected through the mail survey, as well as to obtain data from additional sources).

Mail Survey. A total of 1,500 businesses were surveyed, with 23 percent responding, and 89 private collectors of recyclable materials were surveyed. Follow-up telephone calls were made to 25 who did not respond to

the survey of private collectors. Through a County-sponsored effort, 46 additional collectors were surveyed, resulting in additional usable responses for the City.

The mailing lists used for the surveys were developed from the following sources:

- City of Milpitas business license list
- San Jose State University, Center for the Development of Recycling
- Santa Clara Valley Manufacturing Group's "Commercial Recycling Guide"
- Sierra Club's "Where to Recycle in Santa Clara County"
- City of Santa Clara's list of recyclers
- Telephone books

Landfill operators, transfer station operators, and BFI, the City's contracted waste hauler, were also contacted for data on their residential and non-residential recycling programs and scavenging activities.

The mail survey included a source reduction questionnaire that was designed to document source reduction activities in the City. In addition, telephone calls were made to a diaper service operating in the City.

Cross Checking. To avoid double counting, the material flow was charted for each waste type. The surveys requested that the businesses and the recyclers involved in recycling, collecting, or processing report the purchasers of their recyclable materials. Data from nonresidential generators that reported collectors for a waste type were eliminated from tabulation when those collectors also reported data for that waste type. Data obtained from collectors that reported purchasers for a waste type were eliminated from tabulation when those purchasers also reported data for that waste type. This approach allowed material to be counted only once and quantities to be estimated with the best available data.

Data Reduction

Waste diversion data was entered into a database. Quantities presented in this report are shown by waste type on an aggregate basis only, in order

to ensure confidentiality of the survey respondents. The following data were tallied:

- source (residential or commercial/industrial waste generators)
- program type (e.g., curbside, drop-off, buy-back)
- quantitative estimates of materials diverted

When recyclers' information was reported for the entire County, the City's share was apportioned according to population projections, as published in Association of Bay Area Governments (ABAG) *Projections '90*.

Conversion Factors

Survey data reported in volume were converted to weight using conversion factors from The National Recycling Coalition's *Measurement Standards and Reporting Guidelines*, October 31, 1989, (see Appendix C). Source reduction data for diapers was calculated using a conversion factor from *Diapers in the Waste Stream*.² Landfill operators and recyclers also reported the following average weights of specific materials:

battery	44 lbs
mattress	40 - 50 lbs
laser toner cartridge	4 lbs. (empty)
25 Aluminum cans	1 lb
6 PET liter bottles	1 lb
Christmas tree	19.4 lbs
tire	25 lbs
flower pot	1 lb

2.5.5 Results

The waste diversion characterization results reflect a conservative diversion estimate of 9 percent of the total solid waste stream. The data obtained from the business and the recycler surveys and from the hauler

² Lehrburger, Carl, *Diapers in the Waste Stream: A Review of Waste Management and Public Policy Issues*, December 1988. Beaudry Communications, Washington, D.C.

and City records were assumed to be the total diversion for the City. Data were not extrapolated. The results of the diversion characterization are presented in Table 2-5 for the residential waste stream and in Table 2-6 for the non-residential waste stream. The quantities shown are estimates in annual tons for 1990. A brief discussion of the results is presented below.

Source Reduction

Except for information on cloth diapers, the source reduction mail survey and the telephone calls provided largely qualitative data on source reduction activities occurring in the City of Milpitas. A total of 63.6 tons of single-use diapers were diverted from the City's residential waste stream in 1990 through the use of reusable cotton diapers. A major diaper service operating in the City reported serving 110 households, each using 50 diapers per week³. Therefore, the number of cloth diapers used per year is estimated as 110 (number of household) x 50 (number of diapers per child per week) x 52 (number of weeks in year) = 286,000 diapers per year.

Dividing this number of diapers by 4,500 disposable diapers per ton of garbage yields an estimate of 63.6 tons of garbage per year that were source reduced in the City in 1990, accounting for less than 1 percent of the total solid wastes generated. Thus, 286,000 (diapers per year) divided by 4,500 (disposable diapers/ton)⁴ = 63.6 tons/year approximately.

Residential Recycling

Based on the survey of recyclers and City recycling programs, an estimated 336 tons of solid wastes were diverted in the City in 1990 through residential recycling programs, not including oil (see Table 2-5). These programs include AB 20/20 California redemption programs (114 tons) and Boy Scout newspaper dropoff (170 tons). The estimated amounts by material type that were diverted in 1990 are listed in Table 2-5. The waste type accounting for the largest amount of diversion was newspaper, with 170 tons diverted. California Redemption Value glass was second, with 114 tons diverted.

³ Data from other diaper services in Milpitas were not available.

⁴ See Footnote 2.

Non-Residential Recycling

The estimated quantity of solid wastes diverted from the non-residential sector was 5,982 tons (see Table 2-6). Of this quantity, 143 tons are special wastes, including tires and white goods. The results show that paper (including corrugated containers, high grade ledger paper, and mixed paper), wood wastes, inert solids, and ferrous metal comprise the majority of the diverted waste from the non-residential sector. It is likely that additional quantities of ferrous metals are also being diverted; however, some scrap metal dealers were unwilling to provide data because of proprietary concerns.

Composting

Currently, there are no operating composting programs serving the City of Milpitas; however, BFI, the City's refuse hauler, has plans for future yard waste collection and composting programs at their Recyclery facility. In addition, a composting facility is proposed at the Zanker Road Sanitary Landfill.

2.6 Solid Waste Generation Projections

The planning guidelines for preparing solid waste generation studies require a forecast of solid waste to be generated within the City of Milpitas, and that portion to be diverted and disposed of. A 15-year projection is specified following local adoption of the SRRE. Since the SRRE is due in 1991, the forecast period extends to the year 2005.

The planning guidelines specify acceptable sources of information on which to base forecasts. From the list of acceptable sources, the City elected to base projected growth in waste generation on the State Department of Finance forecast for residential population growth and on the Association of Bay Area Governments (ABAG) publication titled "Projections 90" for the growth in business and industrial activity.. The Department of Finance projects a population growth rate of 2 percent per year. ABAG projects a growth rate in employment for Milpitas of 3 percent. Combining the growth rates of 2 percent for residential and self-haul waste and 3 percent for commercial and industrial waste (in accordance with their current respective proportions in the waste stream) yields an average annual growth rate in the waste stream of 2.48 percent.

Waste generation projections are presented in Tables 2-7 and 2-8. Table 2-7 presents projections of waste diverted and disposed, assuming continuation of current programs. Table 2-8 presents projections assuming implementation of the programs selected by the SRRE.

2.7 Waste Generation Analysis

The solid waste generation analysis is based on the results of the solid waste generation study. It identifies the quantities of materials generated in the City of Milpitas, by waste category, that are currently being diverted and disposed.

The waste generation analysis contains a list of the materials that are currently being disposed of that will be diverted through the programs identified in Sections 4 through 7 of this SRRE. The analysis also addresses the materials that will not be diverted from disposal.

2.7.1 Quantities Diverted and Disposed

Table 2-9 lists, by waste category, the quantities of materials that are currently being diverted and disposed. Only those materials that are defined by AB 939 as "solid waste" are included in the quantities. Some special wastes generated in Milpitas are not considered as "solid waste" under AB 939. Therefore, those quantities are not shown in the table.

2.7.2 Materials Targeted for Diversion

The following is a list of materials that are currently disposed of in Milpitas that are targeted for potential diversion through the programs identified in the Source Reduction, Recycling, Composting, and Special Wastes components (Sections 4 through 7). Only those materials that can be counted towards the AB 939 diversion mandates are shown.

Paper:

corrugated containers
mixed paper
newspaper
high-grade ledger paper

Metals:

aluminum cans
other ferrous
non-ferrous metals, including
aluminum scrap
bi-metal containers
white goods
steel food and beverage cans

Plastics:

PET containers
HDPE containers
film plastics
polystyrene foam
other plastics⁵

Other organics:

yard waste
tires/rubber
wood wastes
textiles/leather

Glass:

CA Redemption Value
other recyclable glass
refillable beverage containers

Other wastes:

inert solids

2.7.3 Materials for Disposal

The following list identifies the materials that are currently being disposed of in Milpitas that will not be diverted from disposal by the programs identified in Sections 4 through 7. The programs identified in Sections 4 through 7 do not target the following list of materials because (1) the materials are either nonrecyclable, (2) the quantity being disposed of is insignificant, or (3) there is no market (existing or future). Only those materials that qualify as solid waste under AB 939 are shown.

Paper:

other paper

Glass:

other non-recyclable glass

Plastics:

other plastics⁵

Other organics:

food waste

⁵ Includes plastic pipe, electrical components, and foamed plastics other than polystyrene foam.

After reviewing waste characterization data from the solid waste generation study and the solid waste generation analysis, the City proposes to target the following solid waste generators as recipients of the City's education and public information programs:

- Commercial/industrial, including institutional and local government
- Residential, including single-family dwellings, apartments and townhomes
- Schools, including education curricula for grades K through 12

The commercial and residential sectors generate different quantities and types of waste. Each sector also has its own unique needs; these differing needs will be addressed in the City's education and public information program (Section 7).

Table 2-10 presents an outline specifying sources of documentation on waste quantities generated, diverted, and disposed of.

Table 2-1

DEMOGRAPHIC DATA FOR COMPARABLE JURISDICTIONS

CITY	COUNTY	POPULATION*	DWELLING UNITS*	PERSONS PER HOUSEHOLD*	MEAN HOUSEHOLD INCOME*	EMPLOYED RESIDENTS*	WASTE STREAM COMPOSITION**	DATE OF WASTE CHARACTERIZATION FIELD STUDY
Milpitas	Santa Clara	47,600	14,210	3.16	51,200	25,200	14%Res 86% Com****	NA ***
Palo Alto	Santa Clara	68,300	26,190	2.31	59,100	41,600	30%Res 70%Com	(8/90)
Sunnyvale	Santa Clara	120,400	50,470	2.36	49,600	76,200	46%Res 54%Com	(10/90)
Santa Clara	Santa Clara	93,400	37,400	2.42	46,800	58,000	46%Res 54%Com	(12/90)

Employment by Sector (Percent)*					
Agriculture & Mining	Mfg & Wholesale	Service	Retail	Other	
Milpitas	0.4	67.4	12.3	10.4	9.5
Palo Alto	0.5	33.3	40.3	12.1	13.8
Sunnyvale	0.2	65.0	18.6	7.1	9.1
Santa Clara	0.2	49.9	26.0	12.6	11.3

* Association of Bay Area Governments Projections 90, December 1989.

** Solid Waste Management Plan for the County of Santa Clara, 1989 Plan Revision, May 1990.

*** The City of Milpitas has chosen to use preexisting solid waste generation studies to characterize the City's waste stream.

****Commercial waste stream composition includes commercial, industrial and self haul waste.

Table 2-2
SUMMARY OF WASTE DISPOSAL QUANTITIES (1990)
City of Milpitas

Source	Tons Per Day-7*	Tons Per Year	Percent
Residential	36	13,032	16
Commercial	37	13,473	17
Industrial/Roll-Off	83	30,371	38
Self-Haul	61	22,160	28
Total**	217	79,036	100

* Based on a 7-day week.
 ** Numbers are rounded. Data reflects quantities disposed of at the Newby Island and Zanker Road landfills, and through transformation.

Table 2-3
SUMMARY OF LANDFILLED WASTE COMPOSITION RESULTS (Weight Percent, 1990)
 City of Milpitas

	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	SELF-HAUL	TOTAL
PAPER: (total)	45.17	46.80	31.38	6.91	29.32
corrugated containers	5.21	13.42	13.39	2.11	8.87
newspaper	14.43	4.26	2.04	0.13	3.92
high grade ledger paper	1.43	4.94	3.76	0.81	2.74
mixed paper	14.79	15.28	7.76	0.33	8.10
other paper	9.31	9.00	4.45	3.24	5.68
PLASTICS: (total)	6.38	6.98	9.42	4.78	7.85
HDPE containers	0.85	1.44	1.24	0.00	0.86
PET containers	0.29	0.14	0.02	0.14	0.12
film plastics	2.40	3.33	2.82	1.01	2.33
other plastics	2.74	5.06	5.33	3.60	4.37
GLASS: (total)	5.03	2.41	1.59	0.05	1.87
refillable bev. containers	0.98	0.57	0.11	0.00	0.30
CA redemption value	1.63	1.19	0.38	0.00	0.62
other recyclable glass	1.90	0.18	0.70	0.03	0.62
other non-recyclable glass	0.53	0.48	0.41	0.03	0.33
METALS: (total)	3.17	7.13	9.87	9.59	9.22
aluminum cans	0.31	0.17	0.15	0.01	0.14
bi-metal containers	0.05	0.05	0.00	0.00	0.02
tin cans	1.16	0.91	0.21	0.00	0.43
other ferrous	1.09	5.47	8.01	8.98	6.71
other aluminum	0.34	0.30	0.17	0.06	0.19
other non-ferrous	0.05	0.02	0.39	0.54	0.31
white goods	0.16	0.21	0.93	0.00	0.42
YARD WASTE: (total)	25.80	8.86	7.78	15.33	12.88
OTHER ORGANICS: (total)	16.26	24.79	22.59	28.43	23.50
food waste	9.10	13.39	1.24	0.55	4.39
tires/rubber	0.61	1.58	1.76	0.00	1.04
wood wastes	1.63	4.89	8.86	16.45	9.13
agricultural crop residues	0.00	0.16	0.00	0.00	0.03
manure	0.12	0.00	0.00	0.00	0.02
textiles/leather	1.35	0.86	4.17	11.07	5.09
other misc. organics	3.45	3.81	6.47	0.36	3.81
OTHER WASTES: (total)	1.99	0.00	17.50	38.23	18.92
inert solids	0.87	0.00	15.91	33.68	15.74
hazardous wastes	0.21	0.00	1.59	1.54	1.08
SPECIAL WASTES: (total)	0.00	0.02	0.00	0.00	0.00
ash	0.00	0.00	0.00	0.00	0.00
sewage sludge	0.00	0.00	0.00	0.00	0.00
industrial sludge	0.00	0.00	0.00	0.00	0.00
asbestos	0.00	0.00	0.00	0.00	0.00
auto shredder waste	0.00	0.00	0.00	0.00	0.00
auto bodies	0.00	0.00	0.00	0.00	0.00
other special wastes	0.00	0.02	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00

**Numbers are rounded.

Table 2-4
SUMMARY OF WASTE DISPOSAL QUANTITIES (Tons, 1990)
 City of Milpitas

	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	SELF-HAUL**	TOTAL
PAPER: (total)	5,887	6,236	9,534	1,466	23,124
corrugated containers	679	1,784	4,066	467	6,997
newsprint	1,880	566	619	28	3,094
high grade ledger paper	186	656	1,143	179	2,164
mixed paper	1,928	2,033	2,356	73	6,390
other paper	1,214	1,196	1,350	719	4,478
PLASTICS: (total)	819	1,327	2,862	1,053	6,058
HDPE containers	111	191	377	0	679
PET containers	38	19	5	32	95
film plastics	313	443	858	223	1,836
other plastics	357	673	1,619	798	3,448
GLASS: (total)	638	321	483	11	1,473
refillable bev. containers	128	76	33	0	236
CA redemption value	212	158	115	0	486
other recyclable glass	247	23	213	6	489
other non-recyclable glass	70	63	124	6	262
METALS: (total)	433	943	2,997	2,126	6,482
aluminum cans	40	22	45	2	110
bi-metal containers	7	7	0	0	14
tin cans	152	121	64	0	337
other ferrous	143	727	2,434	1,991	5,294
other aluminum	44	40	51	13	148
other non-ferrous	7	2	119	120	248
white goods	21	28	281	0	330
YARD WASTE: (total)	2,997	1,178	2,349	3,398	9,923
OTHER ORGANICS: (total)	2,119	3,461	6,833	8,300	18,712
food waste	1,185	1,781	377	121	3,465
tires/rubber	80	387	533	0	1,000
wood wastes	213	650	2,689	3,645	7,198
agricultural crop residues	0	21	0	0	21
manure	15	0	0	0	15
textiles/leather	176	114	1,267	2,453	4,011
other misc. organics	450	507	1,966	80	3,002
OTHER WASTES: (total)	141	1	5,313	7,807	13,263
inert solids	113	1	4,833	7,464	12,411
hazardous wastes	28	0	482	342	852
SPECIAL WASTES***: (total)	0	2	0	0	2
ash	0	0	0	0	0
sewage sludge	0	0	0	0	0
industrial sludge	0	0	0	0	0
asbestos	0	0	0	0	0
auto shredder waste	0	0	0	0	0
auto bodies	0	0	0	0	0
other special wastes	0	2	0	0	2
TOTAL	13,932	13,473	30,371	22,160	79,936

* Numbers are rounded. Quantities reflect wastes disposed of by landfilling, and tires disposed of by transformation.

** Approximately 8,033 tons of the "self-haul" total is a result of the free dump day for Milpitas' residents.

*** Excepting "other special wastes", special wastes are not considered solid wastes for purposes of this study.

Table 2-5
 DIVERSION RATES BY MATERIAL FOR RESIDENTIAL WASTE (Tons, 1990)
 City of Milpitas

COMPONENT	DISPOSED		DIVERTED		GENERATED		DIVERSION RATE (percent)
	Residential		Recycling	Source Reduction			
PAPER: (total)	5,887				6,057		
corrugated containers		679	0	0		679	0
newspaper		1,880	170	0		2,050	8
high grade ledger paper		186	0	0		186	0
mixed paper		1,928	0	0		1,928	0
other paper		1,214	0	0		1,214	0
PLASTICS: (total)	819				833		
HDPE containers		111	0	0		111	0
PET containers		38	14	0		52	27
film plastics		313	0	0		313	0
other plastics		357	0	0		357	0
GLASS: (total)	656				785		
refillable bev. containers		128	0	0		128	0
CA redemption value		212	114	0		326	35
other recyclable glass		247	15	0		262	6
other non-recyclable glass		70	0	0		70	0
METALS: (total)	413				437		
aluminum cans		40	23	0		64	37
bi-metal containers		7	0	0		7	0
tin cans		152	0	0		152	0
other ferrous		143	0	0		143	0
other aluminum		44	0	0		44	0
other non-ferrous		7	0	0		7	0
white goods		21	0	0		21	0
YARD WASTE: (total)	2,997	2,997	0	0	2,997	2,997	0
OTHER ORGANICS: (total)	2,119				2,183		
food waste		1,185	0	0		1,185	0
tires/rubber		80	0	0		80	0
wood wastes		213	0	0		213	0
agricultural crop residues		0	0	0		0	0
manure		15	0	0		15	0
textiles/leather		176	0	0		176	0
other misc. organics		450	0	64		514	12
OTHER WASTES: (total)	141				141		
inert solids		113	0	0		113	0
hazardous wastes		28	0	0		28	0
SPECIAL WASTES: (total)	0				0		
ash		0	0	0		0	0
sewage sludge		0	0	0		0	0
industrial sludge		0	0	0		0	0
asbestos		0	0	0		0	0
auto shredder waste		0	0	0		0	0
auto bodies		0	0	0		0	0
other special wastes		0	0	0		0	0
TOTAL		13,032	336	64		13,432	3
* Numbers are rounded.							

Table 2-6
DIVERSION RATES BY MATERIAL FOR NON-RESIDENTIAL WASTE (Tons, 1990)
 City of Milpitas

COMPONENT	DISPOSED			DIVERTED Recycling	GENERATED	DIVERSION RATE (percent)
	Commercial	Industrial	Self Haul			
PAPER: (total)	6,236	9,534	1,466	823	18,504	12
corrugated containers	1,784	4,066	467	10	7,141	1
newsprint	566	619	28	236	1,224	11
high grade ledger paper	656	1,143	179	198	2,214	4
mixed paper	2,033	2,356	73	0	4,660	0
other paper	1,196	1,350	719	0	3,265	25
PLASTICS: (total)	1,327	2,862	1,053	190	5,571	0
HDPE containers	191	377	0	0	758	0
PET containers	19	5	32	0	57	2
film plastics	443	858	223	37	1,561	3
other plastics	673	1,619	798	105	3,196	5
GLASS: (total)	321	483	11	6	1,026	32
refillable bev. containers	76	33	0	0	115	23
CA redemption value	158	115	0	130	404	0
other recyclable glass	23	213	6	73	315	0
other non-recyclable glass	63	124	6	0	193	20
METALS: (total)	948	2,997	2,126	17	6,350	42
aluminum cans	22	45	2	5	87	0
bi-metal containers	7	0	0	0	12	0
tin cans	121	64	0	0	185	5
other ferrous	727	2,434	1,991	254	5,406	0
other aluminum	40	51	13	0	105	1
other non-ferrous	2	119	120	1	243	1
white goods	28	281	0	4	313	0
YARD WASTE: (total)	1,178	2,349	3,398	0	6,925	0
OTHER ORGANICS: (total)	3,284	6,833	6,300	0	19,030	0
food waste	1,781	377	121	0	2,279	13
tires/rubber	387	533	0	139	1,060	25
wood wastes	650	2,689	3,645	2,298	9,283	0
agricultural crop residues	21	0	0	0	21	0
manure	0	0	0	0	0	0
textiles/leather	114	1,267	2,453	0	3,835	0
other misc. organics	507	1,966	80	0	2,552	0
OTHER WASTES: (total)	1	5,313	7,807	1,455	14,576	11
inert solids	1	4,833	7,464	0	13,752	0
hazardous wastes	0	482	342	0	824	0
SPECIAL WASTES: (total)	2	0	0	0	3	0
ash	0	0	0	0	0	0
sewage sludge	0	0	0	0	0	0
industrial sludge	0	0	0	0	0	0
asbestos	0	0	0	0	0	0
auto shredder waste	0	0	0	0	0	0
auto bodies	0	0	0	0	0	0
other special wastes	2	0	0	1	3	17
TOTAL	13,473	30,371	22,160	5,982	71,986	8

* Numbers are rounded.

Table 2-7
15 Year Waste Generation Projections
Assuming Current Diversion Rates
City of Milpitas

WASTE TYPE	1991				1992			
	Disposal	Diversion	Generation	Diversion Percent	Disposal	Diversion	Generation	Diversion Percent
Paper								
corrugated containers	7,193	903	8,096	11.1%	7,333	920	8,253	11.1%
newspaper	3,147	197	3,344	5.9%	3,208	201	3,409	5.9%
high grade ledger paper	2,205	259	2,464	10.5%	2,248	264	2,512	10.5%
mixed paper	6,559	217	6,776	3.2%	6,686	221	6,907	3.2%
other paper	4,576	0	4,576	0.0%	4,665	0	4,665	0.0%
Subtotal	23,680	1,576	25,256		24,139	1,607	25,746	
Plastic								
HDPE containers	672	208	880	23.7%	685	212	897	23.7%
PET containers	72	16	88	17.8%	74	16	90	17.8%
Film plastics	1,895	41	1,936	2.1%	1,932	41	1,974	2.1%
Other Plastics	3,581	115	3,696	3.1%	3,650	117	3,768	3.1%
Subtotal	6,220	380	6,600		6,341	387	6,728	
Glass								
Refillable glass	257	7	264	2.6%	262	7	269	2.6%
CA redemption glass	525	267	792	33.8%	535	273	807	33.8%
Other recyclable glass	519	97	616	15.7%	530	98	628	15.7%
Other non-recyclable glass	264	0	264	0.0%	269	0	269	0.0%
Subtotal	1,565	371	1,936		1,596	378	1,974	
Metals								
Aluminum cans	132	44	176	25.2%	134	45	179	25.2%
Bi-metal Containers	0	0	0	0.0%	0	0	0	0.0%
tin cans	352	0	352	0.0%	359	0	359	0.0%
other ferrous	5,441	279	5,720	4.9%	5,547	284	5,831	4.9%
other aluminum	176	0	176	0.0%	179	0	179	0.0%
other non-ferrous	262	2	264	0.6%	268	2	269	0.6%
white goods	348	4	352	1.1%	355	4	359	1.1%
Subtotal	6,712	328	7,040		6,842	335	7,177	
Yard Waste								
Yard waste	10,208	0	10,208	0.0%	10,406	0	10,406	0.0%
Subtotal	10,208	0	10,208		10,406	0	10,406	
Organics								
Food waste	3,608	0	3,608	0.0%	3,678	0	3,678	0.0%
Tires and rubber	992	152	1,144	13.3%	1,011	155	1,166	13.3%
Wood waste	7,248	2,520	9,768	25.8%	7,388	2,569	9,958	25.8%
Crop residues	0	0	0	0.0%	0	0	0	0.0%
Manure	0	0	0	0.0%	0	0	0	0.0%
Textiles and leather	4,136	0	4,136	0.0%	4,216	0	4,216	0.0%
Other misc. organics	3,098	70	3,168	2.2%	3,158	72	3,229	2.2%
Subtotal	19,081	2,743	21,824		19,451	2,796	22,248	
Other Wastes								
inert solids	12,660	1,596	14,256	11.2%	12,906	1,627	14,533	11.2%
Hazardous waste	880	0	880	0.0%	897	0	897	0.0%
Subtotal	13,540	1,596	15,136		13,803	1,627	15,430	
Total Other Wastes								
Ash	0	0	0	0.0%	0	0	0	0.0%
Sewage sludge	0	0	0	0.0%	0	0	0	0.0%
Industrial sludge	0	0	0	0.0%	0	0	0	0.0%
Asbestos	0	0	0	0.0%	0	0	0	0.0%
Auto shredder	0	0	0	0.0%	0	0	0	0.0%
Auto bodies	0	0	0	0.0%	0	0	0	0.0%
Other special waste	0	0	0	0.0%	0	0	0	0.0%
Subtotal	0	0	0		0	0	0	
Total Waste *	81,000	7,000	88,000	7.5%	83,000	7,000	90,000	7.5%

* Rounded to the nearest 1,000 tons

Table 2-7 cont'd
 15 Year Waste Generation Projections
 Assuming Current Diversion Rates
 City of Milpitas

WASTE TYPE	1993				1994			
	Disposal	Diversion	Generation	Diversion Percent	Disposal	Diversion	Generation	Diversion Percent
Paper								
corrugated containers	7,515	943	8,458	11.1%	7,701	966	8,668	11.1%
newspaper	3,287	206	3,493	5.9%	3,369	211	3,580	5.9%
high grade ledger paper	2,304	270	2,574	10.5%	2,361	277	2,638	10.5%
mixed paper	6,852	227	7,079	3.2%	7,022	232	7,254	3.2%
other paper	4,780	0	4,780	0.0%	4,899	0	4,899	0.0%
Subtotal	24,738	1,647	26,385		25,352	1,687	27,039	
Plastic								
HDPE containers	702	218	919	23.7%	719	223	942	23.7%
PET containers	76	16	92	17.8%	77	17	94	17.8%
Film plastics	1,980	42	2,023	2.1%	2,029	43	2,073	2.1%
Other Plastics	3,741	120	3,861	3.1%	3,834	123	3,957	3.1%
Subtotal	6,498	397	6,895		6,659	407	7,066	
Glass								
Refillable glass	269	7	276	2.6%	275	7	283	2.6%
CA redemption glass	548	279	827	33.8%	562	286	848	33.8%
Other recyclable glass	543	101	644	15.7%	556	103	659	15.7%
Other non-recyclable glass	276	0	276	0.0%	283	0	283	0.0%
Subtotal	1,635	387	2,023		1,676	397	2,073	
Metals								
Aluminum cans	138	46	184	25.2%	141	47	188	25.2%
Bi-metal Containers	0	0	0	0.0%	0	0	0	0.0%
tin cans	368	0	368	0.0%	377	0	377	0.0%
other ferrous	5,685	291	5,976	4.9%	5,826	298	6,124	4.9%
other aluminum	184	0	184	0.0%	188	0	188	0.0%
other non-ferrous	274	2	276	0.6%	281	2	283	0.6%
white goods	364	4	368	1.1%	373	4	377	1.1%
Subtotal	7,012	343	7,355		7,185	352	7,537	
Yard Waste								
Yard waste	10,664	0	10,664	0.0%	10,929	0	10,929	0.0%
Subtotal	10,664	0	10,664		10,929	0	10,929	
Organics								
Food waste	3,769	0	3,769	0.0%	3,863	0	3,863	0.0%
Tires and rubber	1,036	159	1,195	13.3%	1,062	163	1,225	13.3%
Wood waste	7,571	2,633	10,205	25.8%	7,759	2,698	10,458	25.8%
Crop residues	0	0	0	0.0%	0	0	0	0.0%
Manure	0	0	0	0.0%	0	0	0	0.0%
Textiles and leather	4,321	0	4,321	0.0%	4,428	0	4,428	0.0%
Other misc. organics	3,236	73	3,310	2.2%	3,316	75	3,392	2.2%
Subtotal	19,934	2,866	22,799		20,428	2,937	23,365	
Other Wastes								
Inert solids	13,226	1,667	14,893	11.2%	13,554	1,709	15,262	11.2%
Hazardous waste	919	0	919	0.0%	942	0	942	0.0%
Subtotal	14,145	1,667	15,812		14,496	1,709	16,205	
Total Other Wastes								
Ash	0	0	0	0.0%	0	0	0	0.0%
Sewage sludge	0	0	0	0.0%	0	0	0	0.0%
Industrial sludge	0	0	0	0.0%	0	0	0	0.0%
Asbestos	0	0	0	0.0%	0	0	0	0.0%
Auto shredder	0	0	0	0.0%	0	0	0	0.0%
Auto bodies	0	0	0	0.0%	0	0	0	0.0%
Other special waste	0	0	0	0.0%	0	0	0	0.0%
Subtotal	0	0	0		0	0	0	
Total Waste *	85,000	7,000	92,000	7.5%	87,000	7,000	94,000	7.5%

* Rounded to the nearest 1,000 tons

Table 2-7 cont'd
 15 Year Waste Generation Projections
 Assuming Current Diversion Rates
 City of Milpitas

WASTE TYPE	1995				1996			
	Disposal	Diversion	Generation	Diversion Percent	Disposal	Diversion	Generation	Diversion Percent
Paper								
corrugated containers	7,892	990	8,883	11.1%	8,088	1,015	9,103	11.1%
newspaper	3,452	217	3,669	5.9%	3,538	222	3,760	5.9%
high grade ledger paper	2,419	284	2,703	10.5%	2,479	291	2,770	10.5%
mixed paper	7,196	238	7,434	3.2%	7,374	244	7,619	3.2%
other paper	5,021	0	5,021	0.0%	5,145	0	5,145	0.0%
Subtotal	25,980	1,729	27,710		26,625	1,772	28,397	
Plastic								
HDPE containers	737	229	965	23.7%	755	234	989	23.7%
PET containers	79	17	97	17.8%	81	18	99	17.8%
Film plastics	2,080	45	2,124	2.1%	2,131	46	2,177	2.1%
Other Plastics	3,929	126	4,055	3.1%	4,026	129	4,156	3.1%
Subtotal	6,824	417	7,241		6,994	427	7,421	
Glass								
Refillable glass	282	7	290	2.6%	289	8	297	2.6%
CA redemption glass	576	293	869	33.8%	590	301	890	33.8%
Other recyclable glass	570	106	676	15.7%	584	109	693	15.7%
Other non-recyclable glass	290	0	290	0.0%	297	0	297	0.0%
Subtotal	1,717	407	2,124		1,760	417	2,177	
Metals								
Aluminum cans	144	49	193	25.2%	148	50	198	25.2%
Bi-metal Containers	0	0	0	0.0%	0	0	0	0.0%
tin cans	386	0	386	0.0%	396	0	396	0.0%
other ferrous	5,970	306	6,276	4.9%	6,118	313	6,431	4.9%
other aluminum	193	0	193	0.0%	198	0	198	0.0%
other non-ferrous	288	2	290	0.6%	295	2	297	0.6%
white goods	382	4	386	1.1%	391	4	396	1.1%
Subtotal	7,364	360	7,724		7,546	369	7,915	
Yard Waste								
Yard waste	11,200	0	11,200	0.0%	11,477	0	11,477	0.0%
Subtotal	11,200	0	11,200		11,477	0	11,477	
Organics								
Food waste	3,959	0	3,959	0.0%	4,057	0	4,057	0.0%
Tires and rubber	1,088	167	1,255	13.3%	1,115	171	1,286	13.3%
Wood waste	7,952	2,765	10,717	25.8%	8,149	2,834	10,983	25.8%
Crop residues	0	0	0	0.0%	0	0	0	0.0%
Manure	0	0	0	0.0%	0	0	0	0.0%
Textiles and leather	4,538	0	4,538	0.0%	4,650	0	4,650	0.0%
Other misc. organics	3,399	77	3,476	2.2%	3,483	79	3,562	2.2%
Subtotal	20,935	3,010	23,944		21,454	3,084	24,538	
Other Wastes								
Inert solids	13,890	1,751	15,641	11.2%	14,235	1,794	16,029	11.2%
Hazardous waste	965	0	965	0.0%	989	0	989	0.0%
Subtotal	14,856	1,751	16,606		15,224	1,794	17,018	
Total Other Wastes								
Ash	0	0	0	0.0%	0	0	0	0.0%
Sewage sludge	0	0	0	0.0%	0	0	0	0.0%
Industrial sludge	0	0	0	0.0%	0	0	0	0.0%
Asbestos	0	0	0	0.0%	0	0	0	0.0%
Auto shredder	0	0	0	0.0%	0	0	0	0.0%
Auto bodies	0	0	0	0.0%	0	0	0	0.0%
Other special waste	0	0	0	0.0%	0	0	0	0.0%
Subtotal	0	0	0		0	0	0	
Total Waste *	89,000	7,000	97,000	7.5%	92,000	7,000	99,000	7.5%

* Rounded to the nearest 1,000 tons

Table 2-7 cont'd
 15 Year Waste Generation Projections
 Assuming Current Diversion Rates
 City of Milpitas

WASTE TYPE	1997				1998			
	Disposal	Diversion	Generation	Diversion Percent	Disposal	Diversion	Generation	Diversion Percent
Paper								
corrugated containers	8,288	1,040	9,329	11.1%	8,494	1,066	9,560	11.1%
newspaper	3,626	227	3,853	5.9%	3,716	233	3,949	5.9%
high grade ledger paper	2,541	298	2,839	10.5%	2,604	306	2,910	10.5%
mixed paper	7,557	250	7,808	3.2%	7,745	256	8,001	3.2%
other paper	5,273	0	5,273	0.0%	5,403	0	5,403	0.0%
Subtotal	27,285	1,816	29,101		27,962	1,861	29,823	
Plastic								
HDPE containers	774	240	1,014	23.7%	793	246	1,039	23.7%
PET containers	83	18	101	17.8%	85	19	104	17.8%
Film plastics	2,184	47	2,231	2.1%	2,238	48	2,286	2.1%
Other Plastics	4,126	133	4,259	3.1%	4,228	136	4,364	3.1%
Subtotal	7,167	438	7,605		7,345	448	7,793	
Glass								
Refillable glass	296	8	304	2.6%	304	8	312	2.6%
CA redemption glass	604	308	913	33.8%	619	316	935	33.8%
Other recyclable glass	599	111	710	15.7%	613	114	727	15.7%
Other non-recyclable glass	304	0	304	0.0%	312	0	312	0.0%
Subtotal	1,804	427	2,231		1,848	438	2,286	
Metals								
Aluminum cans	152	51	203	25.2%	156	52	208	25.2%
Bi-metal Containers	0	0	0	0.0%	0	0	0	0.0%
tin cans	406	0	406	0.0%	416	0	416	0.0%
other ferrous	6,270	321	6,591	4.9%	6,425	329	6,754	4.9%
other aluminum	203	0	203	0.0%	208	0	208	0.0%
other non-ferrous	302	2	304	0.6%	310	2	312	0.6%
white goods	401	5	406	1.1%	411	5	416	1.1%
Subtotal	7,733	378	8,112		7,925	388	8,313	
Yard Waste								
Yard waste	11,762	0	11,762	0.0%	12,054	0	12,054	0.0%
Subtotal	11,762	0	11,762		12,054	0	12,054	
Organics								
Food waste	4,157	0	4,157	0.0%	4,260	0	4,260	0.0%
Tires and rubber	1,142	176	1,318	13.3%	1,171	180	1,351	13.3%
Wood waste	8,351	2,904	11,255	25.8%	8,558	2,976	11,534	25.8%
Crop residues	0	0	0	0.0%	0	0	0	0.0%
Manure	0	0	0	0.0%	0	0	0	0.0%
Textiles and leather	4,766	0	4,766	0.0%	4,884	0	4,884	0.0%
Other misc. organics	3,569	81	3,650	2.2%	3,658	83	3,741	2.2%
Subtotal	21,986	3,161	25,146		22,531	3,239	25,770	
Other Wastes								
Inert solids	14,588	1,839	16,426	11.2%	14,949	1,884	16,834	11.2%
Hazardous waste	1,014	0	1,014	0.0%	1,039	0	1,039	0.0%
Subtotal	15,602	1,839	17,440		15,988	1,884	17,873	
Total Other Wastes								
Ash	0	0	0	0.0%	0	0	0	0.0%
Sewage sludge	0	0	0	0.0%	0	0	0	0.0%
Industrial sludge	0	0	0	0.0%	0	0	0	0.0%
Asbestos	0	0	0	0.0%	0	0	0	0.0%
Auto shredder	0	0	0	0.0%	0	0	0	0.0%
Auto bodies	0	0	0	0.0%	0	0	0	0.0%
Other special waste	0	0	0	0.0%	0	0	0	0.0%
Subtotal	0	0	0		0	0	0	
Total Waste *	94,000	8,000	101,000	7.5%	96,000	8,000	104,000	7.5%

* Rounded to the nearest 1,000 tons

Table 2-7 cont'd
15 Year Waste Generation Projections
Assuming Current Diversion Rates
City of Milpitas

WASTE TYPE	1999				2000			
	Disposal	Diversion	Generation	Diversion Percent	Disposal	Diversion	Generation	Diversion Percent
Paper								
corrugated containers	8,705	1,092	9,797	11.1%	8,921	1,119	10,040	11.1%
newspaper	3,808	239	4,047	5.9%	3,902	245	4,147	5.9%
high grade ledger paper	2,668	313	2,982	10.5%	2,735	321	3,056	10.5%
mixed paper	7,937	263	8,200	3.2%	8,134	269	8,403	3.2%
other paper	5,537	0	5,537	0.0%	5,675	0	5,675	0.0%
Subtotal	28,655	1,907	30,562		29,366	1,955	31,320	
Plastic								
HDPE containers	813	252	1,065	23.7%	833	258	1,091	23.7%
PET containers	88	19	106	17.8%	90	19	109	17.8%
Film plastics	2,294	49	2,343	2.1%	2,351	50	2,401	2.1%
Other Plastics	4,333	139	4,473	3.1%	4,441	143	4,583	3.1%
Subtotal	7,527	460	7,987		7,714	471	8,185	
Glass								
Refillable glass	311	8	319	2.6%	319	8	327	2.6%
CA redemption glass	635	324	958	33.8%	651	332	982	33.8%
Other recyclable glass	629	117	745	15.7%	644	120	764	15.7%
Other non-recyclable glass	319	0	319	0.0%	327	0	327	0.0%
Subtotal	1,894	449	2,343		1,941	460	2,401	
Metals								
Aluminum cans	159	54	213	25.2%	163	55	218	25.2%
Bi-metal Containers	0	0	0	0.0%	0	0	0	0.0%
tin cans	426	0	426	0.0%	437	0	437	0.0%
other ferrous	6,585	337	6,922	4.9%	6,748	345	7,093	4.9%
other aluminum	213	0	213	0.0%	218	0	218	0.0%
other non-ferrous	318	2	319	0.6%	325	2	327	0.6%
white goods	421	5	426	1.1%	432	5	437	1.1%
Subtotal	8,122	397	8,519		8,323	407	8,730	
Yard Waste								
Yard waste	12,353	0	12,353	0.0%	12,659	0	12,659	0.0%
Subtotal	12,353	0	12,353		12,659	0	12,659	
Organics								
Food waste	4,366	0	4,366	0.0%	4,474	0	4,474	0.0%
Tires and rubber	1,200	184	1,384	13.3%	1,230	189	1,419	13.3%
Wood waste	8,770	3,050	11,820	25.8%	8,988	3,126	12,113	25.8%
Crop residues	0	0	0	0.0%	0	0	0	0.0%
Manure	0	0	0	0.0%	0	0	0	0.0%
Textiles and leather	5,005	0	5,005	0.0%	5,129	0	5,129	0.0%
Other misc. organics	3,749	85	3,834	2.2%	3,842	87	3,929	2.2%
Subtotal	23,090	3,319	26,409		23,662	3,402	27,064	
Other Wastes								
Inert solids	15,320	1,931	17,251	11.2%	15,700	1,979	17,679	11.2%
Hazardous waste	1,065	0	1,065	0.0%	1,091	0	1,091	0.0%
Subtotal	16,385	1,931	18,316		16,791	1,979	18,770	
Total Other Wastes								
Ash	0	0	0	0.0%	0	0	0	0.0%
Sewage sludge	0	0	0	0.0%	0	0	0	0.0%
Industrial sludge	0	0	0	0.0%	0	0	0	0.0%
Asbestos	0	0	0	0.0%	0	0	0	0.0%
Auto shredder	0	0	0	0.0%	0	0	0	0.0%
Auto bodies	0	0	0	0.0%	0	0	0	0.0%
Other special waste	0	0	0	0.0%	0	0	0	0.0%
Subtotal	0	0	0		0	0	0	
Total Waste *	99,000	8,000	106,000	7.5%	101,000	8,000	109,000	7.5%

* Rounded to the nearest 1,000 tons

Table 2-7 cont'd
15 Year Waste Generation Projections
Assuming Current Diversion Rates
City of Milpitas

WASTE TYPE	2001				2002			
	Disposal	Diversion	Generation	Diversion Percent	Disposal	Diversion	Generation	Diversion Percent
Paper								
corrugated containers	9,142	1,147	10,289	11.1%	9,368	1,176	10,544	11.1%
newspaper	3,999	251	4,250	5.9%	4,098	257	4,355	5.9%
high grade ledger paper	2,802	329	3,131	10.5%	2,872	337	3,209	10.5%
mixed paper	8,335	276	8,611	3.2%	8,542	283	8,825	3.2%
other paper	5,815	0	5,815	0.0%	5,960	0	5,960	0.0%
Subtotal	30,094	2,003	32,097		30,840	2,053	32,893	
Plastic								
HDPE containers	854	265	1,118	23.7%	875	271	1,146	23.7%
PET containers	92	20	112	17.8%	94	20	115	17.8%
Film plastics	2,409	52	2,460	2.1%	2,469	53	2,521	2.1%
Other Plastics	4,551	146	4,697	3.1%	4,664	150	4,814	3.1%
Subtotal	7,905	483	8,388		8,101	495	8,596	
Glass								
Refillable glass	327	9	336	2.6%	335	9	344	2.6%
CA redemption glass	667	340	1,007	33.8%	683	348	1,031	33.8%
Other recyclable glass	660	123	783	15.7%	677	126	802	15.7%
Other non-recyclable glass	336	0	336	0.0%	344	0	344	0.0%
Subtotal	1,989	471	2,460		2,039	483	2,521	
Metals								
Aluminum cans	167	56	224	25.2%	172	58	229	25.2%
Bi-metal Containers	0	0	0	0.0%	0	0	0	0.0%
tin cans	447	0	447	0.0%	458	0	458	0.0%
other ferrous	6,915	354	7,269	4.9%	7,087	363	7,450	4.9%
other aluminum	224	0	224	0.0%	229	0	229	0.0%
other non-ferrous	334	2	336	0.6%	342	2	344	0.6%
white goods	442	5	447	1.1%	453	5	458	1.1%
Subtotal	8,530	417	8,947		8,741	428	9,169	
Yard Waste								
Yard waste	12,973	0	12,973	0.0%	13,295	0	13,295	0.0%
Subtotal	12,973	0	12,973		13,295	0	13,295	
Organics								
Food waste	4,585	0	4,585	0.0%	4,699	0	4,699	0.0%
Tires and rubber	1,260	194	1,454	13.3%	1,291	199	1,490	13.3%
Wood waste	9,211	3,203	12,414	25.8%	9,439	3,283	12,722	25.8%
Crop residues	0	0	0	0.0%	0	0	0	0.0%
Manure	0	0	0	0.0%	0	0	0	0.0%
Textiles and leather	5,256	0	5,256	0.0%	5,387	0	5,387	0.0%
Other misc. organics	3,937	89	4,026	2.2%	4,035	91	4,126	2.2%
Subtotal	24,249	3,486	27,735		24,851	3,573	28,423	
Other Wastes								
Inert solids	16,089	2,028	18,117	11.2%	16,488	2,078	18,567	11.2%
Hazardous waste	1,118	0	1,118	0.0%	1,146	0	1,146	0.0%
Subtotal	17,208	2,028	19,236		17,634	2,078	19,713	
Total Other Wastes								
Ash	0	0	0	0.0%	0	0	0	0.0%
Sewage sludge	0	0	0	0.0%	0	0	0	0.0%
Industrial sludge	0	0	0	0.0%	0	0	0	0.0%
Asbestos	0	0	0	0.0%	0	0	0	0.0%
Auto shredder	0	0	0	0.0%	0	0	0	0.0%
Auto bodies	0	0	0	0.0%	0	0	0	0.0%
Other special waste	0	0	0	0.0%	0	0	0	0.0%
Subtotal	0	0	0		0	0	0	
Total Waste *	103,000	8,000	112,000	7.5%	106,000	9,000	115,000	7.5%

* Rounded to the nearest 1,000 tons

Table 2-7 cont'd
15 Year Waste Generation Projections
Assuming Current Diversion Rates
City of Milpitas

WASTE TYPE	2003				2004			
	Disposal	Diversion	Generation	Diversion Percent	Disposal	Diversion	Generation	Diversion Percent
Paper								
corrugated containers	9,601	1,205	10,806	11.1%	9,839	1,235	11,074	11.1%
newspaper	4,200	263	4,463	5.9%	4,304	270	4,574	5.9%
high grade ledger paper	2,943	345	3,289	10.5%	3,016	354	3,370	10.5%
mixed paper	8,754	290	9,044	3.2%	8,971	297	9,268	3.2%
other paper	6,108	0	6,108	0.0%	6,259	0	6,259	0.0%
Subtotal	31,605	2,104	33,709		32,389	2,156	34,545	
Plastic								
HDPE containers	896	278	1,175	23.7%	919	285	1,204	23.7%
PET containers	97	21	117	17.8%	99	21	120	17.8%
Film plastics	2,530	54	2,584	2.1%	2,593	56	2,648	2.1%
Other Plastics	4,779	154	4,933	3.1%	4,898	158	5,055	3.1%
Subtotal	8,302	507	8,809		8,508	520	9,027	
Glass								
Refillable glass	343	9	352	2.6%	352	9	361	2.6%
CA redemption glass	700	357	1,057	33.8%	718	366	1,083	33.8%
Other recyclable glass	693	129	822	15.7%	711	132	843	15.7%
Other non-recyclable glass	352	0	352	0.0%	361	0	361	0.0%
Subtotal	2,089	495	2,584		2,141	507	2,648	
Metals								
Aluminum cans	176	59	235	25.2%	180	61	241	25.2%
Bi-metal Containers	0	0	0	0.0%	0	0	0	0.0%
tin cans	470	0	470	0.0%	481	0	481	0.0%
other ferrous	7,263	372	7,634	4.9%	7,443	381	7,824	4.9%
other aluminum	235	0	235	0.0%	241	0	241	0.0%
other non-ferrous	350	2	352	0.6%	359	2	361	0.6%
white goods	465	5	470	1.1%	476	5	481	1.1%
Subtotal	8,958	438	9,396		9,180	449	9,629	
Yard Waste								
Yard waste	13,624	0	13,624	0.0%	13,962	0	13,962	0.0%
Subtotal	13,624	0	13,624		13,962	0	13,962	
Organics								
Food waste	4,816	0	4,816	0.0%	4,935	0	4,935	0.0%
Tires and rubber	1,323	203	1,527	13.3%	1,356	209	1,565	13.3%
Wood waste	9,673	3,364	13,037	25.8%	9,913	3,447	13,360	25.8%
Crop residues	0	0	0	0.0%	0	0	0	0.0%
Manure	0	0	0	0.0%	0	0	0	0.0%
Textiles and leather	5,520	0	5,520	0.0%	5,657	0	5,657	0.0%
Other misc. organics	4,135	94	4,228	2.2%	4,237	96	4,333	2.2%
Subtotal	25,467	3,661	29,128		26,099	3,752	29,850	
Other Wastes								
Inert solids	16,897	2,130	19,027	11.2%	17,316	2,183	19,499	11.2%
Hazardous waste	1,175	0	1,175	0.0%	1,204	0	1,204	0.0%
Subtotal	18,072	2,130	20,202		18,520	2,183	20,703	
Total Other Wastes								
Ash	0	0	0	0.0%	0	0	0	0.0%
Sewage sludge	0	0	0	0.0%	0	0	0	0.0%
Industrial sludge	0	0	0	0.0%	0	0	0	0.0%
Asbestos	0	0	0	0.0%	0	0	0	0.0%
Auto shredder	0	0	0	0.0%	0	0	0	0.0%
Auto bodies	0	0	0	0.0%	0	0	0	0.0%
Other special waste	0	0	0	0.0%	0	0	0	0.0%
Subtotal	0	0	0		0	0	0	
Total Waste *	109,000	9,000	117,000	7.5%	111,000	9,000	120,000	7.5%

* Rounded to the nearest 1,000 tons

Table 2-7 cont'd
 15 Year Waste Generation Projections
 Assuming Current Diversion Rates
 City of Milpitas

WASTE TYPE	2005			Diversion Percent
	Disposal	Diversion	Generation	
Paper				
corrugated containers	10,083	1,265	11,348	11.1%
newspaper	4,411	277	4,687	5.9%
high grade ledger paper	3,091	363	3,454	10.5%
mixed paper	9,194	304	9,498	3.2%
other paper	6,414	0	6,414	0.0%
Subtotal	33,192	2,209	35,401	
Plastic				
HDPE containers	941	292	1,233	23.7%
PET containers	101	22	123	17.8%
Film plastics	2,657	57	2,714	2.1%
Other Plastics	5,019	161	5,181	3.1%
Subtotal	8,719	532	9,251	
Glass				
Refillable glass	361	10	370	2.6%
CA redemption glass	735	375	1,110	33.8%
Other recyclable glass	728	135	863	15.7%
Other non-recyclable glass	370	0	370	0.0%
Subtotal	2,194	520	2,714	
Metals				
Aluminum cans	185	62	247	25.2%
Bi-metal Containers	0	0	0	0.0%
tin cans	493	0	493	0.0%
other ferrous	7,627	390	8,018	4.9%
other aluminum	247	0	247	0.0%
other non-ferrous	368	2	370	0.6%
white goods	488	6	493	1.1%
Subtotal	9,408	460	9,868	
Yard Waste				
Yard waste	14,309	0	14,309	0.0%
Subtotal	14,309	0	14,309	
Organics				
Food waste	5,057	0	5,057	0.0%
Tires and rubber	1,390	214	1,604	13.3%
Wood waste	10,159	3,533	13,692	25.8%
Crop residues	0	0	0	0.0%
Manure	0	0	0	0.0%
Textiles and leather	5,797	0	5,797	0.0%
Other misc. organics	4,342	98	4,441	2.2%
Subtotal	26,746	3,845	30,591	
Other Wastes				
Inert solids	17,746	2,237	19,983	11.2%
Hazardous waste	1,233	0	1,233	0.0%
Subtotal	18,979	2,237	21,216	
Total Other Wastes				
Ash	0	0	0	0.0%
Sewage sludge	0	0	0	0.0%
Industrial sludge	0	0	0	0.0%
Asbestos	0	0	0	0.0%
Auto shredder	0	0	0	0.0%
Auto bodies	0	0	0	0.0%
Other special waste	0	0	0	0.0%
Subtotal	0	0	0	
Total Waste *	114,000	9,000	123,000	7.5%

* Rounded to the nearest 1,000 tons

Table 2-8

15 Year Waste Generation Projections
Assuming AB 939 Diversion Requirements
City of Milpitas

WASTE TYPE	1991				1992			
	Disposal	Diversion	Generation	Diversion Percent	Disposal	Diversion	Generation	Diversion Percent
Paper								
corrugated containers	7,193	903	8,096	11.1%	7,333	920	8,253	11.1%
newspaper	3,147	197	3,344	5.9%	3,208	201	3,409	5.9%
high grade ledger paper	2,205	259	2,464	10.5%	2,248	264	2,512	10.5%
mixed paper	6,559	217	6,776	3.2%	6,686	221	6,907	3.2%
other paper	4,576	0	4,576	0.0%	4,665	0	4,665	0.0%
Subtotal	23,680	1,576	25,256		24,139	1,607	25,746	
Plastic								
HDPE containers	672	208	880	23.7%	685	212	897	23.7%
PET containers	72	16	88	17.8%	74	16	90	17.8%
Film plastics	1,895	41	1,936	2.1%	1,932	41	1,974	2.1%
Other Plastics	3,581	115	3,696	3.1%	3,650	117	3,768	3.1%
Subtotal	6,220	380	6,600		6,341	387	6,728	
Glass								
Refillable glass	257	7	264	2.6%	262	7	269	2.6%
CA redemption glass	525	267	792	33.8%	535	273	807	33.8%
Other recyclable glass	519	97	616	15.7%	530	98	628	15.7%
Other non-recyclable glass	264	0	264	0.0%	269	0	269	0.0%
Subtotal	1,565	371	1,936		1,596	378	1,974	
Metals								
Aluminum cans	132	44	176	25.2%	134	45	179	25.2%
Bi-metal Containers	0	0	0	0.0%	0	0	0	0.0%
tin cans	352	0	352	0.0%	359	0	359	0.0%
other ferrous	5,441	279	5,720	4.9%	5,547	284	5,831	4.9%
other aluminum	176	0	176	0.0%	179	0	179	0.0%
other non-ferrous	262	2	264	0.6%	268	2	269	0.6%
white goods	348	4	352	1.1%	355	4	359	1.1%
Subtotal	6,712	328	7,040		6,842	335	7,177	
Yard Waste								
Yard waste	10,208	0	10,208	0.0%	10,406	0	10,406	0.0%
Subtotal	10,208	0	10,208		10,406	0	10,406	
Organics								
Food waste	3,608	0	3,608	0.0%	3,678	0	3,678	0.0%
Tires and rubber	992	152	1,144	13.3%	1,011	155	1,166	13.3%
Wood waste	7,248	2,520	9,768	25.8%	7,388	2,569	9,958	25.8%
Crop residues	0	0	0	0.0%	0	0	0	0.0%
Manure	0	0	0	0.0%	0	0	0	0.0%
Textiles and leather	4,136	0	4,136	0.0%	4,216	0	4,216	0.0%
Other misc. organics	3,098	70	3,168	2.2%	3,158	72	3,229	2.2%
Subtotal	19,081	2,743	21,824		19,451	2,796	22,248	
Other Wastes								
Inert solids	12,660	1,596	14,256	11.2%	12,906	1,627	14,533	11.2%
Hazardous waste	880	0	880	0.0%	897	0	897	0.0%
Subtotal	13,540	1,596	15,136		13,803	1,627	15,430	
Total Other Wastes								
Ash	0	0	0	0.0%	0	0	0	0.0%
Sewage sludge	0	0	0	0.0%	0	0	0	0.0%
Industrial sludge	0	0	0	0.0%	0	0	0	0.0%
Asbestos	0	0	0	0.0%	0	0	0	0.0%
Auto shredder	0	0	0	0.0%	0	0	0	0.0%
Auto bodies	0	0	0	0.0%	0	0	0	0.0%
Other special waste	0	0	0	0.0%	0	0	0	0.0%
Subtotal	0	0	0		0	0	0	
Total Waste *	81,000	7,000	88,000	7.5%	83,000	7,000	90,000	7.5%

* Rounded to the nearest 1,000 tons. Totals reflect achievement of 25% diversion by 1995, and 50% diversion by 2000, based on diverting the targeted waste types identified in the SRRE. See Tables 10-1 to 10-11 for a yearly estimate of the total wastes diverted and disposed of based on implementing the SRRE.

Table 2-8 cont'd

15 Year Waste Generation Projections
Assuming AB 939 Diversion Requirements
City of Milpitas

WASTE TYPE	1993				1994			
	Disposal	Diversion	Generation	Diversion Percent	Disposal	Diversion	Generation	Diversion Percent
Paper								
corrugated containers	7,515	943	8,458	11.1%	7,701	966	8,668	11.1%
newspaper	3,287	206	3,493	5.9%	3,369	211	3,580	5.9%
high grade ledger paper	2,304	270	2,574	10.5%	2,361	277	2,638	10.5%
mixed paper	6,852	227	7,079	3.2%	7,022	232	7,254	3.2%
other paper	4,780	0	4,780	0.0%	4,899	0	4,899	0.0%
Subtotal	24,738	1,647	26,385		25,352	1,687	27,039	
Plastic								
HDPE containers	702	218	919	23.7%	719	223	942	23.7%
PET containers	76	16	92	17.8%	77	17	94	17.8%
Film plastics	1,980	42	2,023	2.1%	2,029	43	2,073	2.1%
Other Plastics	3,741	120	3,861	3.1%	3,834	123	3,957	3.1%
Subtotal	6,498	397	6,895		6,659	407	7,066	
Glass								
Refillable glass	269	7	276	2.6%	275	7	283	2.6%
CA redemption glass	548	279	827	33.8%	562	286	848	33.8%
Other recyclable glass	543	101	644	15.7%	556	103	659	15.7%
Other non-recyclable glass	276	0	276	0.0%	283	0	283	0.0%
Subtotal	1,635	387	2,023		1,676	397	2,073	
Metals								
Aluminum cans	138	46	184	25.2%	141	47	188	25.2%
Bi-metal Containers	0	0	0	0.0%	0	0	0	0.0%
tin cans	368	0	368	0.0%	377	0	377	0.0%
other ferrous	5,685	291	5,976	4.9%	5,826	298	6,124	4.9%
other aluminum	184	0	184	0.0%	188	0	188	0.0%
other non-ferrous	274	2	276	0.6%	281	2	283	0.6%
white goods	364	4	368	1.1%	373	4	377	1.1%
Subtotal	7,012	343	7,355		7,185	352	7,537	
Yard Waste								
Yard waste	10,664	0	10,664	0.0%	10,929	0	10,929	0.0%
Subtotal	10,664	0	10,664		10,929	0	10,929	
Organics								
Food waste	3,769	0	3,769	0.0%	3,863	0	3,863	0.0%
Tires and rubber	1,036	159	1,195	13.3%	1,062	163	1,225	13.3%
Wood waste	7,571	2,633	10,205	25.8%	7,759	2,698	10,458	25.8%
Crop residues	0	0	0	0.0%	0	0	0	0.0%
Manure	0	0	0	0.0%	0	0	0	0.0%
Textiles and leather	4,321	0	4,321	0.0%	4,428	0	4,428	0.0%
Other misc. organics	3,236	73	3,310	2.2%	3,316	75	3,392	2.2%
Subtotal	19,934	2,866	22,799		20,428	2,937	23,365	
Other Wastes								
Inert solids	13,226	1,667	14,893	11.2%	13,554	1,709	15,262	11.2%
Hazardous waste	919	0	919	0.0%	942	0	942	0.0%
Subtotal	14,145	1,667	15,812		14,496	1,709	16,205	
Total Other Wastes								
Ash	0	0	0	0.0%	0	0	0	0.0%
Sewage sludge	0	0	0	0.0%	0	0	0	0.0%
Industrial sludge	0	0	0	0.0%	0	0	0	0.0%
Asbestos	0	0	0	0.0%	0	0	0	0.0%
Auto shredder	0	0	0	0.0%	0	0	0	0.0%
Auto bodies	0	0	0	0.0%	0	0	0	0.0%
Other special waste	0	0	0	0.0%	0	0	0	0.0%
Subtotal	0	0	0		0	0	0	
Total Waste *	85,000	7,000	92,000	7.5%	87,000	7,000	94,000	7.5%

* Rounded to the nearest 1,000 tons. Totals reflect achievement of 25% diversion by 1995, and 50% diversion by 2000, based on diverting the targeted waste types identified in the SRRE. See Tables 10-1 to 10-11 for a yearly estimate of the total wastes diverted and disposed of based on implementing the SRRE.

Table 2-8 cont'd

15 Year Waste Generation Projections
Assuming AB 939 Diversion Requirements
City of Milpitas

WASTE TYPE	1995				1996			
	Disposal	Diversion	Generation	Diversion Percent	Disposal	Diversion	Generation	Diversion Percent
Paper								
corrugated containers	6,116	2,767	8,883	31.1%	6,267	2,835	9,103	31.1%
newspaper	2,718	950	3,669	25.9%	2,786	974	3,760	25.9%
high grade ledger paper	1,879	825	2,703	30.5%	1,925	845	2,770	30.5%
mixed paper	5,709	1,725	7,434	23.2%	5,851	1,768	7,619	23.2%
other paper	4,016	1,004	5,021	20.0%	4,116	1,029	5,145	20.0%
Subtotal	20,438	7,271	27,710		20,945	7,451	28,397	
Plastic								
HDPE containers	544	422	965	43.7%	557	432	989	43.7%
PET containers	60	37	97	37.8%	62	37	99	37.8%
Film plastics	1,655	469	2,124	22.1%	1,696	481	2,177	22.1%
Other Plastics	3,118	937	4,055	23.1%	3,195	961	4,156	23.1%
Subtotal	5,376	1,865	7,241		5,510	1,911	7,421	
Glass								
Refillable glass	282	7	290	2.6%	289	8	297	2.6%
CA redemption glass	402	467	869	53.8%	412	479	890	53.8%
Other recyclable glass	435	241	676	35.7%	446	247	693	35.7%
Other non-recyclable glass	290	0	290	0.0%	297	0	297	0.0%
Subtotal	1,408	716	2,124		1,443	733	2,177	
Metals								
Aluminum cans	106	87	193	45.2%	108	89	198	45.2%
Bi-metal Containers	0	0	0	0.0%	0	0	0	0.0%
tin cans	309	77	386	20.0%	317	79	396	20.0%
other ferrous	4,715	1,561	6,276	24.9%	4,832	1,599	6,431	24.9%
other aluminum	154	39	193	20.0%	158	40	198	20.0%
other non-ferrous	230	60	290	20.6%	236	61	297	20.6%
white goods	305	82	386	21.1%	312	84	396	21.1%
Subtotal	5,819	1,905	7,724		5,651	1,869	7,520	
Yard Waste								
Yard waste	8,960	2,240	11,200	20.0%	9,182	2,295	11,477	20.0%
Subtotal	8,960	2,240	11,200		9,182	2,295	11,477	
Organics								
Food waste	3,959	0	3,959	0.0%	4,057	0	4,057	0.0%
Tires and rubber	1,088	167	1,255	13.3%	1,115	171	1,286	13.3%
Wood waste	5,808	4,909	10,717	45.8%	5,952	5,030	10,983	45.8%
Crop residues	0	0	0	0.0%	0	0	0	0.0%
Manure	0	0	0	0.0%	0	0	0	0.0%
Textiles and leather	4,538	0	4,538	0.0%	4,650	0	4,650	0.0%
Other misc. organics	3,399	77	3,476	2.2%	3,483	79	3,562	2.2%
Subtotal	18,791	5,153	23,944		19,257	5,281	24,538	
Other Wastes								
Inert solids	10,762	4,879	15,641	31.2%	11,029	5,000	16,029	31.2%
Hazardous waste	965	0	965	0.0%	989	0	989	0.0%
Subtotal	11,727	4,879	16,606		12,018	5,000	17,018	
Total Other Wastes								
Ash	0	0	0	0.0%	0	0	0	0.0%
Sewage sludge	0	0	0	0.0%	0	0	0	0.0%
Industrial sludge	0	0	0	0.0%	0	0	0	0.0%
Asbestos	0	0	0	0.0%	0	0	0	0.0%
Auto shredder	0	0	0	0.0%	0	0	0	0.0%
Auto bodies	0	0	0	0.0%	0	0	0	0.0%
Other special waste	0	0	0	0.0%	0	0	0	0.0%
Subtotal	0	0	0		0	0	0	
Total Waste *	73,000	24,000	97,000	24.9%	74,000	25,000	99,000	24.9%

* Rounded to the nearest 1,000 tons. Totals reflect achievement of 25% diversion by 1995, and 50% diversion by 2000, based on diverting the targeted waste types identified in the SRRE. See Tables 10-1 to 10-11 for a yearly estimate of the total wastes diverted and disposed of based on implementing the SRRE.

Table 2-8 cont'd
 15 Year Waste Generation Projections
 Assuming AB 939 Diversion Requirements
 City of Milpitas

WASTE TYPE	1997				1998			
	Disposal	Diversion	Generation	Diversion Percent	Disposal	Diversion	Generation	Diversion Percent
Paper								
corrugated containers	6,423	2,906	9,329	31.1%	6,582	2,978	9,560	31.1%
newspaper	2,855	998	3,853	25.9%	2,926	1,023	3,949	25.9%
high grade ledger paper	1,973	866	2,839	30.5%	2,022	888	2,910	30.5%
mixed paper	5,996	1,812	7,808	23.2%	6,145	1,857	8,001	23.2%
other paper	4,218	1,055	5,273	20.0%	4,323	1,081	5,403	20.0%
Subtotal	21,465	7,636	29,101		21,997	7,826	29,823	
Plastic								
HDPE containers	571	443	1,014	43.7%	585	454	1,039	43.7%
PET containers	63	38	101	37.8%	65	39	104	37.8%
Film plastics	1,738	493	2,231	22.1%	1,781	505	2,286	22.1%
Other Plastics	3,274	984	4,259	23.1%	3,355	1,009	4,364	23.1%
Subtotal	5,646	1,959	7,605		5,786	2,007	7,793	
Glass								
Refillable glass	296	8	304	2.6%	304	8	312	2.6%
CA redemption glass	422	491	913	53.8%	432	503	935	53.8%
Other recyclable glass	457	253	710	35.7%	468	259	727	35.7%
Other non-recyclable glass	304	0	304	0.0%	312	0	312	0.0%
Subtotal	1,479	752	2,231		1,516	770	2,286	
Metals								
Aluminum cans	111	92	203	45.2%	114	94	208	45.2%
Bi-metal Containers	0	0	0	0.0%	0	0	0	0.0%
tin cans	324	81	406	20.0%	333	83	416	20.0%
other ferrous	4,952	1,639	6,591	24.9%	5,074	1,680	6,754	24.9%
other aluminum	162	41	203	20.0%	166	42	208	20.0%
other non-ferrous	242	63	304	20.6%	248	64	312	20.6%
white goods	320	86	406	21.1%	328	88	416	21.1%
Subtotal	5,791	1,915	7,706		5,935	1,963	7,897	
Yard Waste								
Yard waste	9,410	2,352	11,762	20.0%	9,643	2,411	12,054	20.0%
Subtotal	9,410	2,352	11,762		9,643	2,411	12,054	
Organics								
Food waste	4,157	0	4,157	0.0%	4,260	0	4,260	0.0%
Tires and rubber	1,142	176	1,318	13.3%	1,171	180	1,351	13.3%
Wood waste	6,100	5,155	11,255	45.8%	6,251	5,283	11,534	45.8%
Crop residues	0	0	0	0.0%	0	0	0	0.0%
Manure	0	0	0	0.0%	0	0	0	0.0%
Textiles and leather	4,766	0	4,766	0.0%	4,884	0	4,884	0.0%
Other misc. organics	3,569	81	3,650	2.2%	3,658	83	3,741	2.2%
Subtotal	19,735	5,412	25,146		20,224	5,546	25,770	
Other Wastes								
Inert solids	11,302	5,124	16,426	31.2%	11,583	5,251	16,834	31.2%
Hazardous waste	1,014	0	1,014	0.0%	1,039	0	1,039	0.0%
Subtotal	12,316	5,124	17,440		12,622	5,251	17,873	
Total Other Wastes								
Ash	0	0	0	0.0%	0	0	0	0.0%
Sewage sludge	0	0	0	0.0%	0	0	0	0.0%
Industrial sludge	0	0	0	0.0%	0	0	0	0.0%
Asbestos	0	0	0	0.0%	0	0	0	0.0%
Auto shredder	0	0	0	0.0%	0	0	0	0.0%
Auto bodies	0	0	0	0.0%	0	0	0	0.0%
Other special waste	0	0	0	0.0%	0	0	0	0.0%
Subtotal	0	0	0		0	0	0	
Total Waste *	76,000	25,000	101,000	24.9%	78,000	26,000	104,000	24.9%

* Rounded to the nearest 1,000 tons. Totals reflect achievement of 25% diversion by 1995, and 50% diversion by 2000, based on diverting the targeted waste types identified in the SRRE. See Tables 10-1 to 10-11 for a yearly estimate of the total wastes diverted and disposed of based on implementing the SRRE.

Table 2-8 cont'd
 15 Year Waste Generation Projections
 Assuming AB 939 Diversion Requirements
 City of Milpitas

WASTE TYPE	1999				2000			
	Disposal	Diversion	Generation	Diversion Percent	Disposal	Diversion	Generation	Diversion Percent
Paper								
corrugated containers	6,745	3,052	9,797	31.1%	4,001	6,039	10,040	60.1%
newspaper	2,998	1,048	4,047	25.9%	1,870	2,277	4,147	54.9%
high grade ledger paper	2,072	910	2,982	30.5%	1,237	1,818	3,056	59.5%
mixed paper	6,297	1,903	8,200	23.2%	4,016	4,387	8,403	52.2%
other paper	4,430	1,107	5,537	20.0%	2,894	2,781	5,675	49.0%
Subtotal	22,543	8,020	30,562		14,019	17,301	31,320	
Plastic								
HDPE containers	600	465	1,065	43.7%	298	793	1,091	72.7%
PET containers	66	40	106	37.8%	36	73	109	66.8%
Film plastics	1,825	518	2,343	22.1%	1,174	1,227	2,401	51.1%
Other Plastics	3,439	1,034	4,473	23.1%	2,195	2,389	4,583	52.1%
Subtotal	5,930	2,057	7,987		3,703	4,482	8,185	
Glass								
Refillable glass	311	8	319	2.6%	319	8	327	2.6%
CA redemption glass	443	515	958	53.8%	169	813	982	82.8%
Other recyclable glass	480	266	745	35.7%	270	494	764	64.7%
Other non-recyclable glass	319	0	319	0.0%	327	0	327	0.0%
Subtotal	1,553	789	2,343		1,066	1,315	2,401	
Metals								
Aluminum cans	117	96	213	45.2%	56	162	218	74.2%
Bi-metal Containers	0	0	0	0.0%	0	0	0	0.0%
tin cans	341	85	426	20.0%	223	214	437	49.0%
other ferrous	5,200	1,721	6,922	24.9%	3,272	3,821	7,093	53.9%
other aluminum	170	43	213	20.0%	111	107	218	49.0%
other non-ferrous	254	66	319	20.6%	165	162	327	49.6%
white goods	336	90	426	21.1%	218	219	437	50.1%
Subtotal	6,082	2,011	8,093		3,828	4,466	8,294	
Yard Waste								
Yard waste	9,882	2,471	12,353	20.0%	6,456	6,203	12,659	49.0%
Subtotal	9,882	2,471	12,353		6,456	6,203	12,659	
Organics								
Food waste	4,366	0	4,366	0.0%	4,474	0	4,474	0.0%
Tires and rubber	1,200	184	1,384	13.3%	818	600	1,419	42.3%
Wood waste	6,406	5,414	11,820	45.8%	3,052	9,061	12,113	74.8%
Crop residues	0	0	0	0.0%	0	0	0	0.0%
Manure	0	0	0	0.0%	0	0	0	0.0%
Textiles and leather	5,005	0	5,005	0.0%	5,129	0	5,129	0.0%
Other misc. organics	3,749	85	3,834	2.2%	3,842	87	3,929	2.2%
Subtotal	20,726	5,683	26,409		17,315	9,749	27,064	
Other Wastes								
Inert solids	11,870	5,381	17,251	31.2%	7,037	10,642	17,679	60.2%
Hazardous waste	1,065	0	1,065	0.0%	1,091	0	1,091	0.0%
Subtotal	12,935	5,381	18,316		8,129	10,642	18,770	
Total Other Wastes								
Ash	0	0	0	0.0%	0	0	0	0.0%
Sewage sludge	0	0	0	0.0%	0	0	0	0.0%
Industrial sludge	0	0	0	0.0%	0	0	0	0.0%
Asbestos	0	0	0	0.0%	0	0	0	0.0%
Auto shredder	0	0	0	0.0%	0	0	0	0.0%
Auto bodies	0	0	0	0.0%	0	0	0	0.0%
Other special waste	0	0	0	0.0%	0	0	0	0.0%
Subtotal	0	0	0		0	0	0	
Total Waste *	80,000	27,000	106,000	24.9%	55,000	54,000	109,000	49.8%

* Rounded to the nearest 1,000 tons. Totals reflect achievement of 25% diversion by 1995, and 50% diversion by 2000, based on diverting the targeted waste types identified in the SRRE. See Tables 10-1 to 10-11 for a yearly estimate of the total wastes diverted and disposed of based on implementing the SRRE.

Table 2-8 cont'd
15 Year Waste Generation Projections
Assuming AB 939 Diversion Requirements
City of Milpitas

WASTE TYPE	2001				2002			
	Disposal	Diversion	Generation	Diversion Percent	Disposal	Diversion	Generation	Diversion Percent
Paper								
corrugated containers	4,100	6,189	10,289	60.1%	4,202	6,342	10,544	60.1%
newspaper	1,916	2,333	4,250	54.9%	1,964	2,391	4,355	54.9%
high grade ledger paper	1,268	1,863	3,131	59.5%	1,300	1,910	3,209	59.5%
mixed paper	4,116	4,496	8,611	52.2%	4,218	4,607	8,825	52.2%
other paper	2,966	2,850	5,815	49.0%	3,039	2,920	5,960	49.0%
Subtotal	14,366	17,731	32,097		14,723	18,170	32,893	
Plastic								
HDPE containers	306	813	1,118	72.7%	313	833	1,146	72.7%
PET containers	37	75	112	66.8%	38	77	115	66.8%
Film plastics	1,203	1,257	2,460	51.1%	1,233	1,288	2,521	51.1%
Other Plastics	2,249	2,448	4,697	52.1%	2,305	2,509	4,814	52.1%
Subtotal	3,795	4,593	8,388		3,889	4,707	8,596	
Glass								
Refillable glass	327	9	336	2.6%	335	9	344	2.6%
CA redemption glass	173	833	1,007	82.8%	178	854	1,031	82.8%
Other recyclable glass	277	506	783	64.7%	283	519	802	64.7%
Other non-recyclable glass	336	0	336	0.0%	344	0	344	0.0%
Subtotal	1,112	1,348	2,460		1,140	1,381	2,521	
Metals								
Aluminum cans	58	166	224	74.2%	59	170	229	74.2%
Bi-metal Containers	0	0	0	0.0%	0	0	0	0.0%
tin cans	228	219	447	49.0%	234	225	458	49.0%
other ferrous	3,353	3,916	7,269	53.9%	3,436	4,013	7,450	53.9%
other aluminum	114	110	224	49.0%	117	112	229	49.0%
other non-ferrous	169	166	336	49.6%	173	170	344	49.6%
white goods	223	224	447	50.1%	229	230	458	50.1%
Subtotal	3,922	4,577	8,500		4,020	4,691	8,710	
Yard Waste								
Yard waste	6,616	6,357	12,973	49.0%	6,780	6,514	13,295	49.0%
Subtotal	6,616	6,357	12,973		6,780	6,514	13,295	
Organics								
Food waste	4,585	0	4,585	0.0%	4,699	0	4,699	0.0%
Tires and rubber	838	615	1,454	42.3%	859	631	1,490	42.3%
Wood waste	3,128	9,286	12,414	74.8%	3,205	9,516	12,722	74.8%
Crop residues	0	0	0	0.0%	0	0	0	0.0%
Manure	0	0	0	0.0%	0	0	0	0.0%
Textiles and leather	5,256	0	5,256	0.0%	5,387	0	5,387	0.0%
Other misc. organics	3,937	89	4,026	2.2%	4,035	91	4,126	2.2%
Subtotal	17,745	9,990	27,735		18,185	10,238	28,423	
Other Wastes								
Inert solids	7,212	10,906	18,117	60.2%	7,391	11,176	18,567	60.2%
Hazardous waste	1,118	0	1,118	0.0%	1,146	0	1,146	0.0%
Subtotal	8,330	10,906	19,236		8,537	11,176	19,713	
Total Other Wastes								
Ash	0	0	0	0.0%	0	0	0	0.0%
Sewage sludge	0	0	0	0.0%	0	0	0	0.0%
Industrial sludge	0	0	0	0.0%	0	0	0	0.0%
Asbestos	0	0	0	0.0%	0	0	0	0.0%
Auto shredder	0	0	0	0.0%	0	0	0	0.0%
Auto bodies	0	0	0	0.0%	0	0	0	0.0%
Other special waste	0	0	0	0.0%	0	0	0	0.0%
Subtotal	0	0	0		0	0	0	
Total Waste *	56,000	56,000	112,000	49.8%	58,000	57,000	115,000	49.8%

* Rounded to the nearest 1,000 tons. Totals reflect achievement of 25% diversion by 1995, and 50% diversion by 2000, based on diverting the targeted waste types identified in the SRRE. See Tables 10-1 to 10-11 for a yearly estimate of the total wastes diverted and disposed of based on implementing the SRRE.

Table 2-8 cont'd
 15 Year Waste Generation Projections
 Assuming AB 939 Diversion Requirements
 City of Milpitas

WASTE TYPE	2003				2004			
	Disposal	Diversion	Generation	Diversion Percent	Disposal	Diversion	Generation	Diversion Percent
Paper								
corrugated containers	4,306	6,500	10,806	60.1%	4,413	6,661	11,074	60.1%
newspaper	2,013	2,450	4,463	54.9%	2,063	2,511	4,574	54.9%
high grade ledger paper	1,332	1,957	3,289	59.5%	1,365	2,005	3,370	59.5%
mixed paper	4,322	4,721	9,044	52.2%	4,430	4,838	9,268	52.2%
other paper	3,115	2,993	6,108	49.0%	3,192	3,067	6,259	49.0%
Subtotal	15,088	18,621	33,709		15,462	19,083	34,545	
Plastic								
HDPE containers	321	854	1,175	72.7%	329	875	1,204	72.7%
PET containers	39	78	117	66.8%	40	80	120	66.8%
Film plastics	1,264	1,320	2,584	51.1%	1,295	1,353	2,648	51.1%
Other Plastics	2,362	2,571	4,933	52.1%	2,421	2,635	5,055	52.1%
Subtotal	3,986	4,823	8,809		4,084	4,943	9,027	
Glass								
Refillable glass	343	9	352	2.6%	352	9	361	2.6%
CA redemption glass	182	875	1,057	82.8%	187	897	1,083	82.8%
Other recyclable glass	290	532	822	64.7%	298	545	843	64.7%
Other non-recyclable glass	352	0	352	0.0%	361	0	361	0.0%
Subtotal	1,168	1,416	2,584		1,197	1,451	2,648	
Metals								
Aluminum cans	61	174	235	74.2%	62	179	241	74.2%
Bi-metal Containers	0	0	0	0.0%	0	0	0	0.0%
tin cans	240	230	470	49.0%	246	236	481	49.0%
other ferrous	3,522	4,113	7,634	53.9%	3,609	4,215	7,824	53.9%
other aluminum	120	115	235	49.0%	123	118	241	49.0%
other non-ferrous	178	175	352	49.6%	182	179	361	49.6%
white goods	234	235	470	50.1%	240	241	481	50.1%
Subtotal	4,119	4,807	8,926		4,222	4,926	9,148	
Yard Waste								
Yard waste	6,948	6,676	13,624	49.0%	7,121	6,842	13,962	49.0%
Subtotal	6,948	6,676	13,624		7,121	6,842	13,962	
Organics								
Food waste	4,816	0	4,816	0.0%	4,935	0	4,935	0.0%
Tires and rubber	881	646	1,527	42.3%	902	662	1,565	42.3%
Wood waste	3,285	9,752	13,037	74.8%	3,366	9,994	13,360	74.8%
Crop residues	0	0	0	0.0%	0	0	0	0.0%
Manure	0	0	0	0.0%	0	0	0	0.0%
Textiles and leather	5,520	0	5,520	0.0%	5,657	0	5,657	0.0%
Other misc. organics	4,135	94	4,228	2.2%	4,237	96	4,333	2.2%
Subtotal	18,636	10,492	29,128		19,098	10,752	29,850	
Other Wastes								
Inert solids	7,574	11,453	19,027	60.2%	7,762	11,737	19,499	60.2%
Hazardous waste	1,175	0	1,175	0.0%	1,204	0	1,204	0.0%
Subtotal	8,748	11,453	20,202		8,965	11,737	20,703	
Total Other Wastes								
Ash	0	0	0	0.0%	0	0	0	0.0%
Sewage sludge	0	0	0	0.0%	0	0	0	0.0%
Industrial sludge	0	0	0	0.0%	0	0	0	0.0%
Asbestos	0	0	0	0.0%	0	0	0	0.0%
Auto shredder	0	0	0	0.0%	0	0	0	0.0%
Auto bodies	0	0	0	0.0%	0	0	0	0.0%
Other special waste	0	0	0	0.0%	0	0	0	0.0%
Subtotal	0	0	0		0	0	0	
Total Waste *	59,000	59,000	117,000	49.8%	60,000	60,000	120,000	49.8%

* Rounded to the nearest 1,000 tons. Totals reflect achievement of 25% diversion by 1995, and 50% diversion by 2000, based on diverting the targeted waste types identified in the SRRE. See Tables 10-1 to 10-11 for a yearly estimate of the total wastes diverted and disposed of based on implementing the SRRE.

Table 2-8 cont'd
 15 Year Waste Generation Projections
 Assuming AB 939 Diversion Requirements
 City of Milpitas

WASTE TYPE	2005			Diversion Percent
	Disposal	Diversion	Generation	
Paper				
corrugated containers	4,522	6,826	11,348	60.1%
newspaper	2,114	2,574	4,687	54.9%
high grade ledger paper	1,399	2,055	3,454	59.5%
mixed paper	4,540	4,958	9,498	52.2%
other paper	3,271	3,143	6,414	49.0%
Subtotal	15,845	19,556	35,401	
Plastic				
HDPE containers	337	897	1,233	72.7%
PET containers	41	82	123	66.8%
Film plastics	1,327	1,387	2,714	51.1%
Other Plastics	2,481	2,700	5,181	52.1%
Subtotal	4,186	5,066	9,251	
Glass				
Refillable glass	361	10	370	2.6%
CA redemption glass	191	919	1,110	82.8%
Other recyclable glass	305	558	863	64.7%
Other non-recyclable glass	370	0	370	0.0%
Subtotal	1,227	1,487	2,714	
Metals				
Aluminum cans	64	183	247	74.2%
Bi-metal Containers	0	0	0	0.0%
tin cans	252	242	493	49.0%
other ferrous	3,699	4,319	8,018	53.9%
other aluminum	126	121	247	49.0%
other non-ferrous	187	183	370	49.6%
white goods	246	247	493	50.1%
Subtotal	4,326	5,048	9,375	
Yard Waste				
Yard waste	7,297	7,011	14,309	49.0%
Subtotal	7,297	7,011	14,309	
Organics				
Food waste	5,057	0	5,057	0.0%
Tires and rubber	925	679	1,604	42.3%
Wood waste	3,450	10,242	13,692	74.8%
Crop residues	0	0	0	0.0%
Manure	0	0	0	0.0%
Textiles and leather	5,797	0	5,797	0.0%
Other misc. organics	4,342	98	4,441	2.2%
Subtotal	19,572	11,019	30,591	
Other Wastes				
Inert solids	7,954	12,028	19,983	60.2%
Hazardous waste	1,233	0	1,233	0.0%
Subtotal	9,188	12,028	21,216	
Total Other Wastes				
Ash	0	0	0	0.0%
Sewage sludge	0	0	0	0.0%
Industrial sludge	0	0	0	0.0%
Asbestos	0	0	0	0.0%
Auto shredder	0	0	0	0.0%
Auto bodies	0	0	0	0.0%
Other special waste	0	0	0	0.0%
Subtotal	0	0	0	
Total Waste *	62,000	61,000	123,000	50%

* Rounded to the nearest 1,000 tons. Totals reflect achievement of 50% diversion, based on diverting the targeted waste types identified in the SRRE.

Table 2-9
SUMMARY OF WASTES DISPOSED, DIVERTED AND GENERATED (1990)
City of Milpitas

Waste Category	DISPOSED		DIVERTED		GENERATED	
	Tons	%*	Tons	%*	Tons	%*
Paper	23,124	27.1	1,437	1.7	24561	28.8
Plastics	6,058	7.1	346	0.4	6404	7.5
Glass	1,473	1.7	338	0.4	1811	2.1
Metals	6,482	7.6	304	0.4	6786	7.9
Yard Waste	9,923	11.6	0	0	9923	11.6
Other Organics	18,712	21.9	2,500	2.9	21212	24.8
Other Wastes	13,263	15.5	1,455	1.7	14718	17.2
Special Wastes	2	0	1	0	3	0
Total	79,036	92.5	6,381	7.5	85,418	100

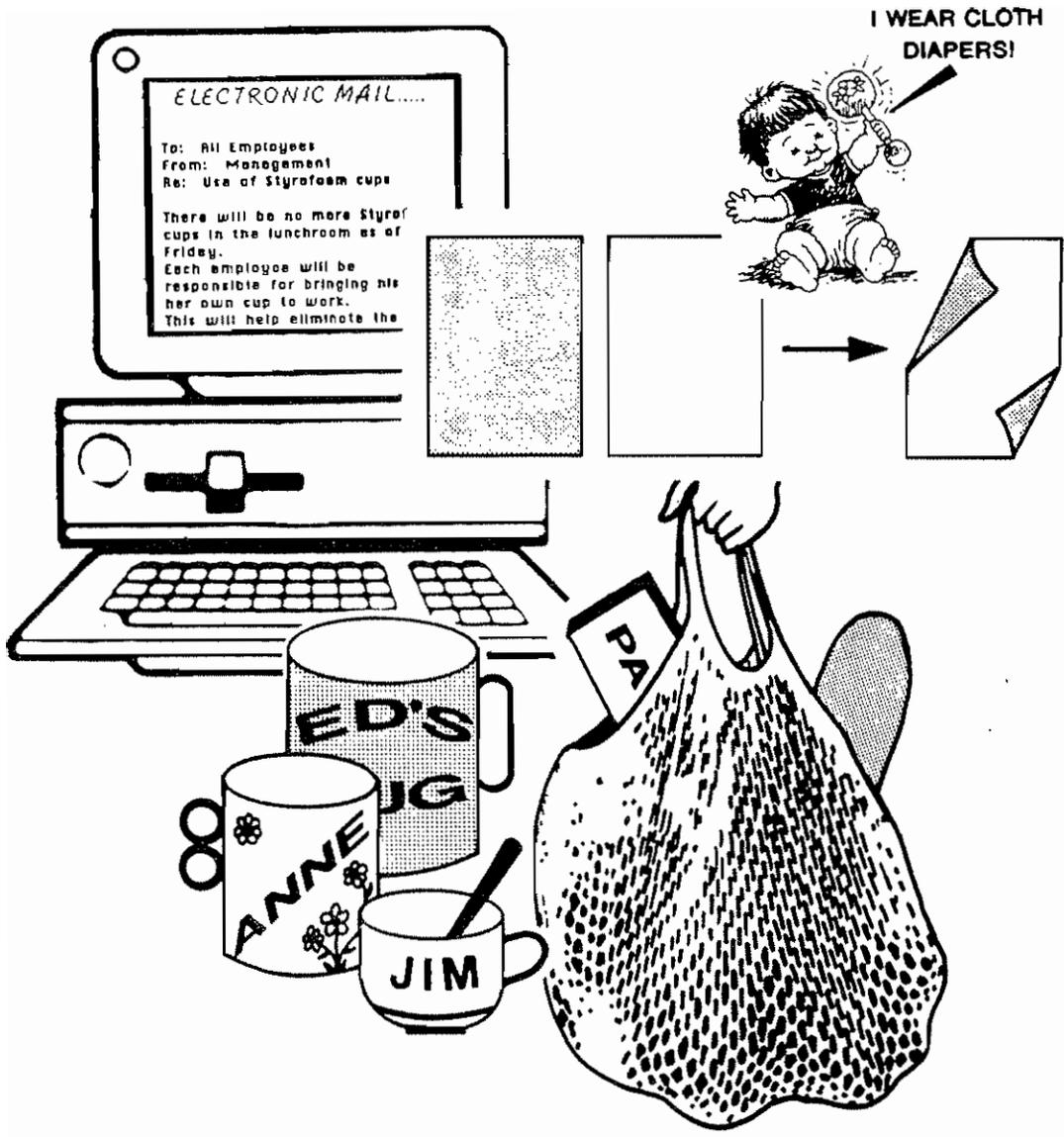
*Percent of total waste stream.
 ** Numbers are rounded.

Table 2-10
Outline of Sources for Diverted
and Disposed of Quantities and Composition of Solid Wastes¹

Resource	Data Type
<u>Disposal/Generation</u>	
Browning-Ferris Industries	Residential, Commercial, Industrial, and Self Haul Quantities
Waste Management Incorporated	Industrial Quantities
Zanker Road Resource Management Company	Industrial and Self Haul Quantities
<u>Diversions</u>	
Browning-Ferris Industries	Residential, Commercial, and Industrial Quantities, and Recyclery Quantities
Zanker Road Resource Management Company	Commercial/Industrial Sector Quantities
Certified California Redemption Centers	CA Redemption Value Material Quantities
Waste Management Incorporated	Commercial/Industrial Sector Quantities
Private Non-Profit Groups	Residential, Commercial/Industrial Sector Quantities
Private Collectors/Recyclers	Commercial/Industrial Sector Quantities
Grocery and Department Stores	Commercial Sector Quantities
Landscapers	Composting Quantities
Survey Private Businesses	Source Reduction Information
1. The City's hauler, BFI, will submit monthly reports on waste quantities. The remaining data will be collected on an annual basis by the City.	

REFERENCES

1. City of Santa Clara Initial Waste Characterization Study, Prepared by Recovery Sciences, Inc. and EcoAnalysis, Inc., December 1990.
2. Solid Waste Generation Study for the City of Palo Alto, Prepared by EMCON Associates, August 1990.
3. City of Sunnyvale's Initial Waste Characterization Study, Prepared by Cal Recovery Systems, Inc., October 1990.



SOURCE REDUCTION

3 SOURCE REDUCTION COMPONENT

3.1 Introduction

Source reduction is defined in Assembly Bill 939 (Public Resources Code, 40196) as "...any action which causes a net reduction in the generation of solid waste. Source reduction includes, but is not limited to, reducing the use of non-recyclable materials, replacing disposable materials and products with reusable materials and products, reducing packaging, reducing the amount of yard wastes generated, establishing garbage rate structures with incentives to reduce the amount of wastes that generators produce, and increasing the efficiency of the use of paper, cardboard, glass, metal, plastic, and other materials. Source reduction does not include steps taken after the material becomes solid waste or actions which would impact air or water resources in lieu of land, including, but not limited to, transformation."

Source reduction precedes waste management and addresses how products are designed, manufactured, purchased, and used so as to reduce the quantity and toxicity of waste produced when the products reach the end of their useful lives. Technical options for communities considering source reduction include product reuse, reduced material volume, reduced toxicity, increased product lifetime, and decreased consumption.

Source reduction as a component of waste reduction is not currently a widely applied concept. It is, therefore, difficult to estimate the actual impact that source reduction activities will have on the solid waste stream. At the local level, source reduction activities are often limited to changes in consumer behavior and consumption patterns as well as local manufacturing and production processes. Table 3-1 presents a list of typical source reduction activities practiced at the local level. Local source reduction activities and programs can be implemented through education, financial incentives and disincentives, and regulation, as well as research and technological developments.

This component describes existing conditions and presents source reduction objectives for the City of Milpitas; evaluates a broad range of alternatives that may be used to achieve those objectives; describes the process for selecting among the alternatives; and identifies a plan of action to implement and monitor the selected source reduction alternatives. Throughout this component the terms "City," "municipality," and "community" are used inter-changeably to refer to the City of Milpitas.

3.2 Objectives

The source reduction objectives presented in this section have been developed to meet the goal of reducing the amount of solid waste generated in the City of Milpitas. These objectives are to be implemented in the short-term planning period (1991-1995) and continued during the medium-term planning period (1996-2000). Through the following objectives, the municipality anticipates reductions in the total solid waste generated.

- Reduce the use of non-recyclable materials
- Replace disposable materials and products with reusable materials and products
- Purchase products with a reduced packaging content
- Purchase repaired or repairable products
- Purchase durable products
- Increase the efficiency of materials used in the commercial and industrial sectors
- Reduce generation of yard waste by promoting backyard or on-site composting
- Reduce the amount of unsolicited mail received by Milpitas residents

Targeted Materials. Target waste types for source reduction have been identified from the results of the solid waste generation study and are based on six factors: (1) the effectiveness of meeting the source reduction objectives; and (2) the volume and weight of the material; (3) the hazard created by the material; (4) the percent content of non-renewable resources; (5) the durability of the material; and (6) the recyclability of the material. These target waste types are outlined below.

- Paper and plastic packaging materials
- Yard waste
- Construction materials, including concrete, asphalt, metals, and lumber
- Paper and plastic cups, utensils, office supplies, and personal care products
- Metal and plastic repairable products, including appliances and electronic items
- Paper, including high grade, corrugated and mixed waste paper

Source reduction alternatives, targeting the above waste types, are evaluated in Section 3.5 according to their effectiveness in meeting the source reduction objectives outlined above.

3.3 Existing Conditions Description

3.3.1 Local Source Reduction Efforts

The City of Milpitas currently has an exclusive contract for residential curbside collection with BFI that expires in the year 2007. Subscription rates for residential curbside service are based on a fixed fee, including a surcharge for the recently implemented curbside recycling program. The curbside recycling program covers newspaper, plastic containers, glass, and aluminum cans.

Collection for multi-family and commercial generators is also handled under the same exclusive contract with BFI, with variable rates charged based upon frequency of collection, type and volume of container, and other factors. Temporary refuse bins and commercial/multi-family recycling is handled through a non-exclusive, competitive bid system. Milpitas allows residents to dump self-haul wastes at the landfill twice a month free of charge. This practice results in 65,000 cubic yards of waste being added to the landfill each year and provides a strong disincentive for source reduction. A change in the disposal fee structure at the landfill to favor recyclables is currently being considered.

Milpitas has a number of current source reduction activities ongoing within the community. These include efforts and programs by both the City government as well as by private individuals, groups, and businesses. An estimated 63.6 tons of solid waste are diverted from disposal through the use of cloth diapers in the City. Milpitas has not attempted to quantify amounts of waste diverted by other existing programs because adequate records and data are not available. The current source reduction activities in Milpitas are not likely to be decreased in scope in the future and will continue to contribute to the attainment of mandated waste diversion goals. Recordkeeping in the future should allow Milpitas to quantify source reduction activities occurring in the City.

The City of Milpitas engages in the following source reduction activities:

- The City's print shop makes scratch tablets from used flyers and office paper and makes two-sided copies on 75 percent of the material sent to them.
- The City garage uses cloth shop rags and employee uniforms that are reusable.
- The City has a 5 percent purchase preference for materials with recycled content.

There are thirty-three businesses known to the City to be operating as thrift, salvage, or repair shops that refurbish or repair used items for reuse. These businesses deal in items ranging from electronics, appliances and tools, to furniture, toys, clothing, and books.

Additionally, a survey taken of businesses in Milpitas revealed that a number of offices and businesses are actively pursuing source reduction activities. Some of the activities cited in the source reduction survey conducted for the City are listed below.

- Reusing packaging material
- Creating scratch pads from blank sides of paper
- Using cloth towels and sponges in the cafeteria
- Using routing memos
- Reusing file folders

- Posting source reduction and recycling reminders on bulletin boards and memos
- Using refillable pens and mechanical pencils
- Using scrap paper for interoffice communications
- Renting equipment instead of purchasing
- Donating old equipment to schools and charities
- Storing reports on microfiche instead of paper
- Using reusable coffee filters
- Keeping binders of information shelved in the library for general staff use instead of providing copies for personal files
- Using shredded paper for packaging material
- Reusing cardboard boxes
- Instituting electronic mail

3.3.2 National Source Reduction Efforts

Many of the source reduction activities affecting the waste generated by the City of Milpitas are being conducted at the national level. These efforts can affect the products consumed by residences and businesses within the City.

The following are some examples of major national source reduction efforts:¹

- Some manufacturers offer concentrated versions of products which use less packaging (e.g., frozen juices, concentrated pesticides, and concentrated soaps).
- Packaging changes initiated by one manufacturer include

¹ This summary is based on information from U.S. Congress Office of Technology assessment, *Facing America's Trash - What Next For Municipal Solid Waste*, OTA-0-424, Washington, D.C.: U.S. Government Printing Office, October 1989.

- Disposable diapers and diaper packages changed so that net total amount of materials in product and package was 50 percent less than preceding design.
- Detergent with bleach eliminates need for separate purchase of bleach.
- One manufacturer changed the tub of a dishwasher from enameled steel to engineered plastic, which enables the warranty on the dishwasher to be increased because the tub is more durable.
- A new blow-molding tool for plastic (HDPE) milk bottles reduces their weight 10 percent while increasing strength.
- A heat-set technology makes it possible to use PET containers for liquids that must be hot-filled. The new technology allowed a juice company to switch from glass to plastic bottles, resulting in a 25 percent reduction in weight and long-term cost savings in bottling and shipping.
- Plastic bags bought by a major "fast food" chain to ship products to its stores are designed to be reused as garbage bags.
- A large video rental and sales chain, trains its sales people to reuse the distinctive plastic bags that tapes are carried in and to ask customers to return tapes in the bags. This results in a savings of about \$1 million and over 25 million bags annually.

3.4 Evaluation of Alternatives

This section presents four alternatives representing a variety of approaches that can achieve the objectives identified in Section 3.2. Each of the alternatives is evaluated according to a set of criteria specified in the regulations issued by the California Integrated Waste Management Board (CIWMB) pursuant to AB 939.

For each evaluation criterion, a rating of high, medium, or low is assigned, and the potential issues are discussed. As structured by the regulations governing AB 939, some of the criteria by which the alternatives are

required to be evaluated are positive in tone (e.g., effectiveness), while others are inherently negative (e.g., hazard). A high rating for a positive criterion implies a positive rating; however, a high rating for a negative criterion corresponds to few or no impacts associated with this potential problem. The results for the evaluation are summarized in Section 3.6, Table 3-2. Source reduction alternatives evaluated for Milpitas are described below.

Many of these alternatives are complementary to each other and depend significantly on the implementation of other alternative, programs presented in the recycling, composting, and special wastes components. Where possible, these relationships have been indicated in the criteria for evaluating the alternatives. An additional consideration in evaluating the alternatives is that their effectiveness and impact need to be considered on the basis of how several alternatives or programs will work together as a system, rather than as alternatives independent of one another.

The source reduction alternatives have been grouped into four general categories:

- (1) Rate structure modifications, including local waste disposal fee modifications and quantity-based local user fees
- (2) Economic incentives, including loans, grants, and loan guarantees, reduced business license fees, and deposits, refunds, and rebates
- (3) Technical assistance and public education, including waste audits, technical assistance to industry and consumer organizations, educational efforts, public recognition activities, and non-procurement programs
- (4) Regulatory programs, including adoption of local ordinances to enhance source reduction, procurement programs, source reduction planning requirements by waste generators, product bans, and local land-use requirements.

3.4.1 Alternative 1 - Rate Structure Modifications

Source reduction activities can be encouraged through rate structure modifications, including disposal fees and quantity-based user fees for

garbage collection services. Rate structure modifications, described below, address all source reduction objectives identified in Section 3.2 and may be applied to both residential and non-residential generators.

Disposal Fees. Disposal fees at the landfill could be modified to promote source reduction by making the cost of disposal for non-recyclable and non-reusable wastes relatively high. Fees could also be imposed for the disposal of goods and products that can be repaired, salvaged, or composted. This type of fee structure is currently being considered at the Newby Island landfill.

Quantity-Based User Fees. These fees involve calculating collection and disposal fees based upon the amount of waste collected. This is similar in principle to other service-based utility charges, such as water and electricity. Generators are charged fees according to the number of cans used, the number of bags collected, or the frequency of collection. Variable rate fees are directly proportional to actual disposal costs; consequently, residents have the opportunity to reduce costs by generating less waste.

There are a number of variants to the rate structure alternative, including:

- Use of a base subscription fee to cover fixed collection costs, plus an additional per-unit volume charge;
- Fees that rise according to increasing volume; and
- Charges based upon weight instead of volume.

Jurisdictions implementing quantity-based user fees or variable rate schemes have frequently found that they do result in reduced quantities of disposed waste. Because of the reduction in waste quantities, however, the projected revenues generated by the system (tipping fees) are often insufficient to cover fixed costs for the solid waste management program. This problem may be solved through the use of a subscription fee to cover fixed costs, plus a variable fee for the actual quantities of waste collected.

Quantity-based user fees are most successful when free or low-cost collection of recyclables is provided in addition to collection of non-recyclables for disposal.

This alternative is evaluated as follows:

Effectiveness. High.¹ Rate structure modifications can be very effective in encouraging source reduction, since the cost of disposal or collection of disposables can be high. Additionally, variable rate structures provide an incentive for increased participation in recycling and community composting programs. Studies have shown that, during the first year of operation, a volume-based rate system can reduce the volume of waste requiring disposal by 25 percent. However, there is an upper limit to the variable rate structure beyond which illegal dumping will begin to occur.

Hazard. Medium.² There is no direct hazard associated with rate structure modifications. However, increased disposal and collection costs could result in an increase in illegal disposal, resulting in public health concerns.

Ability to Accommodate Change. High. Modifications to rate structures, in general, are easily adapted to existing programs. Rate structures can also be further changed and modified as circumstances warrant. This alternative is flexible over both the medium- and long-term. Milpitas' contract with BFI for curbside recycling includes two "windows of opportunity" for review of the contract as well as a full-scale review in 1992 of the collection contract.

Consequences on the Waste Stream. High.³ Rate structure modifications can be designed to reduce waste at the source and avoid substitution of a product or material that results in an equivalent or greater amount of waste being generated. The impact of this alternative, in concert with recycling and composting programs, is that the waste stream may be of lower volume, higher density, and contain much lower proportions of recyclables and yard wastes.

Implementation Period. High. This alternative could be implemented during the short-term planning period.

Facility Requirements. High.⁴ No additional facilities are needed to implement rate structure modifications.

¹ Refers to relative rating of the alternative with respect to this criterion.

² Note that several of the criteria—hazard, consequences on the waste stream, facility requirements, institutional barriers, and estimated cost—on the waste stream—are inherently negative. A rating of high for these criteria corresponds to few or no impacts associated with these potential problems.

³ See Footnote 2.

⁴ See Footnote 2.

Consistency with Local Plans and Policies. Medium. This alternative is generally consistent with the plans and policies of the City of Milpitas.

Institutional Barriers. Medium.⁵ Although Milpitas' contract with BFI includes built-in flexibility and periodic review, implementation of this alternative would depend on the ability of BFI to provide mechanisms for administering the variable rate charge.

Estimated Cost. High.⁶ The costs associated with implementing rate structure modifications are a function of the City staff time required to pursue negotiations with the waste haulers, develop the rate structure and program, seek approval for the program from the City Council, conduct public hearings, and develop a public information campaign to introduce the program to the rate payers. These costs are not expected to be high for the City of Milpitas.

End Uses. Not applicable.

3.4.2 Alternative 2 - Economic Incentives and Disincentives

Source reduction activities can be encouraged through economic incentives and disincentives. Economic incentives and disincentives address all source reduction objectives identified in Section 3.2.

Economic Incentives. Economic incentives can foster source reduction in two ways: (1) direct economic benefits provided to businesses and consumers who participate in source reduction programs, and (2) economic assistance to groups and organizations who foster source reduction and supporting the community's waste management goals and objectives.

Direct economic benefits can include tax credits and/or exemptions to businesses that implement formal source reduction activities for manufacturing or procurement. Loans, grants, and loan guarantees can provide direct economic assistance to businesses for the purpose of implementing source reduction activities. Reduced business license fees can also be granted to businesses that implement source reduction activities.

Economic assistance incentives are primarily intended to support groups and programs that contribute to the education and technical assistance efforts of the community's source reduction campaign. For example, the

⁵ See Footnote 2.

⁶ See Footnote 2.

City could provide loans, loan guarantees, or grants to encourage the economic development of businesses, non-profit groups, or associations that promote source reduction or otherwise foster waste reduction.

This program emphasizes the provision of nominal amounts of support to facilitate volunteer efforts of local or regional groups and associations seeking to foster source reduction efforts at the community level. This alternative enables the community to take advantage of the of volunteer interest groups in the community.

Economic Disincentives. Disincentives are designed to place a penalty on the waste generator. Under this approach, two kinds of disincentives are considered: advanced disposal fees, and direct penalties or fines.

Advanced disposal fees can be imposed by the community on certain products that are either non-recyclable or non-reusable. Products offered for sale that have excess packaging could also be made economically unattractive. A state-wide program to implement advanced disposal fees is currently being considered by the CIWMB. Under such a program, a fee would be imposed on products that meet the following criteria: disposable, non-recyclable, or non-reusable provided that a substitute durable, reusable, or-recyclable product is available.

Penalties and/or fines could be imposed by the municipality on businesses that do not develop and implement source reduction programs and practices. The requirements of this type of program could be restricted to large commercial or industrial waste generators and would serve to highlight the importance of community waste reduction efforts.

This alternative is evaluated as follows:

Effectiveness. Medium. The potential effectiveness of economic incentives is difficult to assess. Advanced disposal fees, however, present an excellent mechanism for creating an incentive for consumers to source reduce.

Hazard. High. There are no hazards created by the economic incentives and disincentives presented in this alternative.

Ability to Accommodate Change. High. Economic incentives can be modified to accommodate changes in consumption patterns, availability of materials, and the economy. Economic incentives are readily adaptable to

new source reduction techniques and approaches as the latter become available, and as new methods and programs are developed.

Consequences on the Waste Stream. Medium. Economic incentives should not result in shifts in waste type generation.

Implementation Period. High. Economic incentives and disincentives must be approved by the City Council. The amount of time required for the approval process and implementation of the program can be accomplished in the short-term planning period.

Facility Requirements. High. No facilities are needed to implement economic incentives in the City of Milpitas.

Consistency with Local Plans and Policies. Low. Providing economic assistance to businesses within the municipality or charging an advanced disposal fee may have no historical precedent. In this respect, this alternative may be viewed as inconsistent with local plans and policies.

Institutional Barriers. Low. This alternative presents potential problems for vendors who must collect any advanced disposal fee at the point of sale.

Estimated Cost. Medium. The costs of this alternative would include the use of the City's staff resources to develop and administer the incentive and disincentive programs. Staff resources would be necessary to develop, approve, implement, and administer each community project funded by the jurisdiction. Additional costs include the direct dollar amounts of any grants or funding provided under the incentive programs.

End Uses. Not applicable.

3.4.3 Alternative 3 - Technical Assistance, Education, and Promotion

The programs presented in this alternative address all source reduction objectives identified in Section 3.2. These activities include waste evaluations, technical assistance, educational efforts, promotional programs (i.e., public recognition and awards), and commercial procurement programs.

Waste evaluations are used to identify the waste types generated by a business that can be targeted for source reduction activities. Data collected from the waste evaluations can also be used for:

- (1) Assessing waste disposal fees;

- (2) Controlling the disposal of banned wastes into the waste stream (e.g., corrugated cardboard, organic wastes, and household hazardous or special wastes); and
- (3) Establishing a baseline for waste generation data from which to measure future progress in waste reduction.

The primary purpose of the waste evaluation alternative is to increase commercial awareness of the need for, and benefits of, waste reduction programs and to assist businesses to design and implement programs reducing waste generation.

Technical Assistance. Technical assistance to businesses and consumers can be accomplished through workshops and seminars that address practical ways in which businesses and consumers can reduce the quantity of wastes generated. Topics to be addressed include (1) decreased consumption; (2) reuse and recycling of materials, including encouraging and assisting waste exchanges between businesses; (3) procurement practices with preferences for reduced packaging, (4) increased durability, and increased recycled materials content; (5) increased manufacturing efficiency; and (6) composting of yard wastes at the site of generation (backyard composting).

Educational Efforts. Educational efforts can be a valuable means of developing consumer awareness about the benefits of source reduction. Educational efforts include developing and sponsoring consumer awareness programs, school curricula, seminars, and public forums. The City will provide information on backyard composting to residents.

Public Recognition and Awards. Public recognition can be used by the community to acknowledge businesses that have implemented successful source reduction activities. Awards can also be presented to community groups or individuals that are promoting source reduction in Milpitas either through example or through education.

Non-procurement Programs. These programs require the City to undertake activities aimed at altering the behavior of its own staff and operations to reduce the amount of waste generated on a day-to-day basis. These activities can include education programs familiarizing people with source reduction practices such as: double-sided copying, increasing the use of scratch paper, making fewer drafts of reports, and using electronic mail. This program provides an opportunity for the City of

Milpitas itself to develop and implement a model source reduction program that can be used as an example for other private, public, and commercial entities in the area.

The following evaluation of technical assistance, education, and promotion activities for source reduction includes waste evaluations, technical assistance, composting programs, educational efforts, public recognition and awards, and non-procurement programs.

This alternative is evaluated as follows:

Effectiveness. High. An effective technical assistance program combined with education and promotion can be effective in reducing quantities of solid wastes generated. Actual quantities are difficult to estimate and are dependent upon the types of programs selected, the scope of each program, and the materials and generators targeted for program impact.

Hazard. High. There are no hazards associated with the programs presented by this alternative. The City of Milpitas may seek to ensure that proper backyard composting techniques are used so that no public health or safety concerns are created.

Ability to Accommodate Change. High. This alternative is adaptable to change as new methods and programs are developed. This alternative also readily accommodates change in the waste stream as well as changes in consumer purchasing behavior and available products and alternatives.

Consequences on the Waste Stream. High. The most likely areas for impact on the waste stream would be from programs aimed at backyard composting, commercial purchasing and procurement, office source reduction, and consumer-purchasing awareness. The waste stream materials affected by these types of programs are yard wastes and wood cuttings, office paper and plastic packaging, corrugated cardboard, and other packaging products.

Implementation Period. High. Initial efforts in technical assistance, public education, and promotional activities can be implemented in the short-term planning period. The need for additional staffing and the more involved aspects of the alternative, such as developing school curricula, are areas that can be implemented in the medium-term.

Facility Requirements. High. No additional facilities in Milpitas would be required. Existing educational facilities could serve as locations for seminars and educational workshops.

Consistency with Local Plans and Policies. High. Technical assistance, education, and promotional activities are consistent with current conditions in Milpitas. The City of Milpitas has historically considered technical assistance and educational activities for waste management to be superior to regulatory controls.

Institutional Barriers. High. There are no institutional barriers to implementing technical assistance, education, and promotional activities for source reduction.

Estimated Cost. Medium. The costs for technical assistance, education, and promotion will vary depending on the City's level of funding available for a broad spectrum of programs. Although staffing would constitute the majority of the costs of implementing technical assistance, public education, and promotional activities.

End Uses. Not applicable.

3.4.4 Alternative 4 - Regulatory Programs

Several alternative regulatory programs that address the source reduction objectives outlined in Section 3.2 are available to the City of Milpitas. These programs include local procurement ordinances, required waste reduction planning and reporting, local product bans, and local land-use planning requirements. One aspect common to all regulatory programs is that they require continuous enforcement efforts.

Local Procurement Ordinances. The City of Milpitas already has in place a five-percent purchasing preference program for recycled paper. The City may extend this program to include other products that are durable, recyclable, and reusable, and that contain recycled material content. Milpitas can require contractors with the City to have a source reduction plan or program in place and provide products or materials according to the above criteria.

Waste Reduction Plans. These plans involve establishing waste reduction planning and reporting requirements for large, commercial or industrial waste generators in the City. Waste reduction planning and reporting would require each business to establish a source reduction plan outlining

what source reduction activities will be implemented. Businesses would also be required to report quantities of wastes source reduced.

Product Bans. These are bans on targeted products and packaging techniques to the extent that the ban results in a reduction of waste at the source and has a net environmental benefit. Bans might be considered on products and packaging that do not lend themselves to easy recyclability or source reduction. Communities that pursue this kind of alternative often adopt a time limit or phase-out period for the ban to take effect, providing time for businesses and others to adjust to the policy and identify substitutes.

Land Use and Development Requirements. These requirements involve establishing incentives and disincentives to land use and development that promote source reduction. For example, regulations can be adopted that prohibit an entity from opening a new business, relocating an old one, or building or otherwise developing property for commercial or residential purposes without presenting a plan describing the wastes that will be added to the waste stream, and the programs that will be implemented to encourage source reduction on the developed area.

This alternative is evaluated as follows:

Effectiveness. Medium. The effectiveness of regulatory programs would depend on the level of regulation imposed by the City, the materials targeted, adherence to the regulations by the community, and the level of enforcement.

Hazard. High. There are no known hazards associated with regulatory programs.

Ability to Accommodate Change. Low. The regulatory measures outlined in this alternative vary in their flexibility to changing social and economic conditions.

Consequences on the Waste Stream. Medium. Changes in the waste stream composition will depend on the effectiveness of each program. Changes in the waste stream are affected by the availability of alternative products for procurement programs and the ability of institutional or commercial generators implementing a waste reduction plan to identify and target specific waste categories (such as disposable diapers, high-grade paper, or corrugated packaging and cardboard). A product ban will reduce the quantities of the banned product present in the waste stream. How-

ever, the ban will also tend to increase the presence of product substitutes in the waste stream.

Implementation Period. Medium. Procurement programs, waste reduction plans, and land-development plans can all be implemented in the short-term time period. With product bans, however, communities usually allow a period of time for consumers, producers, and retailers to adjust to the effects of the ban.

Facility Needs. High. There are no facility requirements for this alternative.

Consistency with Local Plans and Policies. Medium. Regulatory programs may be viewed as inconsistent with municipal policy given current plans for implementing voluntary waste diversion programs.

Institutional Barriers. Low. Purchasing and procurement programs within the diverse City agencies will have to be coordinated in order to achieve a City-wide impact from a source reduction procurement program. There are no institutional barriers presented by a product ban program, although there may be unknown legal ramifications associated with excluding a product from the market by implementing a local product ban. Land-use requirements and waste reduction planning can be expected to encounter stiff opposition from the affected businesses and industries.

Estimated Cost. Medium. Costs for regulatory programs largely depend on the level of regulatory programs that the City chooses to pursue. Each of the programs outlined in this alternative would require resources from the City for developing, administering, implementing, and monitoring the program.

End Uses. Not applicable

3.6 Selection of Program

This section will describe the alternatives and programs selected as well as the basis for their selection. There are two factors critical to the selection process: (1) the degree to which each alternative and program is appropriate to the conditions of the jurisdiction (i.e., goals, objectives, policy environment, waste stream, and solid waste management system), and (2) the degree to which the alternatives and programs complement

each other and form a coherent, comprehensive, and cost-effective package.

A summary of the evaluation results of each alternative can be found in Table 3-2. The selected alternatives are described below.

Selection 1: Public Education and Technical Assistance. The City of Milpitas will implement public education and technical assistance programs in an effort to foster source reduction in the City. In addition to its ranking according to the evaluation criteria, this alternative was selected because it will be uniquely effective in achieving results for a program element whose fundamental emphasis is on changing the behavior of producers and consumers.

Another factor in the selection of the public education and technical assistance alternative is the City's ability to implement this alternative in conjunction with the efforts of other jurisdictions, including the State Department of Conservation, and the CIWMB. The development of promotional and public education materials can be coordinated with neighboring jurisdictions in Santa Clara County. Joint funding for any materials to be disseminated by means of broadcast or print media covering more than one jurisdiction can be explored.

Programs implemented under this alternative will target both residential and non-residential generators and impact materials that comprise a significant proportion of the waste stream (e.g., all types and grades of paper; all types of paper, plastic and styrofoam packaging; and yard wastes).

Selection 2: Rate Modifications. The City of Milpitas will implement modifications to the current rate structure for collection and disposal of both residential and commercial wastes. These modifications will take the form of a variable rate structure designed to encourage source reduction of materials that are not reusable, recyclable, or compostable. The commercial rate modifications will provide financial incentives for source reduction and recycling.

In addition to its ranking according to the evaluation criteria, this alternative was selected because (1) the City's contract with its waste hauler (BFI) will undergo a review and revision in the near future and (2) the alternative will support alternatives and programs selected under the recycling and composting components of this SRRE.

Selection 3: Regulatory Programs. The City of Milpitas will expand and enhance its existing procurement program to encourage source reduction on the part of local government and to set an example for other non-residential generators in the City. Purchase preferences will be extended to materials and products that have packaging that is minimal, reusable, recycled, or recyclable.

Estimated Quantities and Types of Wastes to be Diverted

An estimated 63.6 tons of solid waste were diverted from landfilling in 1990 by source reduction through the use of cloth diapers. Additional information on source reduction diversion quantities is not currently available. The City will pursue methods of evaluating, monitoring, and reporting on source reduction diversion as programs are implemented. The City will revise source reduction estimates when it conducts follow-up waste generation studies in 1994. Additional data will result from waste diversion reports, and program evaluation and monitoring.

The types of materials that are anticipated to be source reduced through the selected alternatives include:

- Paper and plastic packaging materials
- Yard waste
- Construction materials, including concrete, asphalt, lumber, and metals
- Plastic cups, utensils, and personal care products
- Metal and plastic non-repairable products, including appliances and electronics
- Paper, including corrugated, high grade, and mixed waste paper

3.7 Program Implementation

3.7.1 Responsibility for Implementation

The City of Milpitas Community Development Department will be responsible for implementing all of the source reduction programs and activities selected in this component.

The City currently has one staff planner assigned to develop, administer, monitor, and evaluate solid waste programs in Milpitas. However, in order to fully implement the program alternatives selected in this SRRE, the City will require one additional full-time staff member assigned to solid waste planning.

The source reduction program is based primarily upon the public education and technical assistance alternative selected in this component. Further information on program implementation can be found in Section 7.6.1 of the Education and Public Information Component of this SRRE.

3.7.2 Required Implementation Tasks

See Table 7-1 for public education implementation of source reduction programs.

See Table 3-3 for rate modification and regulatory program implementation for source reduction.

3.7.3 Implementation Schedules

See Table 7-1 for public education implementation.

See Table 3-3 for rate modification and regulatory program implementation.

3.7.4 Implementation Funding Requirements

The implementation costs for the alternatives and programs selected in this component have been combined with those for the Education and Public Information Component and can be found in Chapter 7, Section 7.6.4. Costs for Rate Structure modifications are presented in Section 9, Funding Component.

3.8 Monitoring and Evaluation

3.8.1 Methods to Measure Achievement

The objectives of the City's source reduction program are to increase the public's participation in source reduction programs. The following methods will be implemented in order to monitor the achievement of these objectives:

- Future waste generation studies to measure changes in both waste types and waste quantities. Such studies can be combined with future waste characterization studies.
- An annual survey of businesses and the City government to monitor procurement practices and source reduction progress in general.
- A bi-annual residential survey to ascertain the participation rates for backyard composting programs and the general level of awareness regarding source reduction issues.
- Continued monitoring of national trends in source reduction with respect to production and packaging practices resulting in volume and weight reduction. National trends will be monitored to receive "credit" for diversion resulting from reduction measures applicable to products and material types distributed, sold, or otherwise consumed in the City. The City will also monitor these trends to encourage purchase of preferred products exhibiting these reduction characteristics.
- Annual reports to monitor progress and compliance with the requirements of AB 939 will be used to monitor and measure the achievements of the City programs.

Additional monitoring activities to be implemented are described in Section 7.7.1 of the Education and Public Participation Component.

3.8.2 Evaluation Criteria

The City of Milpitas will evaluate the effectiveness of the source reduction program by regularly addressing the following issues in a written format and presenting the results in annual progress reports.

- Are the source reduction objectives being achieved?
- Do residents have a greater understanding of the concept of source reduction?
- Have businesses' procurement practices changed?

3.8.3 Responsibility for Monitoring and Evaluation

The City of Milpitas Community Development Department, Division of Planning, will be responsible for monitoring and evaluating all of the education and public information program activities selected in this component.

3.8.4 Monitoring and Evaluation Funding Requirements

Funding requirements for the monitoring and evaluation of the source reduction programs selected in this component include funds for record-keeping and surveying participation rates. These funds are included in estimates presented in Section 7.7.4 of the Education and Public Information Component.

3.8.5 Contingency Measures

The following measures will be implemented if the source reduction objectives identified in Section 3.2 are not achieved.

- Evaluate the need for increased funding for source reduction programs such as waste audits, specialized technical assistance, and more aggressive source reduction awareness campaigns.
- Modify any source reduction programs that are determined to be inadequate.
- Identify additional source reduction programs for consideration, including grant funding for technical assistance and public education, land-use requirements, modified disposal fees, and economic incentive/disincentive programs.



Table 3-1

WHAT IS SOURCE REDUCTION ?

<h2>DECREASED CONSUMPTION</h2>	<h2>MATERIAL REUSE</h2>
<p><u>Reduce Material Volume</u></p> <ul style="list-style-type: none">• Make two-sided copies• Use routing slips• Use electronic mail• Buy in bulk• Offer waste reduction incentives to employees <p><u>Increase Product Durability</u></p> <ul style="list-style-type: none">• Purchase durable goods• Design durable products• Provide/use maintenance contracts to extend the life of equipment	<ul style="list-style-type: none">• Use cloth towels, retreaded tires, refillable pens, reusable air filters, returnable bottles• Reuse packaging or packing material• Provide/use returnable packaging containers• Donate used equipment• Use ceramic coffee mugs• Reuse blank sides of paper for scratch• Use silverware and dishes in the cafeteria• Compost, mulch or chip on site• Rent equipment rather than buying• Use a waste exchange program• Design for reuse or recyclability

**Table 3-2
Alternatives Evaluation
for Source Reduction Programs**

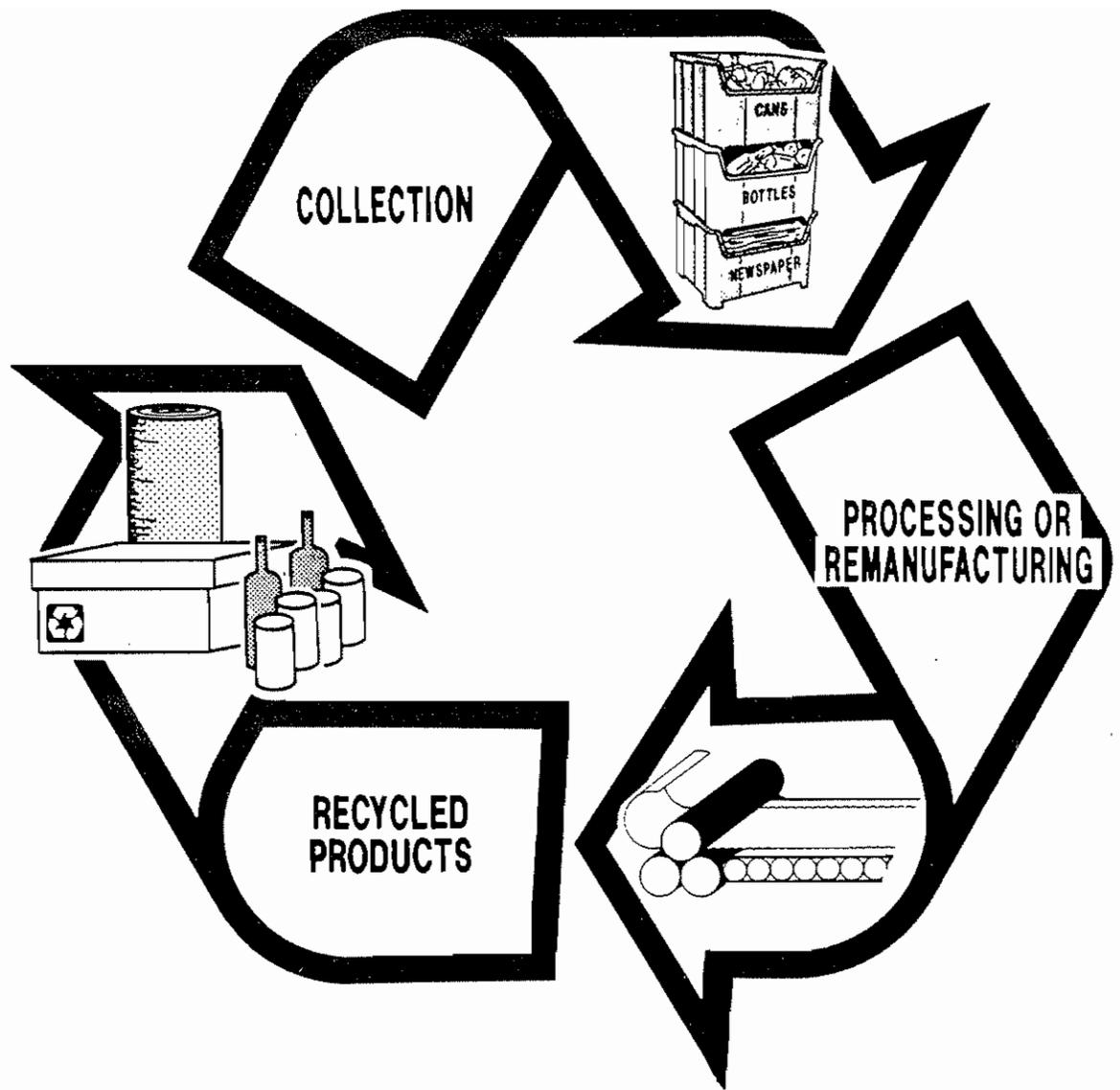
Program Categories	Evaluation Criteria					
	Effectiveness	Hazard	Ability to Accommodate Change	Consequences on the Waste Stream	Implementation Period	Facility Requirements
Category 1 Rate Structure Modifications	high	medium	high	high	high	high
Category 2 Economic Incentives	medium	high	high	medium	high	high
Category 3 Technical Assist. & Education	high	high	low	high	high	high
Category 4 Regulatory Programs	medium	high	low	medium	medium	high

Program Categories	Additional Considerations			
	Consistency With Local Plans and Policies	Institutional Barriers	Cost	End Uses
Category 1 Rate Structure Modifications	medium	medium	high	N/A
Category 2 Economic Incentives	low	low	medium	N/A
Category 3 Technical Assist. & Education	high	high	medium	N/A
Category 4 Regulatory Programs	medium	low	medium	N/A

Table 3-3
SOURCE REDUCTION
Implementation Activities

Program	Program Activities*	Activity Implementation Tasks	Schedule
Variable Rate Structure	Implement variable rate structure for residential collection programs	Negotiate with local haulers; determine appropriate rate structure; develop program to administer variable rates; propose program to City Council; hold public hearings; prepare public information for rate payers	Beginning Early 1993
Procurement Program	Develop City-wide procurement program for Milpitas	Develop procurement programs with every City agency; develop criteria for materials to be included in procurement program; identify vendors of materials and products that meet source reduction criteria	Beginning Late 1991

* Program activities are described in detail in the text. See Table 7-1 for public education implementation of source reduction programs.



RECYCLING

4 RECYCLING COMPONENT

4.1 Introduction

Recycling is defined by the National Recycling Coalition as the series of activities by which materials that would otherwise remain wastes are collected, separated, or processed and used in the form of raw materials. Recycling is an old practice that is taking on an increasingly important role in today's solid waste management programs. This form of waste diversion helps preserve natural resources and reduces the environmental impacts associated with waste disposal.

As stated in the definition, recycling goes far beyond merely collecting and separating post-consumer waste; in order to truly recycle, the materials must be remade into new products. Thus, markets are critical for the full recycling process to be complete. Accordingly, recycling planning must include market development along with program development.

The existing recycling programs in Milpitas are dedicated to the recycling of a range of materials. These programs, which represent the first step in recycling--separation and collection--are described in the following pages. In addition to the description of existing programs, this section includes an evaluation of recycling program alternatives, the selection of recommended alternatives, a discussion of end markets, and plans for implementing and monitoring recycling programs. Costs given for programs are approximate and program details should be considered preliminary. These will be refined once additional details are known.

4.2 Objectives

The City of Milpitas selected the following objectives for this component to be accomplished during the short-term planning period (1991-1995) and the medium-term planning period (1996-2000). These objectives have been established in conjunction with the objectives in the other compo-

nents of this document in order to achieve the required diversion rates of 25 percent by 1995 and 50 percent by 2000.

4.2.1 Short-Term Planning Period

In early 1991 two recycling programs were implemented: (1) residential curbside collection, and (2) a manual/mechanical material recovery facility (The Recyclery) at the Newby Island Landfill. Presented below are recycling objectives that will be met by new programs during the remainder of the short-term planning period.

A diversion of 3.8 to 5.2 percent of Milpitas' total wastestream is expected to be achieved through the following objectives. See Section 4.6.2 for a breakdown of diversion numbers by waste type and recycling program.

Residential

- Establish programs for the collection of recyclable materials from multi-family dwellings.

Non-Residential

- Establish source separation programs for small quantity non-residential waste generators.
- Increase source separation recycling programs for large quantity non-residential waste generators.
- Increase recovery of recyclable materials from City offices and programs.
- Salvage items at the Newby Island Landfill.
- Recover recyclable materials currently being collected in roll-off boxes.

4.2.2 Medium-Term Planning Period

A diversion rate of 4.8 to 7.2 percent* of the City's total wastestream is expected to be achieved as a result of continuing the two programs

* Includes diversion expected from new programs begun in the short-term planning period; see Section 4.6.2, "Quantities and Types of Waste Anticipated to be Diverted."

implemented in the short-term planning period and achieving the following objective during the medium-term planning-period:

Residential

- Increase the types of materials collected through the residential curbside program.

4.3 Waste Types Targeted for Diversion

Based on the results of the waste generation study, the following materials are targeted for diversion. Many of these waste types are currently being collected in Milpitas; these programs will continue, or be expanded to increase the quantities collected.

- mixed paper
- newspaper
- corrugated cardboard
- white ledger, computer paper, and colored ledger
- PET, HDPE, and polystyrene foam
- glass
- aluminum and tin cans
- inert solids (asphalt, concrete)
- telephone books
- magazines and catalogs

4.4 Existing Conditions Description

In 1990, an estimated 7.5 percent of the total waste stream in Milpitas was diverted. Milpitas' programs for the collection of selected recyclable materials are discussed in the following pages. Programs are provided for the residential sector and the non-residential sector. These programs will be continued, or expanded during the short-term and medium-term planning periods, as described in Section 4.5.

4.4.1 Residential Programs

Curbside collection of recyclables. A weekly curbside recycling program began on January 28, 1991 in Milpitas for all single-family homes in the city. Duplexes and townhomes were also included, as these dwellings are considered single-family dwellings in Milpitas. The program, called *RecycleNOW*, is operated by the City's hauler for residential refuse, Browning-Ferris Industries (BFI). BFI is experienced in curbside recycling programs, having established *RecycleNOW* programs in over 200 communities nationwide. Materials collected include newspaper, glass, tin cans, aluminum cans, PET, motor oil, and HDPE. All recyclables except newspaper are collected in one 14-gallon bin on the same day that refuse is collected. Newspaper must be tied or bagged separately.

The average set-out rate (number of residents putting out their recyclables *every week* for a given month) after four weeks of beginning the program was approximately 40 percent; this was the projected rate. That set-out rate corresponds to a 75 to 80 percent participation rate (number of households putting out their recyclables *at least one week* in a given month). These percentages were determined via a BFI study during which staff monitored homes in Milpitas every week for one month to monitor the number of times recyclables were set out. This participation level is consistent with other curbside programs BFI has operated nationwide, including the program in the City of San Mateo. Increased participation is expected to be brought about via public education efforts. BFI has a contract with the City to provide public education for one year; see Section 7, "Education and Public Information Component" for further discussion of public education programs.

Curbside collection of Christmas trees. The Loma Prieta chapter of the Sierra Club and BFI provided a Christmas tree collection program in January 1991. Residents, at no charge, placed their trees at the curbside on their regular refuse collection day and BFI picked up the trees at no cost to the City. A portion of the trees were converted into mulch, which was used at Newby Island Landfill, as well as by the City of Milpitas. The remaining trees were sold to Western Forest Power for hog fuel. The use of trees for fuel cannot be counted toward diversion until after 1995, pursuant to Public Resources Code 41783.

4.4.2 Non-Residential Programs

City recycling program. Current City recycling activities include the informal collection of aluminum cans by employees and a scratch paper program whereby the City's print shop recycles used City fliers and office paper into scratch pads for employees' use. In addition, a collection program for white paper and mixed paper was begun in City facilities in May, 1991.

Commercial/industrial collection programs. Collection of source-separated recyclable materials from the commercial/industrial sectors is a nonexclusive portion of the BFI franchise. BFI, Zanker Road Resource Management, and Waste Management, Inc., tailor recycling collection programs to fit the needs of a particular business and make this service available to any business in Milpitas. Until March 1991, BFI programs were primarily set up by request, whereby the interested business would contact BFI and arrange the service. BFI, due to its increased collection capacity with the opening of The Recyclery™ (see Section 4.4.3, "Residential and Non-Residential Programs"), now contacts businesses directly to offer its collection services, in addition to continuing the on-call program. Materials collected, and fee structures for the service, vary with each company. BFI's commercial/industrial service also encompasses roll-off boxes; BFI estimates it services more than 90 percent of this business.

4.4.3 Residential and Non-Residential Programs

Drop-off and buy-back recycling centers. Several drop-off and buy-back recycling centers exist in or near Milpitas. The Recyclery, a state-certified recycling center at the Newby Island Landfill, includes a Public Recycling and Buyback Center where Milpitas residents, non-profit organizations, and small commercial recyclers bring their materials to be weighed on electronic scales in a drive-through area. Because the Recyclery is certified under AB 2020, the general public is paid California Redemption Value, as opposed to scrap value, for aluminum cans, glass, PET, and bi-metal containers that are marked "California Redemption Value." The State Department of Conservation (DOC) will certify a recycling center if it is open a minimum of 30 hours per week, of which five hours must be other than 9 a.m. to 5 p.m., Monday through Friday. The proceeds from the sale of the materials can be donated to a charity if the recycler chooses. The Center purchases many materials from the public, including numerous aluminum products (e.g., cans, foil, pots and pans,

roasting pans), paper products (e.g., colored ledger, computer paper, and white ledger; glossy paper and magazines; newspaper), copper and brass products, plastics, and glass. Junk mail, polystyrene, and telephone books are also accepted; however, the public is not compensated for these wastes.

Three additional state-certified recycling centers currently operate in Milpitas: (1) Lucky Grocery Store on Park Victoria Drive, (2) Fry's Food Store on W. Calaveras Blvd., and (3) Nob Hill Foods on Jacklin Road.

Another recycling program is offered by Goodwill Industries, which operates a state-certified collection truck on N. Milpitas Blvd. In addition to collecting the usual items at this site (e.g., clothing, books, household items), Goodwill accepts California Redemption Value containers at this location.

In addition, Boy Scouts of America has maintained two newspaper drop-off bins at Abbott and Rudyard in Milpitas since about 1988. The unstaffed bins are open at all times and are cleared weekly by the Scouts.

The Recyclery. In addition to the Public Recycling and Buyback Center described earlier, large items from the landfill are diverted at the Recyclery. These items include corrugated cardboard, mixed paper, wood and brush, and metals.

Telephone book collection. In March 1991, Pacific Bell began a pilot drop-off program for old telephone directories in Santa Clara County; two of the drop-off bins are in Milpitas. The program will run until May 15, 1991, and can be utilized by both the residential and non-residential sectors. Pacific Bell is considering making this an annual program.

4.5 Evaluation of Program Alternatives

The City of Milpitas evaluated the following ten recycling alternatives that could be implemented to meet its diversion goals. For ease of evaluation, these have been divided into alternatives for the residential sector and those for the non-residential sector. Each alternative is evaluated according to criteria specified in the regulations implementing AB 939. Program costs are approximate and program details should be considered preliminary. Cost and program details will be refined during development of the specific programs.

Many of these alternatives are complementary to each other and depend significantly on the implementation of other alternatives, programs, or SRRE Components, such as Source Reduction, Composting, and Education and Public Information. Where possible, these relationships have been indicated in the criteria for evaluating the alternatives. In addition, the effectiveness and impact of the alternatives must be considered on the basis of how several programs will work together as a system, rather than independently. In compliance with the regulations implementing AB 939, the Source Reduction Component addressed the purchase preference for goods with recycled content (see Section 3.4.4).

The following ten alternatives are evaluated within their respective categories based on the evaluation approach presented in Appendix A. For each evaluation criterion, a rating of high, medium, or low is assigned, and a discussion of potential issues is given. The results of the evaluation are summarized in Table 4-1.

Residential Alternatives

Alternative 1 - Separate additional waste types through the curbside program.

Alternative 2 - Develop mobile collection system.

Alternative 3 - Develop buy-back center.

Alternative 4 - Establish source separated recycling program: multi-family dwellings

Non-Residential Alternatives

Alternative 1 - Implement source-separated recycling program: curbside program.

Alternative 2 - Develop manual material recovery operation/mechanized material recovery operation.

Alternative 3 - Salvage at solid waste facility.

Alternative 4 - Establish City-wide recycling programs for the non-residential sector.

Alternative 5 - Divert inert solids generated from City public works projects to a materials processor.

Residential and Non-Residential Alternative

Alternative 1 - Drop-off recycling center

4.5.1 Residential Alternatives

Alternative 1 - Separate additional waste types through the curbside program.

This alternative addresses the objective of collecting recyclables from single family homes. Once the new curbside program is fully established, additional materials, such as corrugated cardboard, magazines, and mixed paper, should be added to the list of acceptable "collectibles" to increase recovery through curbside collection. Another option is to begin wet/dry collections at the curb, similar to systems in Europe. Because few, if any, such programs currently exist for the residential sector in the U.S., the logistics and considerations for such a program are not known at this time.

One type of wet/dry collection system that has been used in Europe involves three cans. One can contains all the recyclable materials that will go to a MRF for processing: this is essentially commingled collection. The second can contains all food scraps and other designated organic wastes. These materials would likely be composted. The third can contains all other materials that cannot be separated; these would probably be taken to the landfill.

BFI's contracts with many processors allows the hauler to offer assured markets for many waste types to its customers. In addition, the planned McMRF™ will allow for efficient processing of additional commingled waste types from the curbside program.

Effectiveness. High.¹ This alternative would be effective in reducing the amount of targeted material(s).

Hazard. High.² This alternative presents no known hazards.

Ability to Accommodate Change. High. This alternative is readily adaptable to changing conditions.

¹ Refers to relative rating of the alternative with respect to this criterion.

² Note that several of the criteria—hazard, consequences on the waste stream, facility requirements, institutional barriers, and estimated cost—on the waste stream—are inherently negative. A rating of high for these criteria corresponds to few or no impacts associated with these potential problems.

Consequences on the Waste Stream. High.³ This alternative has no known impact on the waste stream.

Implementation Period. High. This alternative would likely be completed by 1995.

Facility Requirements. Medium. The McMRFTM will provide the necessary facilities. Also, vehicle modifications might be required when adding new materials (depending on what the materials are).

Consistency with Local Plans and Policies. High. This alternative is consistent with local plans.

Institutional Barriers. High.⁴ No known barriers exist.

Estimated Cost. The cost will depend on which materials are selected.

End Uses. See Section 4.6.7, "Market Conditions."

Public vs. Private Operation. This alternative will be a private operation.

Alternative 2 - Develop Mobile Collection System

A mobile collection system, by definition, is one that moves and can service more than one area. Mobile systems are ideal for rural areas with low-density populations. Under AB 939, the City is required to evaluate this alternative. Establishing a mobile collection system does not specifically address any of the City's recycling objectives.

Effectiveness. Low. Because Milpitas has many recycling collection systems in place, a mobile collection system is expected to have negligible effects on reducing the amount of waste diverted.

Hazard. High. There are few or no potential hazards.

Ability to Accommodate Change. High. This alternative is readily adaptable to changing conditions.

Consequences on the Waste Stream. High. This alternative would not impact the waste stream.

Implementation Period. High. This alternative would likely be implemented by 1995.

³ See Footnote 2.

⁴ See Footnote 2.

Facility Requirements. Medium. It is likely that existing facilities would need to be expanded or altered since a mobile collection system would require a trailer for customer transactions and a storage area for material collected. The collection site should also be secured at night to prevent scavenging.

Consistency with Local Plans and Policies. High. This alternative is consistent with City policies.

Institutional Barriers. Medium. Milpitas has many collection systems in place, establishing a mobile collection system could potentially impact the success of the existing operations.

Estimated Cost. Medium. Capital costs to establish a mobile collection system are estimated to range from \$50,000 to \$100,000.

End Uses. See Section 4.6.7, "Market Conditions."

Public vs. Private Operation. A mobile collection program could be operated by either a public or private entity.

Alternative 3 - Develop Buy-back Center

In compliance with AB 939, the City is required to evaluate a buy-back center alternative. A buy-back center is essentially a drop-off center at which participants are paid for the materials they deliver. These materials typically include aluminum cans, newspaper, glass, metal cans, plastic (PET and HDPE), corrugated cardboard, and high grade papers. This alternative does not specifically address any of Milpitas' recycling objectives, although it might have some minor impacts on waste diversion. At BFI's Public Recycling and Buy-back Center (a short distance from Milpitas), many materials can be sold (see Section 4.4, "Existing Conditions"). Because of the nature of the programs, buy-back centers must have regular business hours and be staffed full-time; they are often more labor intensive than drop-off centers and can require equipment not needed at drop-off centers.

Effectiveness. Low. Offering more buy-back centers in the City of Milpitas would likely be ineffective in diverting additional waste from landfilling. If anything, the waste would just be transferred from another recycling program, such as curbside, where the generator is not paid for it.

Hazard. High. Although this alternative presents few or no hazards, broken glass could potentially be a problem.

Ability to Accommodate Change. High. This alternative is readily adaptable to changes by adding more staff or equipment.

Consequences on the Waste Stream. High. This alternative would have no impact on the waste stream.

Implementation Period. High. This alternative would likely be completed by 1995.

Facility Requirements. Low. New facilities would be required. A site, facility, and processing equipment (e.g., scales, cash register, safe, calculators, hand carts) would be needed.

Consistency with Local Plans and Policies. High. This alternative is consistent with City policies.

Institutional Barriers. Medium. Some institutional barriers exist for this alternative. A location would have to be selected and any necessary permits filed. It is possible that a buy-back center could be located in a vacated building, such as a service station or small warehouse. What is important is that it be located on a well-traveled thoroughfare. In addition, the center would have to be certified by the State DOC as a buy-back center for California Redemption Value beverage containers under AB 2020. According to the DOC, this would require filing an application to become a certified recycling center.

Estimated Cost. Medium to Low. Capital costs will vary depending on the site selected (e.g., whether new construction is required) and the type and size of the facility (e.g., will any processing be done? If so, more sophisticated equipment may be needed). Labor costs would be additional and would again vary depending on the size of the facility.

End Uses. See Section 4.6.7, "Market Conditions."

Public vs. Private Operation. A buy-back center would likely be privately operated.

Alternative 4 - Establish source-separated recycling program: multi-family dwellings

This alternative addresses the objective of establishing programs for the collection of recyclable materials from multi-family dwellings. Multi-family dwellings typically house apartment renters, condominium and townhome owners or renters, residents of senior citizen homes, and mobile home park residents. In Milpitas, most duplexes and townhomes are considered single-family homes and are serviced by the curbside program. For this reason, these dwellings will not be considered in this alternative. By special arrangement, the one senior citizen residence in the City, "Terrace Gardens", will be serviced by curbside collection until at least 1993. This alternative will include Terrace Gardens, in the event that it is no longer serviced by the curbside program after 1993.

Currently there are no on-site recycling programs at the approximately 3,358 multi-family dwelling units. The number of multi-family units in the City is projected to increase approximately 15 percent by 1995, when such units will represent approximately one-third of the total number of housing units in Milpitas. Programs will likely be tailored to the particular multi-family area; for instance, a senior citizen's residence may have different needs than an apartment complex.

Effectiveness. High. A recycling program for multi-unit dwellings is expected to be effective in reducing the amount of targeted material(s) in the solid waste stream. Materials collected would likely be newspaper, glass, aluminum cans, and PET plastic. The success of the program will depend on how well the particular needs of each type of multi-unit dwelling are considered.

Hazard. Medium. Recycling programs at multi-unit dwellings present moderate hazards, which will depend on the type of program in place. For instance, broken glass or other miscellaneous items can be a problem with multi-bin or multi-compartment systems.

Ability to Accommodate Change. Medium. Multi-unit dwelling recycling programs are readily adaptable to changing conditions. If the program grows quickly, it could pose some logistical problems, due to lead times required for purchasing new collection containers, or overflowing containers from increased participation. In addition, the program is more readily adaptable to changing conditions if residents and multi-family dwelling managers are kept up-to-date on changes in the program, etc.

This task could be accomplished by the hauler, City staff, or volunteer groups.

Consequences on the Waste Stream. High. Multi-unit dwelling recycling programs would not impact the waste stream.

Implementation Period. High. This alternative would likely be completed by 1995; BFI has plans to begin servicing more multi-unit dwellings in 1991.

Facility Requirements. Medium. Existing facilities would have to be expanded or altered. Some existing multi-family facilities could have a space problem as the program grows, since space is generally at a premium. "Trade-offs" may be required in order to utilize parking areas or open areas for recycling collection containers. In addition, in Milpitas City policy may require that garbage/recycling collection areas be enclosed, a requirement that could result in changes to accommodate recycling.

Consistency with Local Plans and Policies. Medium. Minor changes to existing plans and policies would be required. These could include changes to any agreements between the City or hauler with a given multi-unit dwelling with regard to its garbage collection. In addition, City policies may need to be adapted to allow for unenclosed garbage/recycling collection areas, if this is needed, and City policies currently prohibit it. Lastly, the City could require changes to zoning and building ordinances to require that recycling collection areas be built into all new multi-unit developments.

Institutional Barriers. Medium. Moderate barriers exist. With rental property, turnover in property managers, on-site managers, and tenants often makes it difficult to keep residents apprised about recycling programs and any changes made in these programs. Also, the facility manager may have to give up parking or other space in order to accommodate recycling. This can be remedied with strong public education efforts.

Estimated Cost. BFI is currently evaluating costs for a widespread multi-family dwelling recycling program and are not available at this time. Cost considerations include type of collection container, type of collection service (e.g., door-to-door versus central locations), collection vehicle (new trucks may be needed), and labor (i.e., one or two-person crew).

End Uses. See Section 4.6.7, "Market Conditions."

Public vs. Private Operation. This will likely be a private operation.

4.5.2 Non-Residential Alternatives

Alternative 1 - Implement source separated recycling program: curbside program.

This alternative addresses the objective of establishing source separation recycling programs for small volume non-residential waste generators, such as those in downtown Milpitas, a high-density commercial area of many small businesses with little room to store recyclable materials. The potentially small volumes of waste generated from these businesses may make it unfeasible for BFI to collect from them. Other small business parks and shopping areas could also be targeted. BFI and the City will work together to set up an efficient and economically-feasible program for this downtown area. It is possible that this program will be an extension of the existing residential curbside program; trucks would drive a specified route around downtown, with stops to pick up materials left at the curb by businesses. This would be a weekly service that would coincide with the day refuse is collected.

Effectiveness. High. This alternative would be effective in reducing the amount of targeted material(s) in the waste stream. Materials collected would likely include corrugated cardboard; newspaper; PET; glass; tin and aluminum cans; white ledger, computer, and colored ledger paper.

Hazard. High. This alternative presents no known hazards.

Ability to Accommodate Change. High. This alternative is readily adaptable to changing conditions.

Consequences on the Waste Stream. High. This alternative has no impact on the waste stream.

Implementation Period. High. This alternative would likely be completed by 1995.

Facility Requirements. Medium. Existing facilities may need to be expanded or altered, i.e., at the businesses, in order to provide room for one week's worth of recyclable materials.

Consistency with Local Plans and Policies. High. This alternative is consistent with local plans and policies.

Institutional Barriers. Medium.. No known barriers exist.

Estimated Cost. This will depend on the extent of the program. Costs may include purchasing collection containers for each business, new trucks, additional staff, and processing costs.

End Uses. See Section 4.6.7, "Market Conditions."

Public vs. Public Operation. This will be a private operation.

Alternative 2 - Develop manual material recovery operation/Mechanized material recovery operation

This alternative addresses the objectives of (1) salvaging items at the Newby Island Landfill, (2) recovering recyclable materials currently being collected via roll-off boxes, and (3) increasing the types of materials recovered through established programs from the non-residential sector. A mechanized material recovery facility involves sorting loads of waste in order to recover recyclable materials. This type of a facility requires the commitment to a large capital investment for a site, buildings, and equipment. BFI has established such a facility in San Jose, where The Recyclery at Newby Island was opened in March 1991. This processing center is one of nine operated nationwide by BFI; the one at Newby Island is the second largest of any such facility in North America. As a consequence of its processing capabilities, it allows commercial entities to establish comprehensive integrated recycling programs in a cost-effective manner.

The objective of The Recyclery is to receive recyclable materials, remove the contaminants, and prepare the materials for transportation to markets. Full operations at The Recyclery will be phased in; the facility's current permit is for 210 tons-per-day (TPD), and it has the capacity to handle 800 TPD. If necessary, the facility can be expanded to 1,600 TPD. A pilot program of approximately 30 loose or compacted commercial loads per day were being processed in the first month of operations. The facility includes manual floor sorting, in addition to providing a 22-station sorting room.

The curbside residential loads go to the McMRFTTM, a small-scale mechanized material recovery facility, within The Recyclery. Wood loads delivered to the facility are directed to the wood processing area; those wood materials that are not recoverable as reused lumber, soil amendment, or compost are processed into fuel and transported to

cogeneration plants. As discussed above, 90 percent-plus of the roll-off boxes in Milpitas are BFI's and are, or will be, processed at The Recyclery.

Effectiveness. High. This alternative is effective in reducing the amount of targeted material(s) in the solid waste stream by creating non-recyclable, unmarketable, or otherwise undesirable materials.

Hazard. Medium. This alternative presents moderate hazards. These include the possibility of fire and explosion from any shredder operations and the possibility of explosion from compacting the residual load. Because some of the materials collected are combustible, there is a minor fire hazard associated with their storage. There are also health risks associated with manual sorting of refuse.

Ability to Accommodate Change. High. The Recyclery is readily adaptable to changing conditions, and in fact, has the capacity to process a much greater quantity of waste.

Consequences on the Waste Stream. High. This alternative does not impact the waste stream by creating non-recyclable, unmarketable, or otherwise undesirable materials.

Implementation Period. N/A; already in progress.

Facility Requirements. High. The Recyclery meets the facility requirements for this alternative.

Consistency with Local Plans and Policies. High. The Recyclery is consistent with local plans and policies.

Institutional Barriers. Medium. The Recyclery cannot expand its capacity without getting a new permit.

Estimated Cost. N/A

End Uses. See Section 4.6.7, "Market Conditions."

Public vs. Private operation. The Recyclery is a private operation.

Alternative 3 - Salvage at solid waste facility.

This alternative addresses the objective of salvaging items at the Newby Island Landfill. Salvaging at solid waste facilities refers to landfill workers removing large items from incoming loads. This activity is very similar to a

manual material recovery operation, except for the waste types separated, which include white goods, mattresses, wood pallets, and large metal pieces. Generally this type of operation takes place at the tipping area at the landfill face. Currently at Newby Island, an auditor at the scales turns trucks around if their load is salvageable. For example, trucks carrying wood loads are directed to the wood processing area. Also, a local recycler, Markovits and Fox, is currently hauling away white goods from the landfill.

Effectiveness. High. This alternative is effective in reducing the amount of targeted material(s) in the waste stream. Because the Newby Island Landfill is used by many jurisdictions, the diversion rate for such a program would have to be determined by apportioning by population.

Hazard. Medium. Workers may be at risk due to trucks coming in and out regularly and from working around large, moving equipment, such as loaders, dozers, and compactors. Also, hazards could arise from workers' exposure to potentially hazardous materials in the waste.

Ability to Accommodate Change. Medium. Salvaging at the landfill is moderately adaptable to change. Too many trucks at the tipping area could create a traffic flow problem.

Consequences on the Waste Stream. High. This alternative would not create non-recyclable, unmarketable, or otherwise undesirable materials.

Implementation Period. Medium. This alternative would likely be completed by 2000. Actually setting up the operation could be done in a matter of weeks. However, six months to one year could be required to begin salvaging at the landfill, depending on the permit revisions required.

Facility Requirements. High. This alternative can be easily integrated into existing facilities.

Consistency with Local Plans and Policies. High. This alternative is consistent with local plans and policies.

Institutional Barriers. Low. No salvaging is currently taking place at the landfill face at Newby Island because the landfill's permit does not allow it. The permit would have to be revised in order to incorporate salvaging at the face.

Estimated Cost. High. The cost of implementing this alternative is estimated to be less than \$50,000.

End Uses. See Section 4.6.7, "Market Conditions."

Public vs. Private Operation. This alternative would be privately operated.

Alternative 4 - Establish City-wide recycling programs for the non-residential sector.

This alternative addresses the objective of establishing source separation recycling programs for both small and large volume non-residential waste generators. BFI offers on-call commercial collection programs tailored to the specific needs of the business; that is, interested companies must call to set up the program. In late March 1991, BFI began contacting businesses directly to offer tailored programs; this includes industrial clients as well. A number of independent recyclers and small hauling firms also offer source separation recycling programs.

In addition, a consulting program will be set up by the City, which will provide a resource for companies of all sizes to determine the most feasible and beneficial program for them. This consulting service will be offered as a public education and information service; See Section 7, "Education and Public Information Component."

Effectiveness. Not applicable.

Hazard. Not applicable.

Ability to Accommodate Change. Not applicable.

Consequences on the Waste Stream. Not applicable.

Implementation Period. Not applicable.

Facility Requirements. Not applicable.

Consistency with Local Plans and Policies. Not applicable.

Institutional Barriers. Not applicable.

Estimated Cost. Not applicable.

End Uses. Not applicable

Public vs. Private Operation. Not applicable.

Alternative 5 - Divert inert solids generated from City public works projects to a materials processor.

This alternative addresses the objective to increase recovery of recyclable materials from City offices and programs. City public works crews in Milpitas are responsible for a very small portion of the construction projects in the City; most are contracted to private construction firms. The City is unaware of any used asphalt or concrete being diverted, although it is recyclable and is often used as road base. This alternative assumes that the contractors hired to do the work will be responsible (under contract agreement with the City), for taking the used materials to the processor. It is further assumed that materials will be taken to an established processor. Recycling requirements for small quantities (e.g., 4 tons or less) would need to be further explored.

Effectiveness. High. This alternative is effective in reducing the amount of targeted material(s) in the waste stream.

Hazard. High. This alternative presents no known hazard.

Ability to Accommodate Change. High. This alternative can readily adapt to changing conditions, due to the fact that the local market for asphalt and concrete is stable.

Consequences on the Waste Stream. High. This alternative will have no impact on the waste stream.

Implementation Period. High. This alternative will likely be completed by 1995.

Facility Requirements. This alternative is intended to be integrated into existing processing facilities.

Consistency with Local Plans and Policies. High. This alternative is consistent with local plans and policies.

Institutional Barriers. Medium. This alternative is impacted by moderate barriers; the contractors may object to having to take the used materials to a processor; the City can include this in their bid requirements.

Estimated Cost. High. Operating costs would include transportation and tipping fees. Tipping fees at Raisch Products, one local processor (San Jose) for asphalt and concrete, vary, depending on the load; this company does not estimate costs on a per-ton basis. However, Raisch estimates a

7-ton load would cost \$15 for asphalt and \$30 for concrete. Zanker Road Resource Management (San Jose) also recycles concrete and asphalt and charges \$5 to \$6.50 per cubic yard, depending on whether the load includes mesh or rebar. Stevens Creek Quarry, Inc. (Cupertino) also recycles concrete and asphalt and charges \$95 per 20 cubic yard load.

End Uses. High. Recycled inert solids are used primarily as road base; processors in the South Bay can use quantities of these materials.

Public vs. Private Operation. This would be a private operation.

4.5.3 Residential *and* Non-Residential Alternative

Alternative - Drop-off recycling center

This alternative addresses the objectives of (1) establishing source separation programs for small volume non-residential waste generators, and (2) increasing the types of materials collected through residential source separation programs. Drop-off recycling centers range in size, from "igloo" style domes, to large centers. They require that the generator source separate recyclable materials and take them to the drop-off site. These sites are often unstaffed, and must be conveniently located and easily accessible in order to be successful. For this reason, drop-off recycling centers are generally located in parking lots of grocery stores, shopping centers, churches, or schools. Participation tends to be higher in rural areas where generators are required to bring their refuse to a central location. Drop-off recycling centers can make recycling more convenient for persons who do not have curbside service and also provide a back-up for those who have curbside.

Effectiveness. Medium. Additional drop-off recycling centers in Milpitas would have a minor effect on reducing the amount of targeted material(s) in the residential solid waste stream. Given the fact that Milpitas has a curbside program in place, and that several drop-off/buy-back opportunities exist for residents (see Section 4.4, "Existing Conditions Description."), additional drop-off programs would not be expected to contribute to any important degree to additional waste diversion. In fact, the Boy Scouts have noticed a considerable decline in the newspapers collected via their drop-off bins since curbside began. For the small volume businesses (e.g., in downtown Milpitas), however, drop-off centers may be effective; this

depends on whether they are part of a larger program (please see Non-Residential Alternative 1).

Hazard. Medium. Drop-off recycling centers present moderate hazards. Because these sites are often unstaffed, they can become "dump sites." As a result, potential hazards include broken glass or other debris around the drop-off containers. In addition, for the safety of the users, sites need to be well-lit and provide adjacent parking.

Ability to Accommodate Change. Medium. Drop-off recycling centers are moderately flexible, in that material types can be added quickly, as new markets develop. Increased contamination of materials, however, would render drop-off sites less flexible.

Consequences on the Waste Stream. Medium. Adding drop-off recycling centers in Milpitas would have a moderate impact on the waste stream. The potential for contamination of materials could render these materials less marketable.

Implementation Period. High. This alternative would likely be completed by 1995.

Facility Requirements. Low. Drop-off centers would have to be built or set up in designated sites. Considerations include a central, accessible site; protection from weather (i.e., to keep paper dry); plenty of storage area for materials; good vehicle access (for both collection trucks and the public); and security (i.e., locked containers).

Consistency with Local Plans and Policies. High. Drop-off recycling centers are consistent with City plans and policies.

Institutional Barriers. Low. Store owners and property owners are often reluctant to allow a drop-off bin in their parking lot, primarily due to the mess that can result if these drop-off areas become dump sites. Drop-off programs require the stores' and property owners' approval and cooperation. In addition, a use permit from the City may be required.

Estimated Cost. Medium. The level of expense associated with drop-off centers depends on the type of center selected. Costs include those for site acquisition, preparation, capital, and operating expenses.

End Uses. Please see Section 4.6.7, "Market Conditions."

Public vs. Private Operation. Drop-off recycling centers can be owned and operated by either public agencies, or private non-profit or for-profit entities.

4.5.4 Other Program Considerations

A. Zoning and building code practices. Milpitas is aware of Recycling Market Development Zones established under SB 1322 and is considering this option in conjunction with San Jose and other local jurisdictions. A community that is a designated Zone offers state and local government incentives to draw to that community industries that use post-consumer waste as the feedstock in their manufacturing processes. Zones will help stimulate economic development in communities by increasing jobs and increasing the tax base. In addition, the City will consider a zoning ordinance that would require all new land development projects to plan and provide for recycling needs in building and site design, with the exception of single family homes.

B. Solid waste disposal rate structure. The City will consider a rate structure modification, for both the residential and commercial sectors.

C. Methods to increase markets. Since the passing of an ordinance amendment in February 1990, the City has given a price preference to vendors who provide recycled paper products for City use.

D. Handling methods. BFI leaves tags or sends letters to residents who have placed the wrong types of the materials at the curb (e.g., paint containers in the garbage can).

4.6 Selection of a Recycling Program

Milpitas' current recycling programs will continue; the programs selected and listed below are either new programs, or additions to successful existing programs. The selection of programs was based on the evaluation criteria and the ease of implementation in the City.

4.6.1 Alternatives Selected

Short-term planning period.

The programs selected to reduce the amount of waste being landfilled or incinerated during the short-term planning period include:

- Establish source-separated recycling program: multi-family dwellings
- Implement source-separated recycling program: curbside program for non-residential sector.
- Develop manual material recovery operation/mechanized material recovery operation.
- Establish City-wide recycling programs for the non-residential sector.
- Divert inert solids generated from City public works projects to a materials processor.

Establish source-separated recycling program: multi-family dwellings - Residential Alternative 4. Multi-family dwellings make up a significant portion of Milpitas' population that should have easily-accessible, on-site recycling opportunities available. Milpitas' voluntary new curbside program for single-family homes had a very successful start (approximately 40 percent set-out rate after one month) and the City's next step will be to address multi-family dwellings. BFI is pursuing recycling programs for multi-family dwellings and will begin a widespread City program upon the City's approval. However, this program will not be reflected in BFI's contract until 1993. BFI has many such programs nationwide; these can be reviewed to determine what type of a program would best fit Milpitas' needs.

Implement source-separated recycling program: curbside program - Non-Residential Alternative 1. The "Main Street" area of Milpitas, as well as other small commercial areas throughout the City, include many small businesses with little room for collection of recyclables. Given these considerations, they should be handled differently than other commercial entities in Milpitas, in order to offer the most convenient service for these businesses. BFI currently tailors collection programs to the needs of individual businesses; the Main Street area and other areas with a lot of smaller businesses would be a subset of BFI's current commercial/industrial collection program. Consideration is being given to achieving this objective through rerouting by BFI.

Develop manual material recovery operation/mechanized material recovery operation - Non-Residential Alternative 2. The Recyclery is currently in the early phases of operation and BFI is conducting a pilot

program on selected loads each day. As operations expand, BFI will work with Milpitas to tailor programs to meet the City's needs, if these programs currently do not exist.

Establish City-wide recycling programs for the non-residential sector - Non-Residential Alternative 4. BFI has had commercial/industrial programs in place for some time, and tailors these to the needs of the given business. Until March 1991 these programs were set up on an on-call basis, whereby interested companies called BFI to set up a program. Due to its increased processing capability with The Recyclery, BFI initiated a program in mid-1991 whereby businesses will be contacted directly to set up tailored programs. BFI has commercial/industrial collection programs operating nationwide, which provides valuable experience that brings an added benefit to Milpitas businesses. Small, independent haulers and recyclers may also wish to provide programs to Milpitas businesses.

Because the commercial/industrial sector will be well-served by BFI's programs as well as those offered by small independent recyclers and haulers, there is no need for the City to set up its own. For this reason, the City will support programs by offering a commercial/industrial consulting service to encourage businesses to recycle. The City will team with BFI and interested independent recyclers to offer, as part of this program, services such as visual waste composition analyses, identification of recyclable materials, cost/benefit analyses comparing recycling to disposal, and recommendations on how to begin and maintain a successful recycling program at the workplace.

The consulting service will be offered as a public education program to businesses; please see Section 7, "Education and Public Information Component."

Divert inert solids generated from City public works projects to a materials processor - Non-Residential Alternative 5. City crews have very little involvement with public works projects involving removal and replacement of asphalt and concrete; the majority of such projects are contracted to local firms. The market for these materials is steady and local processors have been identified. Currently, asphalt and concrete are accepted for disposal at the Newby Island Landfill at no cost if the material meets the landfill's criteria; maximum size pieces of 12" x 12" x 6"; no rebar, wire mesh, or other material. Concrete and asphalt make up a large portion of Milpitas' waste stream which could be diverted by having the material

taken to one of the processors described in Section 4.5 "Evaluation of Program Alternatives." The City is amenable to including a section in its construction specifications that would require the contractor to take materials to a processor. Small quantity generators (e.g., 4 tons or less) would be exempt. Another source of comparison: the City of Santa Clara All Purpose Landfill Gate Fee Schedule (1990) lists a cost of \$11.90 per cubic yard to landfill versus \$5.05 to recycle concrete and asphalt.

Medium-term planning period. The programs selected to reduce the amount of waste being landfilled or incinerated during the medium-term planning period are:

- Separate additional waste types through the residential curbside program

Separate additional waste types through the residential curbside program - Residential Alternative 1. Once the new curbside program is fully up and running and both the City and BFI have a feel for the participation to be expected, etc., more materials will be added. This is not to say that *no* materials will be added until 1995; just that the materials collected will definitely be evaluated at that time. Such materials may include mixed paper, corrugated cardboard, additional plastics, and magazines. With the McMRFTM at The Recyclery, BFI has the capacity to process many more commingled materials from the residential curbside program. Another medium-term option is to begin a wet/dry curbside collection program for single-family homes (See Section 4.5, "Evaluation of Program Alternatives).

4.6.2 Estimated Quantities and Types of Wastes Anticipated to be Diverted

The recycling programs selected are expected to divert the following percentages by waste type from Milpitas' total waste stream.

The following two programs were implemented in early 1991: residential curbside collection, and The Recyclery (manual/mechanical material recovery) at the Newby Island Landfill. These programs are expected to continue through the short-term and medium term planning periods and together are anticipated to divert 23.7 to 24.7 percent of the total waste diversion stream, assuming that the percentage of waste types generated will remain constant throughout the life of the plan. Presented below are

new programs that will be implemented during the short-term and medium-term planning periods.

Short-term planning period

1. Establish source-separated recycling program - multi-family dwellings

Newspaper:	0.08 to 0.2 percent
Glass:	0.02 to 0.06 percent
Aluminum/ Tin cans:	0.002 to 0.03 percent
PET:	<u>0.003 to 0.001 percent</u>
TOTAL	0.1 to 0.3 percent

2. Implement source-separated recycling program: curbside program for non-residential sector

Newspaper:	0.2 to 0.4 percent
PET:	0.01 to 0.02 percent
Glass:	0.1 to 0.2 percent
Aluminum/ Tin cans:	0.05 to 0.2 percent
Ledger paper:	0.3 to 0.4 percent
OCC:	<u>0.8 to 1.3 percent</u>
TOTAL	1.5 to 2.5 percent

3. Establish City-wide recycling programs for the non-residential sector - Not applicable; primarily public education. See Section 7, "Education and Public Information Component."

4. Divert inert solids generated from City public works projects to a materials processor

Asphalt:	1.1 to 1.2 percent
Concrete:	<u>1.1 to 1.2 percent</u>
TOTAL:	2.2 to 2.4 percent

Total diversion from the four new programs listed above: 3.8 to 5.2 percent

Medium-term planning period

Separate additional waste types through the residential curbside program

HDPE, polystyrene foam, plastic pipe, and electrical components:	0.2 to 0.5 percent
Mixed paper:	0.6 to 1.1 percent
OCC:	<u>0.2 to 0.4 percent</u>
TOTAL:	1 to 2 percent.

Total diversion from the new programs introduced in the short-term and medium-term planning periods: 4.8 to 7.2 percent.

4.6.3 Applicable End Uses

Please see Section 4.6.7, "Market Conditions."

4.6.4 Handling and Disposal Methods

Please see Section 4.5.4, "Other Program Considerations, part D."

4.6.5 Facilities to be Utilized for Implementation

Short-term planning period.

Establish source-separated recycling program: multi-family dwellings - common areas of multi-family dwellings (e.g., parking lots, community rooms); The Recyclery (specifically, the McMRF™).

Implement source-separated recycling program: curbside program for non-residential sector - individual businesses; The Recyclery.

Develop manual material recovery operation/mechanized material recovery operation - The Recyclery.

Establish City-wide recycling programs for the non-residential sector - not applicable; primarily public education. Please see Section 7, "Education and Public Information Component."

Divert inert solids generated from City public works projects to a materials processor - None.

Medium-term planning period.

Separate additional waste types through the residential curbside program - BFI facilities, including The Recyclery.

4.6.6 Contingency Measures

In the event of unfavorable market conditions or changes in facility availability which could prevent the City from meeting its diversion goals, the City plans to employ the following measures

- consider pooling resources with other cities or counties in order to market materials cooperatively.
- investigate the existing collection and processing activities to be sure that materials are being prepared properly to meet buyer's specifications.
- conduct broad research to locate markets or end uses not previously found, both on a local level and beyond.
- establish a contingency plan for available facilities (e.g. if The Recyclery is unavailable due to earthquake damage or another such event).

4.6.7 Market Conditions

Recycling requires more than the separation and collection materials; viable markets must exist for the recovered materials. This section addresses the existing market conditions relevant to Milpitas, as well as on a broader scale (e.g., regional, statewide, national, and international). The focus is on those materials most often collected through recycling programs, such as various paper grades, plastics, metals, and glass. In addition, Milpitas is aware of the Recycling Market Development Zones established under SB 1322 and will consider this option in conjunction with San Jose and other local jurisdictions. Many resources exist which identify local markets for different materials; most of these are in the form of lists compiled by entities such as the California Department of Conservation (DOC) and the California Integrated Waste Management Board. For this reason, only highlights are addressed in this section. In addition, the DOC is in the process of preparing a statewide database called *Market Watch* which will be fully operational in approximately 9-12 months, and will include information on markets in California, among other things.

Milpitas is in the fortunate position of being able to take advantage of the contracts BFI has established with various processors nationwide, which amounts to virtually guaranteed markets for many waste types; some of these are included in the following discussion.

Old Newspaper (ONP). Old Newspaper is the main grade of waste paper collected in the residential sector. A number of other ONP markets are available in northern California, including the South Bay. Currently, the amount of ONP that is available nationwide for recycling far exceeds the demand. However, this situation is expected to change. It is estimated that the demand for ONP will almost double by 1995 due to increases in exports of ONP, increases in the paper board market, and other factors.

Because ONP is contaminated with printing inks, it is necessary to deink this raw material before it can be recycled for certain uses. The primary reason for excess ONP is the shortage of newsprint facilities that can deink the newspaper or reuse it. The deinking capacity in the United States is expected to increase in the future to meet the anticipated demand and help balance the market.

End uses for ONP include newsprint, insulation, packing, building materials, and animal bedding. Newsprint manufacture is anticipated to be the largest market for ONP and is anticipated to increase significantly through the year 2000. Other end uses are anticipated to increase only marginally.

Current market prices paid for ONP in California range from \$25 to \$40 per ton. However, the market price for ONP is cyclical due to decreased collection in the winter months, paper mill shutdown for maintenance repair in the summer months, economic conditions, international exchange rates, and other factors. BFI has a contract with Weyerhaeuser Paper Company (Weyerhaeuser) for newspaper.

Old Magazines (OMG). A new market is emerging for OMG; many newspaper recycling mills plan to use OMG in the production of newsprint. This will result in a lowered demand--until more newspaper recycling opportunities emerge in the next couple of years--for ONP. OMG is now being used in newspaper recycling mills due to their conversion from a simple wash process to a flotation process of de-inking. The Smurfit Companies have converted to flotation de-inking and can utilize supplies of OMG. The nearest Smurfit location for Milpitas is in Oakland. The current price paid is \$20 per ton; a higher price can be negotiated, based on

volume. The main requirement for preparation of the magazines is that they be loose--not bagged or tied with string.

High-Grade Waste Paper. High-grade paper is a general description of various long-fiber grades of paper. High-grade paper includes white ledger, colored ledger, computer paper, and tab cards. These grades are more valuable for recycling because of their strength, and thus command a higher price than other paper grades.

Market prices for high-grade paper are dependent on the price of pulp. Because high-grade wastepaper is often used as a substitute for pulp, high-grade paper prices tend to fall with the price of pulp. The market prices for different paper grades vary independently. However, the market price for higher grades are generally more stable than that paid for lower grades. The higher the degree of separation from the source, the higher the price paid for the paper. High-grade paper can be used in making writing paper, computer paper, napkins, facial tissues, and paper towels. BFI has a contract with Weyerhaeuser for high-grade waste paper.

Paperboard. The Newark Group is a national producer of recycled paperboard made from a variety of paper and paperboard grades. The company produces uncoated boxboard, specialty paperboard, tube stock, coated boxboard, gypsum liner, corrugated medium, and other paperboard. The company has locations throughout the United States; the nearest to Milpitas is in Stockton.

Mixed Waste Paper (MWP). As implied in its name, MWP refers to a paper stream containing more than one grade of paper. MWP is defined in AB 939 as a mixture, unsegregated by color or quality, of at least two of the following paper wastes: newspaper, corrugated cardboard, office paper, computer paper, white paper, coated paper stock, or other paper. The housing industry and the value of the U.S. dollar overseas greatly affect the demand for MWP. A strong dollar overseas means a decrease in the demand for MWP. Secondary markets for recovered paper can be found in the U.S and abroad. MWP export has increased significantly and has allowed for growth in MWP recycling, particularly in the western United States. Local domestic markets, however, are fairly well saturated. Potential buyers for MWP in the Bay Area include: Weyerhaeuser in San Jose and DAI El Papers USA Corporation in Burlingame, but other markets need to be identified in order for recycling of MWP to be feasible in Milpitas.

The primary use of MWP is in the manufacture of combination boxboard which is used to make boxes for shoes, clothing, and dry foods. Other uses for MWP include the manufacture of roofing felt and construction paper building materials.

Old Corrugated Containers (OCC). The amount of OCC consumed in the U.S. is significant, approximately 15 million tons per year, due to its use in shipping packaging for most consumer products. The quantity of OCC in the waste stream is greater in the commercial sector than in the residential sector. OCC that has been separated properly can be used in the manufacture of new corrugated containers, cereal boxes, pad bases, and wallboard.

The market for OCC in California is very strong; more than one half of the collected OCC in California is used by mills within the state. Current market prices for OCC range from \$40 to \$65 per ton. Potential buyers for OCC collected in Milpitas are Jefferson Smurfit and Weyerhaeuser in San Jose and DAI El Papers USA Corporation in Burlingame. BFI has a contract with Weyenhaeuser for OCC.

Aluminum Cans. Approximately half of the aluminum disposed of in solid waste is in the form of cans. The waste recovery system for aluminum cans is highly successful. Compared to other recyclables, aluminum cans command the greatest price per pound.

Aluminum cans that have been separated can be used by the primary producers and are remelted and made directly into can stock. Aluminum scrap is used primarily by secondary aluminum producers. Current scrap value market prices for aluminum cans range from \$0.40 to \$0.55 per pound. The addition to the AB 2020 redemption value raises the total market price. Markets for aluminum cans exist in the U.S. and abroad. BFI has a contract with ALCOA Recycling Company for aluminum cans.

Steel Food and Beverage Containers. Tin cans that are used as food containers are actually steel cans with a thin coating of tin. The percentage of tin in steel cans usually totals about 0.25 percent³ and is worth approximately \$3 to \$4 per pound. Even this small amount of tin can cause contamination in steelmaking. For this reason, detinning is used to both reclaim valuable tin and improve the quality of the steel scrap,

³ "A Force in Detinning," by Tom Watson, *Resource Recovery*, January/February 1989, p. 18.

although sometimes the post-consumer steel cans and scrap are used directly as a raw material.⁴ Steel can recycling is expanding, due in part to increased participation by steel mills and detinning mills in collecting and purchasing used steel cans.⁵ This is despite aggressive efforts by the aluminum can industry to enter the steel-dominated food can market.⁶

The major detinning companies have opened new facilities around the U.S. to accommodate the influx of steel cans and the demand from the steel industry. This has helped decrease transportation distances for recyclers.⁷

Glass Cullet. Waste glass usage in the U.S. is estimated at 25 to 30 percent of the glass produced. Cullet is primarily traded on the U.S. market, so its market price remains fairly constant. A primary concern for end use markets is the quality of the material. In the glass plant, contaminants can cause damage to equipment or result in poor quality product. One of the problems with curbside collection of commingled glass is that it produces multi-colored shards of glass. Markets for mixed-color cullet are not as stable or lucrative as that for color-sorted containers.

The two primary end uses for recovered waste glass are cullet for new glass and as a raw material for making secondary products, such as asphalt highway paving material, foamed insulation, and construction material. In addition, cullet is ground into sand at Zanker Road Landfill in San Jose, for use as daily cover and other applications.

Two potential markets for recovered glass in Milpitas are Owens-Brockway (a division of Owens-Illinois Corporation) in Tracy and Circo Recyclers in Newark. Neither charges a processing fee to take the materials. The glass market has become problematic for many recyclers recently due to the increased quality standards being imposed and the request for color-sorted materials. Current market prices for sorted California Redemption Value glass range from \$0.03 to \$0.05 per pound sometimes with a stipulation that the glass be color-sorted. The addition to the AB 2020 redemption values raises the total market price.

⁴ Watson, p. 18.

⁵ "The Steel Can's Push for Recycling Respect," by Michael Misner, *Waste Age*, February 1991, p. 69.

⁶ Misner, p.70.

⁷ Recyclable Steel Cans: An Integral Part of Your Curbside Recycling Program, *Steel Can Recycling Institute*, Summer 1990, p.14.

Plastics. Markets for plastics are fairly new, but the EPA predicts that as processing technologies are developed, plastics recycling will grow and new markets will develop.

Most soda containers are made out of polyethylene terephthalate (PET) which is the most recycled of all plastics. Over 160 million pounds of PET bottles were recycled in 1988. Post-consumer PET is prohibited for use in new food containers because of FDA restrictions (although certain developments are underway that may lift this restriction). The primary end use for PET is fiberfill, which is used in pillows, sleeping bags, and ski jacket insulation, among other things. The most desirable market for recycled PET is compounded, extruded, and molded plastic makers. BFI has a national contract with Wellman, Inc. for PET, although PET collected in California is not sent to Wellman.

High-density polyethylene (HDPE) is used in the manufacture of jugs (e.g., milk, cider, distilled water) and bottles (e.g., laundry and dish detergent, motor oil, antifreeze). Although the market for recycled HDPE is growing, because of sanitary restrictions, these items are not recycled back into food packaging. Major potential markets for recycled HDPE are soft drink basecups, plastics lumber, containers, drums, pails, and various types of pipes. One major West Coast processor of HDPE is Partek in Vancouver, Washington, which is adjacent to Portland, Oregon. Partek processes only HDPE Grade 2, and uses it to manufacture new containers. HDPE Grade 2 is used in its natural color for milk, water, and juice jugs; and is colored for use in laundry detergent containers, shampoo and conditioner bottles, antifreeze containers, etc.

Low-density polyethylene (LDPE). LDPE is used primarily in the manufacture of various types of film, such as food wrapping. Greater than 1,310 million pounds of it is made into trash bags. It is also used to make piping and to coat wires and cables.⁸ It is also used in the manufacture of rigid items, such as food storage containers and flexible lids.⁹ LDPE is used in plastic grocery bags, which is one of the fastest growing segments of recycling. Four manufacturers provide most of the grocery sacks in

⁸ "Progress in Plastics Recycling", by Jim Glenn, *BioCycle*, December 1990, p. 53.

⁹ "All Plastics Are Not Created Equal," by Jerry Powell, *Resource Recycling*, May 1990, p.41.

North America and are committed to separating plastic grocery sacks from the waste stream to make them into new products.¹⁰

Some local markets for LDPE are Bay Polymer in Fremont, RPX Resins in Scotts Valley, and Tech Polymers in Berkeley. Also, Dow Chemical Company and Sealed Air Company have formed a joint venture to recycle LDPE; one of its local plants is in Hayward. At this time, the program is available to Dow and Sealed Air customers only, but expansion of the program is being considered.¹¹

Polystyrene. There are various forms of polystyrene; the most familiar being the foamed or expanded polystyrene foam (EPS) commonly referred to as styrofoam. The uses for EPS foam include fast-food single serve cups and trays and packing materials in both rigid, molded form and in loose form or "peanuts," as it is sometimes called. The local market for polystyrene products includes Free-Flow Packaging Corporation in Redwood City and Bay Polymer Corporation in Fremont. Recovered polystyrene can be used in the manufacture of toys, office equipment, insulation, and cassette casings. One potential drawback to polystyrene collection is that the material occupies a high volume in collection vehicles and storage areas relative to its low weight.

Telephone Books. Louisiana Pacific Company in Oroville expects to use a steady supply of telephone books for its particle board manufacture once it has its equipment for that part of the operation in place. The company uses phone books to make up approximately 10 percent of the content of its particle board. The company is presently in the early stages of acquiring the additional equipment necessary to expand its capacity.

Inert Solids. Asphalt and concrete from construction demolition gets landfilled in many areas, although it is often recyclable. Local recyclers are Raisch Products in San Jose, Zanker Road Resource Management in San Jose, and Stevens Creek Quarry, Inc. in Cupertino.

Overseas Markets. Strong markets exist abroad (e.g., Mexico, Saudi Arabia, Pacific Rim nations) for many materials, especially mixed waste paper and newspaper. Numerous brokers on the West Coast represent these markets and are listed in various references.

¹⁰ "Plastic Grocery Sack Recycling," by Arthur Amidon, *Resource Recycling*, November 1990, p. 24.

¹¹ "Dow and Sealed Air Join to Recycle LDPE Scrap," by Susan Combs, *Recycling Times*, January 29, 1991, p. 9.

4.7 Recycling Program Implementation

4.7.1 Agencies Responsible for Implementation

Agencies responsible for implementation are shown in Table 4-2.

4.7.2 Implementation Tasks

Implementation tasks are shown on Table 4-2.

4.7.3 Short-term and Medium-term Planning Period Implementation Schedule

Implementation schedule is shown on Table 4-2.

4.7.4 Implementation Costs

Please see Section 9, "Funding Component."

4.7.5 Actions Planned to Deter Scavenging

The most effective means for deterring unauthorized removal of recyclable materials is through an ordinance prohibiting this activity. Milpitas has recently adopted such an ordinance.

4.8 Recycling Program Monitoring and Evaluation

Milpitas recognizes the need to monitor and evaluate recycling programs in order to ascertain whether diversion goals are being met. The following section includes the steps that will be taken to monitor and evaluate the selected recycling programs.

4.8.1 Methods to Quantify and Monitor Achievement of Objectives

The following tasks will be used to effectively monitor the success of the recycling programs. Solid waste diversion will be quantified by tons.

Recordkeeping. For curbside, BFI has agreed to provide the City monthly, quarterly, and annual reports including information that will help the City ascertain whether it is meeting its recycling objectives for its residential curbside recycling program. These reports will include the number of participating households and a breakdown of the materials collected. Accurate recordkeeping will be the key to determining whether recycling

objectives are being met. The City will also work with BFI and other haulers to track progress made in non-residential recycling programs, since so many of the City's objectives revolved around this sector.

Waste generation study. A future waste generation study, can be conducted in order to gauge the changes in the City's waste stream and the effectiveness of the recycling programs.

Surveys. Mailed questionnaires or telephone surveys will be conducted approximately yearly with sample groups from both the residential and commercial/industrial sectors to determine (a) the awareness level about recycling (and source reduction) programs, and (b) among those already participating, what the satisfaction level is. For instance, are recycling programs convenient? Are they being used to their capacity? Through the surveys, obstacles to recycling can be identified and participation increased.

4.8.2 Criteria for Evaluating Program's Effectiveness

The effectiveness of each recycling program will be evaluated using the following written criteria.

- **Achievement of recycling objectives**
- **Total solid waste collected.** Through the recordkeeping system and the waste generation study, a determination will be made as to whether the program is successful in achieving the estimated reduction in solid waste volume and weight.
- **Participation rate.** Regular surveying of residents and businesses will give the City an idea about the numbers of residents and businesses participating in recycling programs over time. An increase in the number of households or businesses participating over time is one measure of the success of these programs.
- **Adherence to implementation of schedule**

4.7.3 Parties Responsible for Monitoring, Evaluation, and Reporting

The City will oversee the monitoring and evaluation of recycling programs and will be ultimately responsible for their execution. In addition, the City

will work closely with the haulers to keep up-to-date about program changes, new programs, etc., which could potentially impact waste diversion goals. Volunteers or interns will be utilized for tasks such as conducting surveys.

4.7.4 Monitoring and Evaluation Funding Requirements

Additional staffing may be needed to manage the additional recordkeeping and evaluation for the recycling programs. This could be a task given to the second new staff person (1992). A more detailed database may be needed. In addition, a budget will need to be set aside for a waste generation study and for surveying costs (primarily staff time and printing/ mailing costs for questionnaires).

4.7.5 Measures to be Implemented if Monitoring Shows a Shortfall

If monitoring efforts indicate that diversion objectives are not being met, the following measures will be employed.

- diversion goals will be re-evaluated to determine their feasibility, given empirical data.
- evaluate public education efforts to determine whether these need to be increased to broaden awareness of, and participation in, recycling programs.
- evaluate alternative markets for recovered materials.
- provide incentives to the commercial/industrial sector for recycling.
- address issues resulting from surveys that could potentially be affecting diversion goals.
- establish City ordinance making recycling mandatory.
- institute a rate structure modification.
- adopt more aggressive procurement ordinances.

Table 4-1
SUMMARY OF ALTERNATIVES EVALUATION

Program Alternatives	Evaluation Criteria					
	Effectiveness	Hazard	Ability to Accommodate Change	Consequences on the Waste Stream	Implementation Period	Facility Requirements
RESIDENTIAL						
Alternative 1 Separate Additional Waste	high	medium	high	high	medium	medium
Alternative 2 Mobile Collection	low	high	high	high	high	medium
Alternative 3 Buy-Back	low	high	high	high	high	low
Alternative 4 Multi-family	high	medium	medium	high	high	medium
NON-RESIDENTIAL						
Alternative 1 Source Separated	high	high	high	high	high	medium
Alternative 2 Manual/Mechanical MRF	high	medium	high	high	high	high
Alternative 3 Salvage at Newby Island landfill	high	medium	medium	high	medium	high
Alternative 4 City-wide Recycling	N/A	N/A	N/A	N/A	N/A	N/A
Alternative 5 Inert Solids	high	medium	high	high	high	high
RES/NON-RESIDENTIAL						
Alternative 1 Drop-off Facility	medium	medium	medium	medium	high	medium

Table 4-1 (cont'd)
SUMMARY OF ALTERNATIVES EVALUATION

Program Alternatives	Consistency with Local Plans and Policies	Additional Considerations			End Uses
		Institutional Barriers	Estimated Cost (\$)		
RESIDENTIAL					
Alternative 1 Separate Additional Waste	high	high	medium	high	high
Alternative 2 Mobile Collection	high	medium	medium	high	high
Alternative 3 Buy-Back	high	medium	medium	medium	medium
Alternative 2 Multi-family	low	high	high	high	high
NON-RESIDENTIAL					
Alternative 1 Source Separated	high	medium	high	high	high
Alternative 2 Manual/Mechanical MRF	high	medium	high	high	high
Alternative 3 Salvage at Newby Island landfill	high	low	high	medium	medium
Alternative 4 City-wide Recycling	N/A	N/A	N/A	N/A	N/A
Alternative 5 Inert Solids	high	high	high	high	high
RES/NON-RESIDENTIAL					
Alternative 1 Drop-off Facility	high	low	low	medium	medium

Table 4-2
Calendar of Recycling Tasks*

Program	Implementation Tasks	Date	Responsible Entity
Source separated recycling program: multi-family dwellings	<p>Amend City refuse collection contract.</p> <p>Purchase collection containers.</p> <p>Publicize program broadly and offer evening question/answer programs for residents.</p>	1993	Community Development Department
Source-separated recycling program: curbside program for non-residential sector	<p>Amend City refuse collection contract.</p> <p>Meet with Chamber of Commerce</p> <p>Purchase collection containers if needed.</p> <p>Publicize broadly and sponsor informational sessions for businesses.</p>	1993	Community Development Department
Manual and mechanized material recovery operations	<p>Keep up-to-date about new programs, etc. at The Recyclery.</p> <p>Work with BFI to respond to any areas the City would like to address regarding The Recyclery.</p>	1991	Community Development Department

Table 4-2
Calendar of Recycling Tasks*
(Continued)

Program	Implementation Tasks	Date	Responsible Entity
Non-residential City-wide recycling programs	Not applicable; primarily public education. Please see Section 7.	Not Applicable	Community Development Department
Divert inert solids	<p>Make arrangements with materials processors.</p> <p>Amend City contracts to include stipulation that contractor take used asphalt and concrete to materials processor.</p>	1992	Community Development Department
Separate additional waste types through residential curbside	<p>Survey residents regarding additional waste types, dry versus wet waste collection, etc.</p> <p>Determine equipment needed to add more materials.</p> <p>Identify end uses for additional collected materials.</p> <p>Publicize broadly to residents.</p>	1996	Community Development Department
<p>* The City's existing recycling programs will continue; this table includes implementation information for new programs selected and previously described in Section 4.5.</p>			