



# COMPOSTING



## 5 COMPOSTING COMPONENT

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### 5.1 Introduction

Composting is the controlled biological decomposition of solid organic materials. Such materials include leaves, grass clippings, food waste, 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 soil conditioner, mulch, or fertilizer, depending on its physical properties. Although biological decomposition occurs naturally, several physical and chemical parameters must be controlled to maximize the rate of microbial activity and to minimize environmental impacts. These factors include temperature, oxygen, nutrient availability, moisture, and pH. With proper controls, composting can occur rapidly, yield a quality product, and reduce the original volume of the organic material by 50 percent or greater.

Composting can play a key role in an integrated waste management program. Composting such waste can significantly reduce the amount of waste that goes to landfills or other disposal facilities. It also allows for more efficient waste collection and reduces gas and leachate problems associated with the landfilling of organic wastes. Composting activities can take place at the site of generation, i.e., backyard composting, or at a centralized facility. Backyard composting is considered a source reduction activity according to the *Planning Guidelines and Procedures for Preparing and Revising Countywide Integrated Waste Management Plans*.

Yard wastes have been found to make up a large percentage of the waste stream in Milpitas, comprising approximately 12 percent by weight. This has made composting an obvious choice as a focus for meeting AB 939 diversion goals.

This component presents composting objectives for the City of Milpitas and identifies existing and proposed activities for achieving these objectives.

## 5.2 Objectives

The City's composting objectives, which apply to both short-term and medium-term planning periods, are as follows:

- Divert yard waste from the landfill by composting.
- Promote diversion techniques that emphasize source separation of organic wastes from the municipal waste stream.
- Develop local public sector and private sector markets and uses for compost in the short-term (1995) and medium-term (2000) period.

## 5.3 Existing Conditions Description

Although the City of Milpitas has not initiated a municipal composting program, the City is in the unique position to take part in the development of such a program. Browning-Ferris Industries (BFI), the City's franchised waste hauling and disposal firm for commercial and residential wastes, recently began pilot operations of the Recyclery, a state-of-the-art materials recovery facility (MRF). The facility is located in San Jose. Full-scale operations are expected to begin upon permit issuance. Among its various recovery activities, the MRF will include a wood waste processing and composting system, turning wood and yard waste into wood fuel and compost. Another nearby facility Zanker Road Landfill, has an existing yard waste composting and wood fuel operation, although only a very small portion of waste from Milpitas flows to that facility. However, waste quantities diverted through transformation, i.e. incineration, are not countable toward the City's 1995 goal according to the *Planning Guidelines and Procedures for Preparing and Revising Countywide Integrated Waste Management Plans*. Up to 10 percent waste diversion through transformation is allowable towards the year 2000 goal. Therefore, this component will focus primarily on yard waste composting activities.

The City has not initiated any market development activities, local government procurement programs, economic development activities, or consumer incentives for compost. No composting programs will be decreased or phased out in the short- or medium-term planning periods.

## 5.4 Evaluation of Alternatives

This section presents an evaluation of alternative composting programs that can be used in Milpitas to meet the composting objectives. The following alternatives were evaluated based on the evaluation approach described in Appendix A.

For each evaluation criterion, a rating of high, medium, or low is assigned, and a discussion of potential issues is given.

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; and consequently a high rating for a negative criterion corresponds to few or no impacts associated with this potential problem. The results of the evaluation are summarized in Table 5-1.

Many of these activities are complementary to each other and depend significantly on the implementation of other alternatives or programs. The alternatives are evaluated in terms of their effectiveness and impact on the entire waste management system, including public education, source reduction, recycling, and disposal, and not as alternatives independent of one another.

Every composting program consists of three parts: collecting the organic materials, processing these materials, and marketing the finished compost product.

Milpitas evaluated the following collection and processing alternatives and related options to effectively divert its compostable material from landfill disposal or transformation.

- ALTERNATIVE 1. Implement Collection Alternatives
  - OPTION 1. Establish a residential yard waste collection program
  - OPTION 2. Develop a commercial/industrial yard waste program
  - OPTION 3. Collect alternative feedstocks
  - OPTION 4. Utilize mechanized yard waste separation

- ALTERNATIVE 2. Implement Processing Alternatives

OPTION 1. Develop a windrow composting system

OPTION 2. Develop a in-vessel composting system

#### 5.4.1 ALTERNATIVE 1. Collection Alternatives

**OPTION 1. Establish a residential yard waste collection program.**

This option proposes that a residential curbside program be established to enable the production of compost from the collected material. This option may be implemented by the City or a City contractor.

While the implementation of one yard waste collection practice over another is not anticipated to have a measurable impact on the quantities collected, differing advantages, such as costs, labor, or flexibility, may be gained. Collection practices could include loose collection, containerized collection, or a bag collection system. A brief description of each of these methods follows.

*A loose yard waste collection system*, utilizing a packer truck and a "claw", could be implemented in the City. The claw, referring to a mechanical claw attached to a front-end loader, gathers up loose yard waste placed next to the curb and deposits it into the packer truck. A minimum two-person crew is required for this operation. This option is usually conducted in conjunction with a street-sweeping service to dispose of remaining debris. The claw may drop or be unable to grab up to 10 percent of the leaves and grass set out. This system has been successfully implemented in Sacramento, Davis, and San Jose in a pilot program.

*Containerized collection* requires that residents place their yard waste into reusable rigid containers for collection. This option proposes that residents provide their own containers, using guidelines established by the City and labeled with City-provided signs to distinguish them from ordinary trash containers. This system is being used in Palo Alto.

The *bag collection system* is very much like the containerized collection system; however, plastic or heavy-duty compostable paper bags would be used. This option proposes that the City provide residents with such bags. The paper bags are weather-resistant and made of two plies of 50-pound kraft paper coated with a water-proof, non-toxic adhesive. For both types of bags, a 30-gallon capacity bag should be used. The use of paper bags

may be more convenient because they don't split open like plastic bags sometimes do. In addition, plastic bags must be removed during yard waste processing. Shredding the paper bags during processing is not a problem. Paper bags are then simply composted along with the yard waste.

See Section 7, "Education and Public Information Component" for a full description of promotional activities to be implemented in conjunction with this option.

This option facilitates the component objective of promoting diversion techniques that emphasize source separation of organic wastes from the municipal waste stream.

**Effectiveness.** Medium.<sup>1</sup> Residential yard waste makes up approximately 4 percent of the waste stream. It is anticipated that 2,250 tons/year or approximately 3 percent of the waste stream could be diverted through a curbside program.

**Hazard.** High.<sup>2</sup> Potential hazards associated with this option are minimal. Normally, fire hazard is low; however, some risk may be associated in the loose collection practice with automobile catalytic converters starting yard debris on fire. Crew-member injuries could result from lifting heavy bags if bags are used.

**Ability to accommodate change.** High. Public acceptance for this option is anticipated to be moderate. Blowing yard debris or parking problems associated with yard waste piles located at the curb may be anticipated in the collection of loose yard waste. Some residents may not like being required to provide their own container for yard waste and may have trouble fitting brush and branches into the container. Changing technologies are unlikely to affect the feasibility of this option. However, seasonal variations probably have a larger effect than variations in economic, technical, and/or social conditions.

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<sup>1</sup> Refers to relative rating of the alternative with respect to this criterion.

<sup>2</sup> Note that several of the criteria—including, but not limited to, hazard, institutional barriers, and consequences 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.<sup>3</sup> This option does not significantly shift solid waste generation from one type of solid waste production to another. Paper bags will be composted along with the yard waste. Rigid containers will be reused. While plastic bags will be discarded or recycled, this is not anticipated to contribute significant quantities to the waste stream.

**Implementation period.** High. This option will be implemented in the short-term and medium-term planning periods.

**Facility requirements.** Medium.<sup>4</sup> In order to produce compost, this option depends on the development of a composting facility. See Alternative 2 for discussion of the proposed facility options.

**Consistency with local plans and policies.** High. This option is consistent with local policies and does not affect existing plans or ordinances.

**Institutional barriers.** High.<sup>5</sup> No specific barriers to this alternative are anticipated; however, the City's current contracts and agreements must be considered in implementing this option.

**Estimated cost.** Medium. A packer truck, front-end loader and claw attachment will be needed for the loose collection system. The cost of a packer truck could range from \$63,000 to \$168,000 depending on the capacity required. The cost of a front-end loader could range from \$40,000 to \$168,000, with the mechanical claw attachment adding an additional \$7,000 to \$11,000. Operational and maintenance costs are anticipated to be moderate. The containerized and bag collection systems will require few additional costs. Compostable paper bags, as described above, cost approximately \$0.29 each. However, only about one-half of the yard waste can be put in bags, due to the bulkiness of brush and trimmings. Assuming a 60 percent participation rate with 50 percent of the yard waste bagged in kraft bags at 60 pounds per bag, approximately 29,090 bags would be required for a total cost of \$8,500 per year for bags.

Per ton collection costs are expected to be approximately \$70 to \$90 per ton of collected yard waste.

**End uses.** N/A. End uses are discussed in Section 5.4.3.

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<sup>3</sup> See Footnote 2.

<sup>4</sup> See Footnote 2.

<sup>5</sup> See Footnote 2.

**OPTION 2. Develop commercial/industrial yard waste program.**

Option 2 involves the development of a yard waste curbside collection program to include selected commercial and industrial businesses. Separate bins would be provided for each participating customer. Yard waste collection vehicles would deposit the yard wastes at the site of the proposed compost processing facility. Only companies that regularly dispose of significant quantities of yard waste would be targeted for this program. This option may be implemented by the City or a City contractor.

This option facilitates the component objective of promoting diversion techniques that emphasize source separation of organic wastes from the municipal waste stream.

**Effectiveness.** Low. Commercial and industrial yard waste makes up approximately 5 percent of the waste stream. Providing bins for separate collection of yard waste from yard waste-generating businesses could divert approximately 2 to 3 percent of the waste stream.

**Hazard.** High. No potential hazards are associated with this option.

**Ability to accommodate change.** Medium. As a collection program, this option would have the flexibility to adjust to changing waste quantities.

**Consequences on the waste stream.** High. This option does not shift solid waste generation from one type of solid waste to another and does not result in the creation of non-recyclable wastes.

**Implementation period.** Medium. This option would be implemented in the short-term and continued in the medium-term planning periods. Some difficulties in implementation may be encountered due to lack of additional bin space at some commercial and industrial businesses.

**Facility requirements.** Medium. Collection vehicles would be required for this option in servicing participating businesses. Additional bins and program monitoring would also be required. In order to produce compost, this option depends on the development of a composting facility. See Alternative 2 for a discussion of the proposed facility options.

**Consistency with local plans and policies.** High. This option is consistent with local policies, plans, and ordinances.

**Institutional barriers.** Low. A lack of space in existing buildings may prevent the placement of additional bins at some locations. The City's current ordinance, contracts and agreements must be considered in implementing

this option. Additional barriers may include the need for fenced areas to endorse the yard waste bins or lockable bins in order to prevent the addition of trash to the yard waste bins by unauthorized users.

**Estimated cost.** Medium. Additional collection vehicles and bins would be required for this option in servicing participating businesses. Additional costs would be involved with separate collection of yard waste. However, incremental costs are less than the actual costs since these materials are already being collected by the existing system. Depending on exact quantities and collection methods, additional collection costs could increase collection costs by 5 to 20 percent.

**End uses.** N/A. End uses are discussed in Section 5.4.4.

**OPTION 3. Collect alternative feedstocks.** This option involves the special collection of food wastes from commercial businesses such as restaurants and grocery stores. These wastes will then be transported to a processing facility, such as an in-vessel composting facility, to be co-processed with yard wastes into a high-grade compost product. This option may be implemented by the City or a City contractor.

This option meets the component objective of promoting diversion techniques that emphasize source separation of organic wastes from the municipal waste stream.

**Effectiveness.** Low. A program capable of collecting one-half of the food waste that is being landfilled from commercial sources would divert about 1 percent of the waste stream.

**Hazard.** Medium. Assuming that the wastes would be composted in an in-vessel system, there are no additional health hazards associated with this option, provided that current regulations regarding the collection and storage of food wastes are adhered to. Composting such wastes in an open windrow system would likely increase vector problems and could cause significant odor problems. For further discussion on this issue, see *Consistency with local plans and policies*.

**Ability to accommodate change.** Medium. Public acceptance for this option is uncertain. Changing technologies are unlikely to affect the feasibility of this option. A food-waste collection program provides the necessary feedstock to develop a high-grade, readily marketable compost.

**Consequences on the waste stream.** High. This option does not shift solid waste generation from one type of solid waste to another.

**Implementation period.** Medium. This option would be implemented in the medium-term planning period.

**Facility requirements.** Low. This option is dependent on the development of an in-vessel composting facility and is not recommended for use with a windrow processing system. Additional collection vehicles and dedicated containers (bins) may be required.

**Consistency with local plans and policies.** Medium. This option is consistent with local policies, plans, and ordinances. The implementation of this option must comply with the Santa Clara County Environmental Health Division requirements, including (1) food establishments must have a minimum twice weekly collection, or more frequent depending on the size of the business; and (2) food wastes must be stored in tight, leak-proof containers to prevent access to flies or rodents. These containers must be kept clean.

**Institutional barriers.** Medium. Alternative handling and storage procedures for food wastes must be implemented by participating businesses. A lack of space for additional bins may also restrict the implementation of this option.

**Estimated cost.** Low. Additional collection vehicles or truck trips would be required for the participating businesses. Additional costs would be similar to current costs of about \$50 to \$100 per additional ton.

**End uses.** N/A. This option provides the necessary feedstock to produce a high-grade compost product. End uses are discussed in Section 5.4.4.

**OPTION 4. Utilize mechanized yard waste separation.** This option involves the diversion of yard wastes through the use of a combination of a mechanized and manual yard waste separation system, such as a material recovery facility (MRF). Yard wastes would be diverted by directing loads of relatively uncontaminated yard wastes to a material recovery facility. There, yard waste would be segregated from other waste materials and processed, or transported to a processing facility. BFI, the City's franchised hauling and disposal firm for commercial and residential wastes, recently began pilot operations of the Recyclery, a state-of-the-art materials recovery facility (MRF). Full-scale operations are expected to begin upon permit issuance. Among its various recovery activities, the MRF will

include a wood waste processing and composting system, turning wood and yard waste into wood fuel and compost.

This option facilitates the component objective of diverting yard waste from the landfill by composting, if a composting system is developed in conjunction with this option.

**Effectiveness.** Medium. Assuming that about one half of the yard waste currently landfilled via roll-offs and self-haul loads, which have been found to frequently contain quantities of relatively uncontaminated yard waste, were diverted would account for approximately 4 percent of the waste stream.

**Hazard.** High. There are no additional health hazards associated with this option.

**Ability to accommodate change.** High. Once implemented, collection of yard waste could be increased by incorporating other program options, such as having the program operator reduce the tipping fee for clean loads of yard waste or by adding yard waste as a material to collect from mixed wastes. Similarly, yard waste quantities could be reduced by diverting less material.

**Consequences on the waste stream.** High. This option does not shift solid waste generation from one type to another.

**Implementation period.** High. This option would be implemented over the medium-term planning period.

**Facility requirements.** Low. This option requires the use of a MRF and the development of a processing facility.

**Consistency with local plans and policies.** High. This option is consistent with current local and regional planning efforts.

**Institutional barriers.** High. Institutional barriers are anticipated to have little impact on this option.

**Estimated cost.** High. Since the MRF would rely on the existing collection system to deliver wastes to the facility, collection costs are estimated to remain approximately the same. The cost of constructing and operating the MRF as well as other costs would be reflected in the facility tipping fee. Tipping fees are expected to be in the range of \$30 to \$50 per ton, including processing. Since the MRF would provide other functions in addition to

yard waste segregation, the costs attributed to the collection of yard waste cannot be estimated precisely.

**End uses.** End uses are discussed in Section 5.4.3.

**OPTION 5. Enact a County Ordinance to Ban Yard Waste From Disposal.** This option proposes the enactment of a City ordinance to ban yard waste from landfill disposal. A comprehensive ban on yard waste represents an effort to increase the diversion for all yard debris generated by both residents and commercial businesses. Residents and haulers would be required to deliver yard wastes to the proposed composting facilities or drop-off sites.

A total of ten states nationwide, and many counties, have legislation banning at least some types of yard wastes from landfilling. Regulations range from banning only the landfilling of leaves to banning leaves and grass clippings, tree stumps, or all yard debris.

The following language, regarding residential compliance, is an example of such an ordinance:

- "...leaves, grass, prunings, and garden waste cannot be collected with mixed municipal wastes if that waste is going to be disposed of or processed in the metro area."  
Carver County, Minnesota.

This option meets the component objective of diverting yard wastes from disposal if a processing program is selected in conjunction with this option. However, without regional coordination a yard waste ban would be problematic since wastes from Milpitas flow to several facilities located outside of Milpitas.

**Effectiveness.** High. Bans have been demonstrated to be effective in reducing the quantities of yard waste landfilled. During the month directly following the enactment of the yard waste ban in Dakota County, Minnesota, 25 percent more yard waste was delivered to the compost site than the highest rate for any previous month. However, this rate is difficult to anticipate for Milpitas to the lack of any previous yard waste collected or drop-off programs.

A yard waste ban could perhaps divert 10 percent of the wastestream if implemented in conjunction with one or more collection options to facilitate participation. In conjunction with a yard waste ban, the residential yard

waste collection program could ultimately divert approximately 2,400 tons per year or 2.3 percent of the wastestream. The drop-off and mechanized yard waste separation program could ultimately lead to the collection of approximately 8,400 tons per year or about 8.0 percent of the wastestream.

**Hazard.** Medium. Potential hazards associated with this option include vector and fire hazards due to stockpiling or illegal dumping of yard waste.

**Ability to accommodate change.** Medium. Public acceptance of this option is uncertain. However, while such a ban has a limited ability to accommodate changing conditions, flexibility is a greater factor of the processing option chosen in conjunction with this option.

**Consequences on the wastestream.** High. This option does not shift solid waste generation from one type of solid waste production to another.

**Implementation period.** Medium. This option will be implemented in the medium-term planning period, in order to allow for the prior implementation of one or more collection alternatives.

**Facility requirements.** High. A new composting facility is required for the implementation of this option. See Alternative 2 for discussion of proposed composting facilities.

**Consistency with local plans and policies.** Low. This option does not conflict with local policies. However, it would conflict with policies in adjacent cities and at local landfills. An enforcement mechanism would have to be developed for the City since there is no such program in place.

The City could develop a random "audit" policy for enforcement of the yard waste ban. A load-checking program targeting commercial, industrial, and self-haul vehicles would be implemented at all appropriate landfill, inspecting vehicles at random to determine compliance. Warnings would be issued prior to a citation. This would be similar to the existing prohibited waste control program at the landfill. However, those audit or load checking programs may not be workable at the out-of-City landfills without similar laws in most or all nearby jurisdictions.

**Institutional barriers.** Low. Without coordination among other Santa Clara and Alameda County jurisdictions, monitoring and enforcement of the law would be difficult.

**Estimated cost.** Medium. This option could be implemented in conjunction with the existing prohibited waste control program at the landfills at the cost of hiring personnel to examine loads from Milpitas at all landfills that receive waste from Milpitas. Assuming one person placed at each of 3 landfills at \$30,000 per year plus 20 percent administration cost yields \$108,000 per year.

**End uses.** Not applicable. End uses are discussed in Section 5.4.3.

#### **5.4.2 ALTERNATIVE 2. Processing Alternatives**

**OPTION 1. Develop a windrow composting system.** This option proposes the development of a turned windrow system that includes post-processing operations that are capable of producing a high-grade compost. This option could be implemented by the City or a City contractor. The Recyclery will incorporate a windrow composting system into its yard waste recovery activities. Ten acres have been set aside for this purpose, and required permits for the Recyclery are currently being obtained.

Windrow composting systems involve stacking the compostable materials in piles with a triangular or trapezoidal cross-section. The turned windrow is the method most commonly used for yard waste composting. "Turning" describes the method of aeration, basically referring to tearing down the pile and reconstructing it. During the active compost stage, materials will be turned 2 to 4 times monthly to increase aeration, utilizing a compost turner made especially for this purpose. If plastic bags are used in collecting the yard waste, turning equipment that has demonstrated effectiveness in removing bags will be needed. An irrigation system will be used to maintain proper moisture levels. Following a curing period when the compost is sufficiently stabilized, the compost will be subjected to an additional stage of processing (referred to as post-processing) in which the material would be screened in preparation for producing marketable products. The fine material passing a fine screen with approximately 1/4 inch openings will be transferred to the finished compost stockpile, and oversize material will be returned to the active compost windrows, or segregated and marketed as additional products, such as mulch or wood chips.

Initially, the program should be operated on a pilot basis, accepting only limited quantities of yard waste. A full program should follow during the medium-term planning period. It is important for all of the composting

equipment and procedures to be fully operational in expanding the program to accept large quantities of yard wastes.

This option meets the component objectives of diverting yard waste from the landfill by composting.

**Effectiveness.** N/A. This criterion is not applicable to the processing alternatives (See Section 5.4.1, Alternative 1. Collection alternatives).

**Hazard.** High. Potential hazards associated with this option are minimal. Normally, fire hazard is low, due to the interior moisture content of the composting material. Thus, if the surface materials were ignited, a major fire would be unlikely. Fire safety is improved through the ready availability of water through the proposed irrigation system and the provision of open aisles between windrows.

**Ability to accommodate change.** High. Public acceptance for this option is anticipated to be high. Changing technologies are unlikely to affect the feasibility of the composting program. Turning and screening will enhance the marketability of the product. In addition to creating a desirable consistency, the screening process also reduces visual contamination. Visual contaminants affect the appearance of the compost and include particles of waste, such as glass, plastics, or metals, which decrease the product's marketability.

**Consequences on the waste stream.** High. This option does not shift solid waste generation from one type to another.

**Implementation.** Medium. This option will be implemented in the short-term and medium-term planning periods. The Recyclery is anticipated to begin composting operations 12 months after permits have been issued. Alternatively, composting operations may be possible at the Zanker Road Landfill.

**Facility requirements.** Low. This option requires development of a composting site, including the purchase of grinding, turning, and screening equipment for implementation. Necessary equipment includes a loader, grinder, compost turner, irrigation (drip) hoses, hoppers, conveyors, and a screen. Site preparation activities, such as grading for proper drainage, may also be required. Additional labor requirements will be determined. Regular lab analyses of the finished product will increase the products' marketability (See Section 5.4.3 for further discussion of this issue).

**Consistency with local plans and policies.** High. This option is consistent with local policies, plans, and ordinances.

**Institutional barriers.** Medium. AB 939 does not allow the use of transformation as a diversion measure. Therefore, AB 939 impacts the decision whether to utilize wood chips as fuel.

**Estimated cost.** Medium. Capital costs for a dedicated yard waste processing and composting facility are expected to be approximately \$0.5 to \$9 million, exclusive of land. Costs could be higher or lower depending on the specific types of equipment purchased and site preparation. Annual operating expenses, which may range from \$50,000 to \$100,000, include labor, fuel, equipment maintenance (parts and labor), and lab analyses. Expressed on a cost-per-ton-of-yard-waste basis, these capital and operating costs would amount to approximately \$30 per ton.

**End uses.** High. This option produces a variety of compost products and by-products, including composted fines, mulch, and wood chips. The option has the capability of producing a high-quality compost (See also Section 5.4.3.)

**OPTION 2. Develop an In-vessel Composting System.** This option proposes the development of an in-vessel bin-type system for the processing of yard waste. An in-vessel system provides an enclosed or semi-enclosed environment for the composting process. This option could be implemented by the City or a City contractor.

The bin system consists of one or more rectangular troughs into which feedstock is fed by way of conveyor belts. Air is forced into the composting material through perforations in the floor of the bin. A tiller-like device, in conjunction with a travelling belt, may also be used to mix the material periodically and to discharge the material from the bins. If plastic bags are used in collecting the yard waste, equipment that has demonstrated effectiveness in removing bags will be needed. After an initial in-vessel composting period, all in-vessel systems require some "curing" or "maturation" time in order for the compost to stabilize.

The retention time of materials in the active composting stage is approximately 21 days. At that time, materials will be substantially stabilized. Then they will be moved to the curing stage where they will be further stabilized for another 42 days. Following the curing stage, the compost will be screened in a post-processing stage to prepare the material for market.

The fine material passing a 1/4-inch screen will be transferred to the finished compost stockpile, and oversize material will be returned to the active composting stage.

Because of the high level of mechanization included in an in-vessel system, no pilot program will be necessary. A brief start-up period will be required, however, in order to test equipment and procedures.

This option meets the component objectives of diverting yard waste from the landfill by composting.

**Effectiveness.** N/A. This is not applicable to the processing alternatives (See Section 5.4.2, Alternative 1. Collection Alternatives).

**Hazard.** High. There are no potential hazards associated with this option.

**Ability to accommodate change.** High. Public acceptance of this option is anticipated to be high. In-vessel composting has several technological advantages, including excellent capabilities to control the physical parameters of composting (e.g., oxygen content, moisture content, and temperature), high decomposition rates, reduced land requirements in comparison to windrow systems, and minimized environmental impacts. A variety of bin systems are operating successfully in the United States.

Changing technologies are unlikely to affect the feasibility of this option. Post-processing will enhance the marketability of the product. In addition to creating a more desirable consistency, post-processing also reduces visual contamination. Visual contaminants, which affect the appearance of the compost, include particles of waste, such as glass, plastics, or metals; the presence of these contaminants decreases the product's marketability.

**Consequences on the waste stream.** Medium. This option does not shift solid waste generation from one type to another.

**Implementation.** Medium. This option can be implemented in the medium-term planning period.

**Facility requirements.** Low. In-vessel systems are more machine intensive, thus less labor is required in their operation. A bin-type composting facility must be sited and constructed prior to implementation. This option also requires the purchase of screening equipment for post-processing activities. Necessary equipment includes hoppers, conveyors, and a screen.

**Consistency with local plans and policies..** High. This option is consistent with local policies, plans, and ordinances.

**Institutional barriers.** Medium. AB 939 does not allow the use of transformation as a diversion measure. Therefore, AB 939 impacts the decision whether to utilize wood chips as fuel.

**Estimated cost.** Low. The disadvantages of the in-vessel composting system are cost and equipment maintenance. The cost of an in-vessel system can be prohibitive for use in yard waste composting. In addition to significant capital costs, an in-vessel system can also incur large operating costs. Equipment maintenance may be time consuming and costly for an in-vessel system depending on the equipment and system design. Capital costs for an in-vessel facility could be as high as \$2 million, with annual operating expenses of approximately \$100,000 (not including labor). Expressing capital and operating expenses on a cost-per-input ton of yard waste, an in-vessel bin system could range from \$40 to \$80 per ton.

**End uses.** High. This option produces a variety of compost products and by-products, including composted fines, mulch, and wood chips. The in-vessel system has the capability of producing a high-quality compost (See also Section 5.4.3.)

### 5.4.3 End Uses<sup>6</sup>

The availability of compost markets is a key requirement in the successful development of a composting program. Local markets should be identified whenever possible. Transportation costs are also an important consideration, because the greater the distance to market, the higher the price of the product. However, this also works in reducing outside competition when there is a local source available. The price of the product is critical in its marketability.

Potential markets include soil brokers, garden supply stores, agriculture, nurseries, landscape contractors, sod growers, tree farms, and golf courses. On-site direct marketing to residents has not been found to be a reliable end-use. Most homeowners seek a high-quality product in small quantities, usually preferring a bagged product. Residents may lack

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<sup>6</sup> This section presents a discussion of end uses for compost that applies to the alternatives discussed in Section 5.4.2.

appropriate containers or means of transport for bulk distribution of the product.

Soil brokers are typically the largest buyers of organic materials on the wholesale market. This market is currently very promising and especially strong for locally produced organic materials. Many of these organic materials currently purchased by soil brokers are transported, sometimes great distances, from lumber mills and other industrial processing facilities. For the most part, local soil brokers rely on imported sawdust, wood chips, bark dust, and bark chips for organic materials. Local production of compost and other organic materials could substitute for the large quantities of imported organic materials.

Public agency markets, although generally smaller than the private sector markets, are also worth considering. The City could implement procurement policies giving preference to the use of compost products in place of commercial fertilizers and soil amendments when these are purchased. Although City use of these products may be low, the value of such a decision may prove worthwhile, especially in encouraging landscapers and other businesses to use compost products.

The aim of several pieces of legislation passed in California last year was to increase public sector demand for compost. Beginning in 1991, the state's highway landscape maintenance programs will use compost in place of, or in addition to, commercial fertilizers. Beginning in 1993, the state will initiate programs to restore public lands using composted materials. In addition to these measures, any state procuring agency that requests a bid for commercial fertilizer or soil amendment must document the determination that the use of compost was not feasible. Future markets for compost may be identified by a state-funded study evaluating uses for compost. These efforts may further expand markets for the City's compost for use by the Department of Transportation, the Department of General Services, and other state and local public agencies. In addition, the City should evaluate the use of compost for land reclamation uses. These are generally one-time uses and should not be relied on in a long-term market strategy.

Flexibility in production is a key for reliable distribution of the compost product. There is currently demand for a number of different compost grades for a variety of uses. Production of varying particle sizes for the

compost product using coarser to finer screens during post-processing, allows better pricing flexibility in meeting differing market needs.

There are at least four distinct products that could result from yard waste processing activities: composted fines, mulch, wood chips, and low-grade compost. The composted fines, a higher grade compost, could be defined as mature compost with 98 percent of the particles passing through a 1/4-inch screen. Mulch consists of either mature composted or uncomposted materials, slightly larger than the fines, ranging from 1/2 to 2 inches in particle size. Wood chips are not composted and can range in size from 1 to 3 inches. Low-grade compost is a product in which there has been no screening to differentiate between the particle sizes described above or one that contains contaminants. The production of uncomposted mulch and wood chips does not involve controlled biological decomposition and therefore is not considered composting under AB 939. However, credit for the diversion of such materials can be given as a form of recycling.

The market for wood chips processed and sold as fuel is exceptional. Even though, this method of diversion constitutes transformation and is therefore not countable toward AB 939 goals, it is a viable alternative to landfill disposal. It will also count 10 percent towards the year 2000 AB 939 goals. Avoided landfill disposal costs, as well as revenues gained from the sale of wood chips, may make this an attractive option. These revenues then could be used to support AB 939 diversion programs. Marketing wood chips for mulch or other landscape dressing is not advisable unless the product is uniform in particle size and is aesthetically consistent in appearance. Bark chips are typically used by landscapers because of the consistency of these qualities, while chipped yard waste tends to appear mottled in color and inconsistent in size. This is primarily dependent on the composition of feedstock and such marketing should be considered if a consistent high-quality material is produced.

Levels of contamination, stability, nutrient content, and physical appearance also affect the quality, and thus the marketability, of compost. Market studies have indicated that the quality of the product is a primary concern for commercial buyers. Conducting regular laboratory analyses, including a Soil Fertility and Micronutrient Analysis and an Organic Amendment Analysis, is highly recommended. Laboratory results and testing parameters should be made available to potential buyers to assure them that the finished product maintains consistent levels of quality and content.

The market for compost produced from feedstocks other than yard debris (such as MSW and food-waste compost) may be limited in Milpitas and the Bay Area. Although the appearance, consistency, and nutrient content demonstrated by food-waste compost may be preferred by many landscapers and nurseries, its marketability could be limited by health concerns including disease transmission, contamination, and an uncertainty as to its contents. The production of this material has the potential of improving the yield and quality of high-grade compost; however, processing complications perhaps combined with an uncertain reception from potential buyers, may result in a limited ability to distribute the product.

There are some risks associated with identifying end uses for compost. The quantity of compost products on the market in California within the next few years is unknown, although it is expected to increase rapidly. Competition among composting programs in a number of localities could be significant. Although it is too early to project the saturation level of the compost market, flexibility in product specifications and pricing could be the key to a successful marketing strategy. The risks associated with marketing low-grade compost may be somewhat higher than those associated with high-grade compost. Compost marketing is anticipated to be competitive if adjacent regions are also compost-producers. If high-grade yard waste compost is readily available, this will out-compete a program that offers only a low-grade compost product.

## **5.5 Selection of Program**

The selection of programs was based on the application of evaluation criteria and the ease of implementation in the City of Milpitas.

### **5.5.1 Alternatives Selected**

The programs selected are to be implemented in the short and medium-term period:

- Establish a residential yard waste collection program (Alternative 1, Option 1)
- Utilize mechanized yard waste separation (Alternative 1, Option 4)
- Develop a windrow composting system (Alternative 2, Option 1)

These three alternatives were selected to increase the quantity of yard wastes collected and to develop a composting facility. As noted above, implementation will commence in the short term and continued into the medium-term planning periods. These alternatives meet the objective of developing a composting program, and therefore received a positive rating during the evaluation process. Yard wastes will be collected at the curb of city residences, transported to the MRF, and composted through a windrow composting system. Yard waste from self-haul and roll-off loads will also be diverted to composting. Loads having some contaminants will be sorted to yield a clean yard waste feedstock for composting. After the yard waste has been completely composted through the selected windrow system, the compost will be screened to create a variety of products and enhance its marketability. See Section 7, "Education and Public Information Component," for a full description of the selected education program. It is anticipated that the City will contract with a private firm or firms to implement this program and market resulting materials.

### **5.5.2 Estimated Types and Quantities of Wastes to be Diverted**

In Milpitas, yard wastes comprise approximately 12 percent by weight of the City's total wastestream. By collecting residential yard waste at the curb and by processing these materials into compost, yard waste diversion could account for approximately 6.7 to 7.1 percent of the waste stream. This range of diversion could be realized by 1995.

### **5.5.3 End Markets and End Uses**

Area soil brokers will be targeted as the primary market for compost and mulch products. Although this is anticipated to be a reliable market, secondary markets will also be identified. Secondary markets consist of additional potential large-scale users and buyers of organic material in the region, including soil brokers, garden supply stores, nurseries, landscape contractors, sod growers, tree farms, and golf courses. The development of agriculture as a primary market should also be considered.

The City will implement appropriate procurement measures for composted materials. This "internal market" will be reliable and relatively stable during periods of fluctuation in other markets.

The strategy for marketing wood chips, resulting from the screening operations, will be dependent on the size and appearance of the product. If the

wood chips are not marketable as a landscape dressing, they will be marketed as fuel. Although the diversion of wood chips for this purpose does not contribute to diversion credits under AB 939, and thus the diversion goals, revenue from the sale of wood chips, will help to defray the costs of the increased processing program. In addition, up to 10 percent transformation (as incineration is defined by AB 939) is allowed diversion credit under extreme circumstance in meeting the 50 percent diversion goal by 2000 (For further discussion of end uses, see Section 5.4.3.)

#### **5.5.4 Materials Handling and Disposal Needs**

A residential yard waste collection program will be utilized in conjunction with a MRF/drop-off facility and the development of a processing program. Disposal of additional contaminants from the screening process, including particles of glass, plastics, or metals, is anticipated to be minimal, but will be disposed by the contractor. Aside from the screened contaminants, no special materials handling or disposal needs are anticipated.

#### **5.5.5 Facility Needs**

Although the selected program is to be implemented by a City contractor, the following describes the required facilities: Collection vehicles will be needed for the yard waste collection program; depending on the system chosen, these could include a packer truck, front-end loader and claw attachment. The MRF will need to have space for a sorting operation that is capable of removing contaminants from loads of yard waste that are dropped off at the facility by self-haulers and roll-offs. In addition to collection vehicles, the program requires the purchase of shredding, turning, and screening equipment for implementation. Necessary equipment includes a loader, "tub grinder" or other hammermill units, compost turner, hoppers, conveyors, and a screen. Site preparation activities, such as grading for proper drainage, may also be required. This processing operation will require two to four employees. Regular lab analyses of the finished product will increase the product's marketability. See Section 5.4.3 for further discussion of end uses.

The cost of shredding equipment ranges from \$50,000 to \$400,000, depending on the type and capacity of the unit. Manufacturers of shredding equipment include Farmhand; Fuel Harvester; Jones Manufacturing; Iggesund Recycling, Inc.; Jacobsen, Inc.; Recycling Systems, Inc.; Shredding Systems, Inc.; Stumpmaster Inc.; and Universal Engineering. The

cost of screening equipment is approximately \$125,000. Manufacturers of screening equipment include Heil Engineered Systems, Hobbs-Adams Engineering Co., Lindemann Recycling Equipment, Parker Manufacturing, Powerscreen of America, and Recycling Systems, Inc. The cost of a compost turner can range from \$100,000 to \$200,000. Manufacturers of turning equipment include Brown Bear Corp.; Eagle Crusher Co., Inc.; Kolman/Athey; Resource Recovery Systems of Nebraska, Inc.; Royer Industries; Scarab Manufacturing, Scat Engineering; and Wildcat Manufacturing Co., Inc.

#### **5.5.6 Measures to be Taken if Diversion Rate Requirements Cannot be Met.**

The City or City contractor will have several options in the event that the compost market is not viable for the diversion of organic materials. These alternatives include (1) stockpiling compost until the emergence of more favorable market conditions, (2) re-evaluating the use of alternative compost feedstocks to further improve compost quality and thus marketability, and (3) significantly increasing the quantities of compost utilized by the City to absorb compost stockpiles. While none of these options is currently recommended for implementation, they may be put into place as emergency measures to achieve the mandated diversion requirements.

### **5.6 Program Implementation**

The following section describes the tasks necessary to implement the selected program.

#### **5.6.1 Government Agencies Responsible for Implementation.**

The City of Milpitas is currently responsible for operating the City's waste collection and disposal contracts. The Community Development Department will also be responsible for developing and managing contracts for implementing the selected program. See Section 7, "Education and Public Information component," for a discussion of the implementation of the selected education program.

#### **5.6.2 Tasks Necessary to Implement Program**

The City will develop contracts for a residential curbside yard waste collection program. In addition, compost processing operations will be estab-

lished. The processing and public education programs will be implemented in the short-term and medium-term planning period. The implementation of a marketing program for the improved compost product will continue into the medium-term planning period. Through contracts with the City, these programs will be implemented primarily by the Contractor(s).

The steps required for implementation of the collection program include:

- determine City procurements policies for compost
- determine the compost feedstock specifications
- select collection method
- obtain funding
- establish collection routes
- purchase collection vehicles and equipment
- begin collection program

Several steps will be required for implementation of the processing program , to be completed by the City or a City contractor:

- determine compost product specifications
- develop compost process and facility design
- obtain funding
- perform facility/site improvements
- purchase and install processing and screening equipment
- start-up
- perform lab analyses
- test market compost products

### **5.6.3 Short-term and Medium-term Planning Period Implementation Schedule**

The schedule in Figure 5-1 presents the schedule for implementation of the selected program.

#### **5.6.4 Implementation Costs**

Table 5-2 summarizes the implementation costs for the selected program.

### **5.7 Monitoring and Evaluation**

#### **5.7.1 Methods to Quantify and Monitor Achievement of Objectives**

To effectively monitor the achievement of the program in meeting the objectives, the following tasks should be undertaken:

- Record incoming yard waste quantities from the City's curbside collection programs and quantities delivered to the landfill.
- Compare and analyze disposal records from before and after the implementation of the selected program.
- Monitor market demand and trends
- If the above data is not conclusive, perform a new waste generation study, as needed.

#### **5.7.2 Written Criteria for Evaluating Program's Effectiveness**

The City will evaluate the achievement of the selected composting program by the following criteria:

- Incoming yard waste will be monitored for increases in diversion quantities.
- Marketing strategies will be evaluated for effectiveness in moving compost products and whether additional markets or specifications are needed.

#### **5.7.3 Agencies Responsible for Monitoring, Evaluation, and Reporting**

The Community Development Department for the City of Milpitas will manage contracts for the composting program, including monitoring, evaluating and reporting.

#### **5.7.4 Monitoring and Evaluation Funding Requirements**

There will be no additional funding needed to monitor and evaluate the effectiveness of the selected program.

#### **5.7.5 Measures to be Implemented if There is a Shortfall in the Diversion Objectives**

If the diversion objectives for composting are not met, or there is a shortfall in attaining the diversion mandate, the following measures may be implemented:

- See Section 5.5.6, Identification of Measures to be Taken if Requirement Cannot be Met, for alternatives in the event of a marketing shortfall.
- Increase the level of effort for public education

Evaluate whether the City's disposal contract could include salvaging yard waste at the active dumping area of the landfill.

Table 5-1  
SUMMARY OF ALTERNATIVES EVALUATION

Program Alternatives	Evaluation Criteria						Facility Requirements
	Effectiveness	Hazard	Ability to Accommodate Change	Consequences on the Waste Stream	Implementation Period		
<b>Alternative 1</b>							
Residential Collection	Medium	High	High	High	High	Medium	Medium
Comm/Ind Program	Low	High	Medium	High	Medium	Medium	Medium
Alternative Feedstocks	Low	Medium	Medium	High	Medium	Low	Low
MRF Separation	Medium	High	High	High	High	High	High
<b>Alternative 2</b>							
Windrow Processing System	N/A	High	High	Medium	High	High	High
In-vessel Processing System	N/A	High	High	Medium	Medium	Low	Low

Program Alternatives	Additional Considerations				End Uses
	Consistency with Local Plans and Policies	Institutional Barriers	Estimated Cost		
<b>Alternative 1</b>					
Residential Collection	High	High	Medium	N/A	N/A
Comm/Ind Program	High	Low	Low	N/A	N/A
Alternative Feedstocks	Low	Medium	Low	N/A	N/A
MRF Separation	High	High	Low	N/A	N/A
<b>Alternative 2</b>					
Windrow Processing System	High	Medium	Medium	High	High
In-vessel Processing System	High	Medium	Low	High	High

Table 5-2

Estimated Annual Costs for City of Milpitas  
Composting Program<sup>1</sup>

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Residential Collection (2,250 tons/year at \$70 to \$90/ton)	\$157,500 to \$202,500
Mechanized Yard Waste Separation (2,700 tons/year at \$5/ton)	\$13,500
Processing and Windrow Composting (4,950 tons/year at \$25/ton)	\$123,750
Testing and Administration	\$50,000
Public Education	\$30,000
TOTAL	\$374,750 to 419,750

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1. Assumes operation by a private collection company.







**SPECIAL  
WASTE**



## 6 SPECIAL WASTE COMPONENT

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### 6.1 Introduction

Special wastes are solid wastes that require unique handling and disposal methods because of their health hazard, environmental impact, or physical characteristics. Special wastes are defined in Section 18720, Article 3, Chapter 9, Title 14, California Code of Regulations.

Some special wastes, including sewage sludge, ash, tires, white goods (such as large appliances), abandoned vehicles, and dead animals, have recycling potential, although markets and end uses can be limited.

The special wastes addressed in this component for the City of Milpitas include sewage sludge, asbestos, tires, white goods, abandoned vehicles, and dead animals. The Solid Waste Generation Study identified that these waste types are generated in the City of Milpitas.

### 6.2 Objectives

Based on data from the Solid Waste Generation Study, the following objective has been developed for the special wastes currently generated in Milpitas:

- Establish a program to divert, to the extent possible, white goods from the disposal waste stream.

This objective will be implemented during the short-term planning period (1991-1995) and continued during the medium-term planning period (1996 to 2000). A diversion rate for special wastes of approximately 0.6 to 0.7 percent of the total wastestream should be achieved during the short-term and medium-term planning periods if the above objective is met.

### **6.2.1 Targeted Materials**

White goods are targeted for diversion in Milpitas because of their weight and potential hazard.

## **6.3 Existing Conditions Description**

This section describes special wastes and some current management practices for those wastes that are utilized in the City of Milpitas. This section also provides a discussion of those special wastes for which there is currently no permitted handling or disposal facility. Current special waste management practices that divert special wastes from the landfill will continue through the short-term and medium-term planning periods. This information is summarized in Table 6-1.

### **6.3.1 Sewage Sludge**

Sewage sludge is produced by wastewater treatment plants during secondary treatment of wastewater. In areas where wastewater systems service industrial areas, sludges may contain heavy metals and other constituents that can pose hazards to public health. Sludges with heavy metals can require special disposal. However, the potential exists for using sewage sludge as a fertilizer if contaminants such as heavy metals can be removed.

Approximately 34,000 tons per year of dry sewage sludge are generated by the San Jose/Santa Clara plant, which treats wastewater from Milpitas, San Jose, Santa Clara, Monte Sereno, Campbell, Los Gatos, and Saratoga. The City of Milpitas is responsible for generating 5 percent of the sludge, for a total of 1,700 tons of sewage sludge per year.

Wastewater generated in the City of Milpitas is exported to the San Jose/Santa Clara Water Pollution Control Plant, located in the City of San Jose. No sewage sludge is generated in the City of Milpitas. Sludge generated from the processing of Milpitas' wastewater is the responsibility of the City of San Jose for purposes of AB 939 planning.

### **6.3.2 Asbestos**

Asbestos is a naturally-occurring fibrous substance that has been shown to cause lung cancer and other respiratory problems. Before 1970, asbestos was in widespread use in products such as ceiling and floor tiles,

and insulation for pipes, boilers, and ducts. Friable, or airborne, asbestos is known to have adverse effects on the human lung and poses a potential public health risk when inhaled. It becomes available for inhalation when the material is disturbed in processes such as building repair or maintenance.

Friable asbestos in the waste stream is considered a hazardous material and requires special handling and disposal. Asbestos waste that is generated in the City of Milpitas must be manifested and taken to a waste disposal facility permitted to accept asbestos. All friable asbestos-containing waste generated in Milpitas is taken to out-of-county facilities. The Newby Island landfill does not accept friable or nonfriable asbestos waste. How much waste asbestos is generated in Milpitas each year is not known. The Solid Waste Generation Study confirmed that asbestos is not being disposed of at the landfill.

Since asbestos poses a potential risk to public health, it is not possible to recycle or divert it from landfill disposal; the only alternative to consider in managing asbestos is disposal.

### **6.3.3 Tires**

Used tires pose special handling and disposal problems. For example, stockpiled used tires can collect rainwater and serve as breeding grounds for disease vectors; they can also pose a fire hazard. Tires disposed of in a landfill tend to "float" to the surface, interrupting the landfill cover. They can cause differential landfill settlement if concentrated in one area in the landfill.

Tires are considered nonputrescible waste and therefore can be accepted at Class III or unclassified landfills. The Newby Island Landfill is permitted to accept waste tires for disposal, but discourages them from being accepted at the landfill by imposing high rate fees for their disposal.

The majority of used tires generated in Milpitas are collected by Oxford Tire Recycling of Northern California (Oxford). Oxford collects tires from several gas stations and auto stores in the City of Milpitas. Oxford collected approximately 25,272 tires in 1990 from the City of Milpitas. At an average of 25 pounds per tire, approximately 316 tons of tires were diverted from disposal in 1990.

Oxford transports the collected tires to its facility in Union City, California, where the tires are separated for delivery to appropriate end use. Tires in good condition and able to be resold, and casings that can be used for retreaded tires, are taken to tire distributors.

Tires that are not reused are taken to the Tire-to-Energy Plant in Westley, California. This facility, operated by the Oxford Energy Company, incinerates whole tires to produce steam to generate electricity. This facility plant recovers incineration byproducts that include fly ash and gypsum. The fly ash containing zinc is shipped to a smelting facility. Gypsum has nonagricultural land applications. Slag from the steel and fiberglass belts in the tires is recovered and used for road base (i.e., under asphalt). The slag is 95 percent ferrous.

Oxford estimates that 11 percent of the collected tires are resold, 14 percent are used for casings, and 75 percent are used as tire-derived fuel for generation of electricity. By-products of the electricity generation process include 4 tons of gypsum, 8 tons of zinc, and 13 tons of steel for every 100 tons of tires transformed.

#### **6.3.4 White Goods**

"White goods" are large appliances (such as washers, dryers, and refrigerators) that have entered the waste stream. White goods have special handling requirements because of their size and weight and because they may contain polychlorinated biphenyls (PCBs) and chlorofluorocarbons (CFCs). PCBs are a known human carcinogen, and CFCs have been shown to break down the stratospheric ozone layer.

The electrical capacitors and cooling units should be removed before the white goods are placed in a landfill. White goods must be thoroughly crushed before burial to avoid refuse bridging, which can cause uneven compaction of the refuse fill. If the electrical capacitors and cooling units are not removed before crushing, PCBs and CFCs could be released into the environment. All CFCs will be recycled. PCBs will be properly disposed of in permitted hazardous waste disposal sites.

White goods are accepted at the Newby Island landfill for a fee of \$16. BFI stockpiles these white goods at the recycler in a 50-yard container, which is taken 3 to 4 times per week to Markovits and Fox. The average weight of each load is 5 tons. Currently 25 percent of the bin space is white goods and the remaining 75 percent is other ferrous metals.

Approximately 4 tons of white goods were diverted in 1990 at The Recyclery. An estimated 210 tons will be diverted at The Recyclery in 1991. Milpitas residents can also request BFI to pickup white goods at the curb. Pickups are done City-wide on Tuesdays. There is a fee of \$29 each for the first two items, and \$49 afterwards.

### **6.3.5 Abandoned Vehicles**

Under California regulations, abandoned vehicles are considered to be an unclassified waste, thus qualifying for disposal in a Class III landfill. The Newby Island landfill does not, however, accept autobodies for disposal. Abandoned vehicles generated in Milpitas are picked up by Milpitas Towing and Garbe's Towing. In 1990, 294 abandoned vehicles were towed in Milpitas. Approximately 132 of these vehicles were processed for scrap with the remainder being picked up by the owners or resold. Using an average weight of 1.5 tons per vehicle, approximately 198 tons of scrap were recovered from abandoned vehicles. Abandoned vehicles however, are not countable under AB 939, since they are not normally disposed of at the landfill.

### **6.3.6 Dead Animals**

The Santa Clara Valley Humane Society is primarily responsible for management of dead animals generated in Milpitas. The Humane Society contracts with Koefran of Sacramento for collection of dead animals. Koefran provides a freezer at the Humane Society for storage of animal remains. Koefran collects the remains 3 times per week. The remains are transported to Sacramento for use by a rendering company and are recycled into bone meal and used in fertilizer. According to the Humane Society, approximately 0.5 ton of dead animals per year is diverted from the Newby Island landfill.

## **6.4 Evaluation of Alternatives**

The alternative evaluated in this section addresses the objective of establishing programs to divert, to the extent feasible, white goods from the disposal waste stream.

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 of the evaluation are summarized in Table 6-2. The special waste alternative evaluated for Milpitas is described below.

## 6.5 White Goods

### 6.5.1 Alternative 1 - Prohibit Disposal of White Goods at the Newby Island Landfill

White goods could continue to be accepted at the Newby Island Landfill, but would be prohibited from being disposed of. BFI would require waste haulers to identify white goods in incoming loads, and, after payment of fee, to deposit them at the Recyclery. At the Recyclery, electrical capacitors, cooling units, insulation, and wiring would be removed. The electrical capacitors and cooling units can be recycled and the insulation and wiring recycled. The resulting scrap metal could be sold to a scrap metal dealer.

The City of Milpitas could work with BFI to implement this activity at the landfill.

This alternative is evaluated according to the required criteria.

**Effectiveness.** High.<sup>1</sup> This alternative would be effective in diverting approximately 330 tons annually of white goods from disposal.

**Hazard.** Medium.<sup>2</sup> Potential hazards include risk of injury to Recyclery personnel from potential exposure to PCBs.

**Ability to Accommodate Change.** Medium. The ability of this alternative to accommodate change is limited to the amount of white goods that can be stockpiled at the Recyclery during unfavorable market conditions.

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<sup>1</sup> Refers to relative rating of the alternative with respect to this criterion.

<sup>2</sup> Note that several of the criteria—including, but not limited to, hazard, institutional barriers, and consequences 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.<sup>3</sup> This alternative would divert white goods from the characterized waste stream. White goods represent approximately 0.34 of the total wastestream in Milpitas.

**Implementation Period.** High. Implementation is possible, using assets that are currently available at the Newby Island Landfill and the Recyclery.

**Facility Requirements.** High.<sup>4</sup> This alternative does not require any facilities; a stockpile for white goods at the Recyclery already exists.

**Consistency with Local Plans and Policies.** Medium. This alternative may be inconsistent with local plans and policies if "landfill bans" are normally opposed.

**Institutional Barriers.** High.<sup>5</sup> No known institutional barriers exist.

**Estimated Cost.** High.<sup>6</sup> No significant costs are associated with this alternative. Loadchecking and stockpiling of white goods can take place with current facility assets.

**End Uses.** High. White goods can be repaired and reused; they can also be used for scrap metal following the removal of electrical capacitors and cooling units. The removed units can be recycled. A relatively stable market is available locally for scrapmetal.

## 6.5 Selection of Program

This section (1) identifies the new program that has been selected to be implemented in the City of Milpitas, (2) discusses why the program was selected, and (3) describes the quantities and types of wastes anticipated to be diverted, applicable end uses, handling and disposal methods, and facilities to be utilized for implementation.

The selection of the program was based on the results of the alternatives evaluation and the ease of implementation in the City of Milpitas.

### 6.5.1 Selected Alternatives

The following alternative was selected for implementation .

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<sup>3</sup> See Footnote 2.

<sup>4</sup> See Footnote 2.

<sup>5</sup> See Footnote 2.

<sup>6</sup> See Footnote 2.

*Prohibit Disposal of White Goods at the Newby Island landfill.* BFI currently collects and stockpiles white goods at the landfill. White goods are still present, however, in the wastes being disposed of at the Newby Island landfill. Prohibiting disposal of white goods at the landfill will help to eliminate white goods from the disposal waste stream. Implementation of this alternative would require minimal time and effort and would require no new facilities.

### **6.5.2 Quantities and Types of Wastes Anticipated to be Diverted**

Approximately 330 tons of white goods are anticipated to be diverted from the Newby Island Landfill annually. This quantity does not account for projected growth of this waste type.

### **6.5.3 Applicable End Uses.**

Those white goods diverted to The Recyclery will be stockpiled. The electric capacitors and cooling units will be removed, and can be recycled. CFCs will be recycled; PCBs will be properly disposed of in a permitted hazardous waste disposal site. The remaining portion will be sold as scrap metal.

### **6.5.4 Handling and Disposal Methods**

White goods will be diverted to The Recyclery for processing.

### **6.5.5 Facilities to be Utilized for Implementation**

The Recyclery will be used to process white goods diverted from the disposal waste stream.

## **6.6 Program Implementation**

This section identifies the organizations responsible for implementation, the tasks necessary to implement the selected program, the short-term and medium-term planning period implementation schedules, and the implementation costs.

### **6.6.1 Organizations Responsible for Implementation**

The City of Milpitas can work with BFI to have this program implemented at the landfill site. This alternative may involve other cities working with

BFI also since Milpitas' waste stream is only a portion of the waste being disposed at the Newby Island Landfill.

### **6.6.2 Tasks Necessary to Implement Program**

- Initiate discussions with BFI
- Work in cooperation with other cities pursuing the same program.
- Develop a method to identify white goods in incoming loads.
- Provide information to the public about the prohibition.

### **6.6.3 Short-term and Medium-term Planning Period Implementation Schedule**

The implementation of the prohibition of white goods at the Newby Island Landfill could take place by 1992.

### **6.6.4 Implementation costs**

Prohibiting white goods disposal at the landfill could take place with current landfill and Recyclery assets. Some recordkeeping costs by BFI may be incurred.

## **6.7 Monitoring and Evaluation**

### **6.7.1 Methods to Quantify and Monitor Achievement of Objectives**

The following methods will be used to monitor the achievement of the objective identified in Section 6.2:

- Track the quantity of white goods diverted for recycling. (The total weight of white goods diverted should average 330 tons per year at present generation quantities.)
- Monitor the markets to which the white goods are diverted to ensure that the marketed white goods are not being disposed of.
- Perform a waste disposal characterization in the future.

### **6.7.2 Criteria for evaluating program's effectiveness**

Milpitas will evaluate the success of the special waste program by the following criteria:

- Is the objective of the special waste component being achieved?
- Was the alternative implemented on schedule?
- Are special wastes being managed so that hazards to public health and safety and the environment are minimized?
- Are special wastes managed consistent with applicable permits and regulations?

### **6.7.3 Responsible Parties for Monitoring, Evaluation, and Reporting**

The City of Milpitas, Community Development Department, which is responsible for managing solid waste, would also be responsible for monitoring and evaluating the effectiveness of the alternative program implemented.

### **6.7.4 Monitoring and Evaluation of Funding Requirements**

Some staff time from the City of Milpitas will be required for recordkeeping. During the first year of implementation, the City will monitor the costs of overseeing this program and identify the need for additional funding and staffing.

### **6.7.5 Measures to be Implemented if the Special Waste Objective is Not Achieved**

The following measures will be implemented if the objective identified in Section 6.2 is not achieved:

- Implement additional waste acceptance procedures at the Newby Island landfill.

Table 6-1

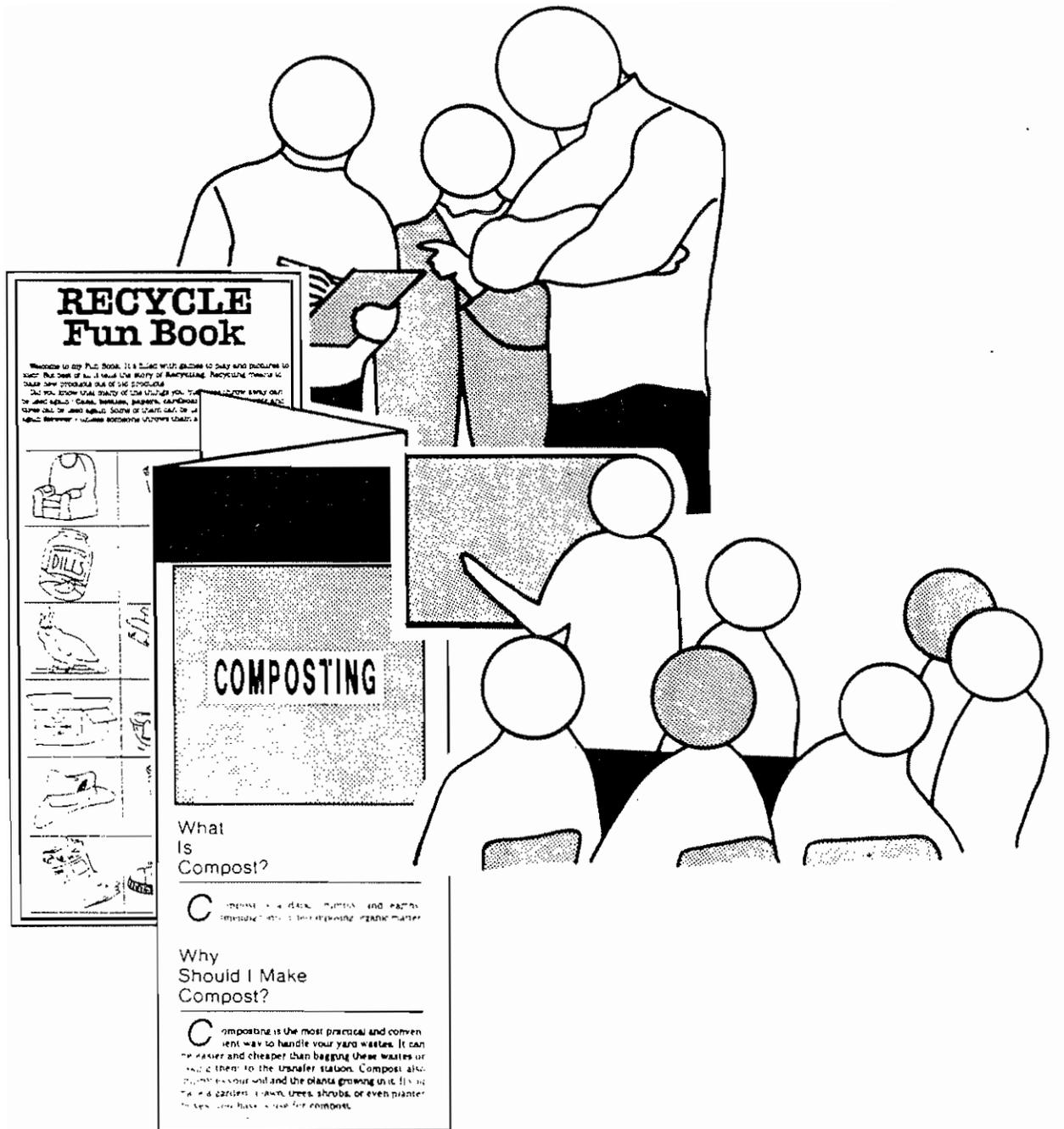
SUMMARY OF  
EXISTING SPECIAL WASTES CONDITIONS  
MILPITAS

SPECIAL WASTE TYPE	ACCEPTED AT NEWBY ISLAND LANDFILL	HANDLING PRACTICE	ESTIMATED ANNUAL TONS GENERATED	ESTIMATED ANNUAL TONS DIVERTED	END USE/ MARKETS
ASBESTOS	No	Manifested and hauled by licensed hauler	Unknown	Unknown	Disposal
ABANDONED VEHICLES	No	Collected by towing companies	198	198	Scrap metal
DEAD ANIMALS	Yes	Collected at Santa Clara Valley Humane Society	0.5	0.5	Bone meal and fertilizer
TIRES	No	Collected by Oxford Tire	316	316	Re-use, tire-derived products, and energy
WHITE GOODS	Yes	Stockpiled at the Recyclery	540	210	Scrap metal

Table 6-2

**SUMMARY OF ALTERNATIVES EVALUATION**

Program Alternatives	Evaluation Criteria					
	Effectiveness	Hazard	Ability to accommodate change	Consequences on the Waste Stream	Implementation	Facility Requirements
<b>Alternative 1</b> Prohibit Disposal of White Goods at the Newby Island Landfill	High	Medium	Medium	High	High	High
<b>Program Alternatives</b>	<b>Additional Considerations</b>					
	Consistency with Local Plans and Policies	Institutional Barriers	Estimated Cost (\$)	Available Markets (End Uses)		
<b>Alternative 1</b> Prohibit Disposal of White Goods at the Newby Island Landfill	Medium	High	High	High		



# EDUCATION AND PUBLIC INFORMATION



## **7 EDUCATION AND PUBLIC INFORMATION COMPONENT**

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### **7.1 Introduction**

Education and public information programs serve two critical functions in implementing successful waste reduction programs. First, they explain, through increased knowledge and awareness, why waste reduction programs are vital to the community's waste management strategy. Second, public education and information programs let the public know how to effectively participate in the community's waste reduction programs. Both ongoing education and public information are essential to the successful implementation of the source reduction, recycling, composting, special waste, household hazardous waste, and funding components of the SRRE. The public education and information component is the mechanism that facilitates the success of all the other components and is critical to their implementation.

Public education and information programs seek to change the behavior of the community as a whole. It is therefore critical that the City's public education and information programs reach all of the different segments of the population in Milpitas. This requires taking into account differences in waste streams, generation rates, and communication issues inherent in a community containing diverse residential, commercial, and demographic elements. Selecting waste reduction programs without providing methods of informing and educating the complete diversity of generators in Milpitas could cause the community to fall short of the mandated AB 939 waste diversion goals.

Through public education and information, Milpitas can encourage community residents to develop patterns of behavior aimed at waste reduction. By drawing upon a sense of community and civic pride, Milpitas can develop successful participation in waste reduction programs while limiting the use of mandatory actions.

This component consists of six sections: a statement of objectives; a description of existing programs; an evaluation of alternatives; a description of selected program alternatives; an implementation plan; and a monitoring and evaluation program.

## **7.2 Objectives**

The City of Milpitas has developed objectives for education and public information programs consistent with the needs of the waste diversion alternatives selected in the source reduction, recycling, composting, special wastes and funding components of this SRRE. The following objectives will be implemented in the short-term planning period (1991-1995). The objectives presented below will continue throughout the medium-term planning period (1996-2000). Details on specific programs and timetables associated with these objectives are presented in Tables 7-1, 7-2, and 7-3.

- Heighten public awareness of solid waste reduction issues on an ongoing basis, especially of the need to reduce, reuse, compost, and recycle waste.
- Monitor the development and integration of educational programs on reduction, recycling, and resource conservation into the curricula of schools in Milpitas.
- Provide public recognition of private and public groups, associations, businesses, or individuals that support, participate in, or implement waste reduction programs.
- Provide informational and educational materials to support the implementation of a variable rate structure for collection and disposal service in Milpitas.
- Promote and provide technical assistance on backyard composting as a source reduction effort.
- Increase participation rates in the curbside residential recycling program.
- Provide public information on collection programs for recyclables, yard waste, and special wastes.

### 7.3 Existing Conditions Description

The City of Milpitas has a number of education and public information programs and activities currently in place. The public awareness activities include support for the curbside recycling program initiated in early 1991, as well as solid waste curriculum used in the local school system. The City of Milpitas works very closely with its residential hauler (Browning-Ferris Industries) in developing and implementing education and public information programs. Descriptions of the ongoing public awareness activities are listed below.

#### Media Programs

- **Radio Programs.** Milpitas sponsors radio spots to publicize the curbside recycling program.
- **Television Programs.** Milpitas has aired video programs on solid waste issues on its public access cable television channel. These programs include videos such as the Loma Prieta Chapter of the Sierra Club video, "Re-Use It or Lose Use It" (1991).
- **Newspaper Advertisements.** Announcements alerting the public to the curbside recycling program have been placed in several local newspapers. These advertisements are a joint effort between BFI and the City and include instructions on how to effectively participate in the recycling program.
- **News Releases.** The City also prepares news releases for local newspapers that highlight new waste management initiatives and programs in Milpitas.

#### Education

- **Environmental Curriculum.** The Milpitas Unified School District has integrated environmental program materials into its curriculum. This includes a revised science curriculum that contains lessons on waste management and environmental issues for grades K-12. These efforts are coordinated on a countywide basis by the Santa Clara County Office of Education.

- **Facility Tours.** A material recovery facility owned and operated by the City's contract hauler (BFI's Recyclery) features a participatory learning center with "hands on" exhibits and demonstrations of recycling processes and technologies. Guided tours of the various operations will be conducted for school children, teachers, parents, and other interested individuals.
- **Waste Audits.** The City's contract hauler (BFI) currently conducts waste audits as a service to commercial customers.

### Outreach

- **Hotline.** The City's hauler has established a hotline program to answer questions and provide information to the public about recycling issues in Milpitas.
- **Task Force.** The City of Milpitas has also established a Task Force (SWRAC) composed of representatives of businesses, community organizations, local government, and residents. The SWRAC was appointed as an advisory body on the SRRE and HHWE for the County. The Task Force also serves as a vehicle for feedback and ensures that the City is responsive to community concerns. Although this Task Force was created specifically to facilitate the development of the SRRE and HHWE, its function might also be useful during the implementation of SRRE and HHWE programs.

### Campaigns

- **Special Contests.** As part of the first-year public awareness program, BFI is coordinating an essay, poster, and sculpture contest through the local schools.

## 7.4 Target Audience for Selected Programs

There are four specialized target audiences for the education and public information programs selected in this component: (1) residential generators; (2) commercial generators; (3) institutional generators; and (4) non-english speaking generators.

### **7.4.1 Residential Generators**

The Solid Waste Generation Study identified the residential sector as a significant source of waste generation that will require an integrated approach to source reduction, recycling, composting, and special wastes. The residential waste stream consists of significant amounts of yard waste, cardboard, old newspaper, mixed and other grades of paper, glass, food and other organic wastes, and plastics. The City of Milpitas will address these materials through a number of source reduction and recycling diversion programs, all of which rely heavily on education, technical assistance, and public information.

### **7.4.2 Commercial Generators**

The non-residential (i.e., commercial/industrial) sector consists of cardboard, newspaper, high-grade paper, lower grades of paper, plastics, food wastes, inert solids, ferrous metals, and CA Redemption glass. The City will address these materials with technical assistance and education programs.

Of special note are the top 22 employers in the City that account for over 60 percent of the employment base in Milpitas.<sup>1</sup> These firms are predominantly in the electronics industry and tend to generate large quantities of paper, cardboard, and plastic packaging materials. Targeting these firms through technical assistance, education, and information programs provides a tremendous opportunity for the City to reach a large proportion of the commercial/industrial sector. A speakers' bureau will be created to share and disseminate information coming commercial generators.

### **7.4.3 Institutional Generators**

While the Solid Waste Generation Study did not target institutions (e.g., schools and government agencies), these waste generators offer special challenges and opportunities for education and public information programs. Schools and other public agencies can serve as models for selected waste reduction programs.

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<sup>1</sup> Based on data contained in the Community Economic Profile for Milpitas, February, 1990, prepared by the Milpitas Chamber of Commerce, and on employment data provided by ABAG in the 1989 Revision to the Solid Waste Management Plan for the County of Santa Clara, page III-8.

#### **7.4.4 Non-English Speaking Generators**

Milpitas has a significant proportion of non-english speaking residents. Preliminary reports for the 1990 census indicate that there are four primary groups that may require specialized public education, information, and outreach materials: Hispanic, Vietnamese, Philippine, and Chinese. These preliminary census figures estimate that approximately 33 percent of the City's population is of Asian descent and approximately 18 percent is of Hispanic descent. While not all of these residents will require specialized public education and outreach materials (many will be English-speakers), some will require specialized effort on the part of the City to increase their participation and overall awareness of the programs available to them.

#### **7.5 Program Selection**

The City of Milpitas will continue all of the programs and activities described above in support of the community's source reduction and recycling programs. In addition, the City will select and implement the following education and public information programs in support of the programs selected in the source reduction, recycling, and composting components.

**Public Service Announcements.** Virtually every radio and television station offers free air time to non-profit organizations to announce an event or present an issue. The City can take advantage of this by working with non-profit organizations to sponsor public service announcements (PSAs).

**Television Programming.** Most television stations offer public service announcement opportunities, as well as numerous programs that can provide promotional opportunities for the City. For example, a representative of the City can be a guest on a local program, or one of the stations can feature a City program or event as part of its programming. As with radio and newspapers, television reaches a broad audience, and extends throughout a wide geographic area.

**Video Tape Libraries.** A number of video resource materials are available for purchase that provide information on source reduction, recycling, composting, and other solid waste issues. Milpitas can purchase these videos for distribution to the general public through the local library system.

**Coordination with Community Groups.** The City of Milpitas will work closely with community groups throughout the City to disseminate information about waste management. These community groups can serve as a tremendous resource for the City in terms of volunteer staff and community outreach. The name recognition and credibility of community groups will enhance the acceptance of AB 939 programs throughout the City.

**Coordination with Non-Profit Organizations.** The City will utilize the volunteer services of non-profit organizations for community outreach. These organizations, such as youth groups and scouting organizations, serve to augment public education programs. For example, a public education program on source reduction, recycling, and composting could be integrated into an Eagle Scout community service project for the Boy Scouts.

**Internship Program.** Funding an internship program for students from surrounding universities is a cost-effective method of augmenting City staff and volunteer groups for the purpose of implementing public education programs. Milpitas will consider sponsoring a waste reduction internship, providing a community relations opportunity as well as additional staffing to assist with education and public information programs.

**Participation in Local Events.** Participating in local events is a highly visible method of reaching the community about waste reduction programs. The City will take advantage of the large groups present at community events to target them for educational materials about the City's waste reduction programs and practices. The City can also provide ongoing recycling programs at public facilities such as parks and at events held locally, such as fairs and ball games.

**Junk Mail Reduction Program.** Information is available from the Direct Marketing Association of America and other such groups regarding what can be done to minimize the large volume of junk mail each household receives each year. Many communities are disseminating this information to their residents.

**Brochures.** Brochures can be mailed or distributed to residents or businesses to announce new recycling programs or events. Informational brochures and fact sheets can encourage participation in existing and planned programs. This is a particularly good way to kick off a new program, such as a widespread commercial recycling program. All brochures will be printed on recycled paper (and will be marked accordingly).

**How-To Information.** How-to information can be provided to targeted audiences, such as to new residents, employers, churches, and community organizations. These materials can cover source reduction, recycling, and composting techniques, as well as topics such as where to take wastes requiring special handling and disposal.

**Composting Education.** The City may consider establishing a "hands on" composting demonstration project, perhaps in coordination with the community garden. The program can provide public education about the composting process by walking through the steps from yard waste decomposition to a finished compost product.

**Technical Assistance.** The City will assist the major businesses and industries in Milpitas to implement source reduction programs, establish collection and recycling programs, and buy recycled products.

**Mailed Inserts.** Any type of ongoing mailer for which the City is responsible (e.g., "Milpitas Connection" or the City Calendar) can be considered an opportunity for an informational or educational insert. The City can also coordinate with another organization such as the Chamber of Commerce's publication "Panorama." The insert can be a simple, one-page flyer providing recycling information or announcing upcoming recycling events in the community.

**Newsletter.** An "Environmental Newsletter" can be published periodically, containing information on solid waste issues, as well as other environmental issues, such as water and energy conservation, transportation, and pollution. The broader the scope of the newsletter, the more likely residents are to read it. For example, someone who is not particularly interested in recycling may read the newsletter for water conservation information and learn about solid waste issues as a side benefit. In addition, the yearly Calendar distributed to Milpitas residents can have a waste reduction theme or feature information on waste issues.

**Workshops.** Workshops and seminars offered to each targeted waste generator group can be very effective. These address practical ways to reduce the quantity of wastes generated and disposed of. Proposed workshop topics include decreased consumption, procurement practices, increased manufacturing efficiency, and composting of yard wastes at the site of generation.

**Speakers Bureau.** The City can organize a speakers bureau that would include volunteer speakers on solid waste issues. The list of speakers would then be distributed to community groups, schools, businesses, government offices, and churches interested in sponsoring a workshop or seminar on waste management.

**Consumer Awareness.** Milpitas can prepare a "Buy Recycled" pamphlet to be distributed with other recycling information to urge residents to "complete the loop" by buying recycled products whenever possible. The City could consider creating a source reduction shopping checklist for consumers. The checklist would focus on criteria consumers can use when buying products, including durability, reusability, recyclability, and minimal packaging. The City will work with stores to publicize environmental programs.

**Waste Diversion Thermometer.** The community can be kept involved in an ongoing way by publicizing the AB 939 25 and 50 percent diversion targets for 1995 and 2000, respectively. A poster board tracking the City's waste diversion percentage can be placed in highly visible areas around the community, such as libraries and City buildings. The tracking "thermometer" would serve as a constant reminder that the City is striving for a 50 percent reduction in solid waste disposal by the year 2000.

**Promotional Materials.** The City can distribute waste reduction promotional materials targeted at all elements of the population, including different age groups and ethnic groups. Effective materials, available from the State Department of Conservation and from other sources, include door hangers, bookcovers, poster, bookmarks, stickers, yo-yo's, recycled paper notepads, certificates, recycled plastic Frisbees, buttons, pencils, and magnets. These materials could be incorporated into many of the public information and education activities described in this section. Materials should be minimally packaged, have recycled content, and be recyclable.

**New Residents Program.** The City of Milpitas can immediately involve new residents in existing and planned recycling programs by preparing and distributing special informational and educational materials for new residents. These materials would explain (1) the waste reduction goals of the City and (2) how residents can assist by participating in the waste reduction programs available.

## **7.6 Program Implementation**

### **7.6.1 Responsible Parties**

The City of Milpitas Community Development Department, Division of Planning, will be responsible for implementing all of the education and public information programs selected in this component. These activities will support the source reduction, recycling, and composting programs selected in the respective components of the SRRE.

The City currently has one staff planner assigned to develop, administer, monitor, and evaluate solid waste programs in Milpitas. This staff planner is currently functioning at 80 percent capacity on solid waste issues and is expected to continue working on solid waste planning issues at roughly 80 percent capacity for the initial 18 months to 2 years of program implementation. After this period, the current staff planner's responsibilities could be scaled back to 50 percent capacity.

However, in order to fully implement the program alternatives selected in this SRRE the City will require one full-time staff member in addition to the current staff planner assigned to solid waste planning. Moreover, the City should consider augmenting its available staff resources by initiating an internship program with local universities and colleges wherein academic credit is granted in return for substantive and meaningful contributions to the City's efforts in waste reduction.

### **7.6.2 Required Implementation Tasks**

See Tables 7-1 through 7-3. Educational materials can be printed in non-English languages for those populations of the community that do not speak English. Associations and groups serving non-English speaking populations can be targeted to assist in the public information effort.

### **7.6.3 Implementation Schedules**

See Tables 7-1 through 7-3.

### **7.6.4 Implementation Funding Requirements**

The funding requirements for the education and public information programs selected in this component consist of the cost for one additional employee plus direct costs for materials, supplies, and promotional items.

It is expected that any facilities required to conduct educational and informational programs will either be City-owned and operated or their use will be donated by businesses, organizations, and/or private individuals.

Costs are estimated to be approximately \$55,000 - \$65,000 per year for one additional staff person. This cost would extend through the short-term planning period into the medium-term planning period.

Direct costs for materials will vary extensively depending upon the level of program activity. It is estimated that a program budget of approximately \$20,000 per year would allow for some degree of coverage across each of the selected activities in this component, including: newspaper announcements; a few radio spots; workshops; brochures; informational flyers and pamphlets; videos or other resource materials at the Milpitas Library; mail inserts; newsletters; and promotional materials. Public service announcements and news releases also provide a measure of public exposure that is free of charge to the City.

Costs for educational materials in non-English languages are included in the \$20,000 budget for materials.

During the first year of the curbside recycling program, the City's public information and education campaign will be provided in conjunction with the BFI, as stipulated in their contract. This will assist the City in ensuring that residents are made aware of the curbside recycling program available to them.

## **7.7 Monitoring and Evaluation**

### **7.7.1 Methods to Measure Achievement**

The objectives of the City of Milpitas' education and public information program are to increase the public's participation in waste diversion programs and to heighten awareness of the need to reduce, reuse, recycle, and compost. To monitor the achievement of these objectives, residents and businesses in Milpitas will be randomly surveyed every two years by telephone and/or at major shopping centers in the City. The random survey will target a representative sample of the public and will focus on the public's awareness of various waste diversion programs available to City residents and businesses. In addition, the survey will assist in identifying the relative effectiveness of alternative education and public information techniques and approaches.

These monitoring and evaluation techniques will be applied to all target groups, including the City's non-English speaking population. In addition, special efforts to apply these techniques will be made through local community organizations, associations, and groups serving the non-English speaking community.

The number of businesses requesting technical assistance or participating in City-sponsored programs will be tracked to monitor the effectiveness of these programs. Additional methods for monitoring include mail-in response coupons from the newspaper, surveys at events, periodic surveys, and feedback from phone calls or other communications from the public. Finally, annual reports to measure progress in complying with the requirements of AB 939 will provide a means for documenting the achievements of the City's programs. Measurement tools will be an integrated component of public information and education activities, whenever possible.

#### **7.7.2 Written Evaluation Criteria**

The City of Milpitas will evaluate the effectiveness of the education and public information program by regularly addressing the following issues in a written format and presenting the results in annual progress reports:

- Have the participation rates in respective waste diversion programs increased?
- Has the City received more inquiries about waste diversion services available?
- Was there sufficient City staffing to implement the education and public information programs?
- Do the targeted generators have a greater awareness of the importance of diverting wastes from land disposal?
- Was each segment of the community (e.g., residential, commercial, industrial, schools, non-english speakers) contacted during the planning period?

#### **7.7.3 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 edu-

cation and public information program activities selected in this component.

#### **7.7.4 Monitoring and Evaluation Funding Requirements**

Funding requirements for the monitoring and evaluation of the education and public information programs selected in this component include funds for recordkeeping and surveying the participation rates of each individual waste reduction program. These funds can be expected to be less than \$3,500 per year for survey forms and computer services, if necessary<sup>2</sup>.

#### **7.7.5 Contingency Measures**

The following measures will be implemented if the education and information objectives identified in Section 7.2 are not achieved:

- Evaluate the need for increased staffing, including a contract employee, temporary services, additional interns, or full- or part-time permanent staffing.
- Revise the job descriptions of staff responsible for education and information.
- Evaluate the need for increased funding for education and information programs such as waste audits, specialized technical assistance, and more aggressive waste reduction awareness campaigns.
- Modify the education and public information programs that seem to be inadequate.
- Identify additional education and public information programs for consideration.

#### **7.7.6 Program Monitoring and Reporting Schedule**

The City of Milpitas will monitor and report on the effectiveness of the education and public information programs on a regular basis, with frequent revisions to the schedule if needed. The City will monitor and report on City programs at least once per year as well as prior to any review or renegotiation of contracts with City waste haulers or contractors. This will

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<sup>2</sup> Some of the monitoring tasks will be undertaken by a student intern. Approximately \$10,400 is estimated for the intern's salary.

allow for the City to incorporate needed changes to education and public information programs into its agreements with its waste collection and disposal partners.

Table 7-1  
**SOURCE REDUCTION**  
**Public Education Activities**

RESIDENTIAL

Program	Program Activities <sup>1</sup>	Activity Implementation Tasks	Schedule <sup>2</sup>
Technical Assistance	Composting and mulching information; junk mail reduction program; environmental shopping campaign; newsletter; coordination with community groups	Publicize technical assistance services in newsletter; publicize available back yard composting and source reduction assistance; disseminate source reduction shopping checklist; coordinate above with assistance from community groups	Beginning Mid 1992
Public Education	Speakers bureau; environmental shopping campaign; promotional materials; newsletter; contests and displays; local events participation; environmental education curriculum; internship program; community organizations and non-profit groups	Develop and utilize speakers bureau; disseminate shopping tips; purchase and disseminate promotional materials; develop and print newsletter articles; sponsor source reduction awards; publicize source reduction activities at local events; coordinate with schools to include source reduction curriculum, poster contests, and promotional materials for K-12; develop internship program; coordinate above activities with assistance from community groups	Beginning Early 1992
Public Information	Newsletter; source reduction consumer guide; utility bill announcements; new resident program	Disseminate promotional materials and information publicizing available education and assistance programs; establish new resident information program; coordinate above activities with assistance from schools and community groups	Beginning Late 1991

<sup>1</sup> Program activities are described in detail in the text.

<sup>2</sup> Activity and task schedules beginning in the short-term planning period (1991-1995) will continue through the medium-term planning period (1996-2000).

Table 7-1 (Cont'd)  
**SOURCE REDUCTION**  
**Public Education Activities**

COMMERCIAL/INDUSTRIAL

Program	Program Activities <sup>1</sup>	Activity Implementation Tasks	Schedule <sup>2</sup>
Technical Assistance	On-site composting and mulching assistance; speakers bureau; internship program	Offer businesses and landscapers assistance with on-site composting and mulching; develop and utilize speakers bureau; develop internship program	Beginning July 1993
Public Education	Education and information pamphlet; promotional materials; Chamber of Commerce; information required through business licensing procedures	Disseminate source reduction pamphlets and promotional materials; coordinate above efforts with Chamber of Commerce; Santa Clara County Manufacturers Group	Beginning July 1993
Promotion Activities	Public recognition and awards; promotional materials	Establish a high visibility source reduction "company of the year" award; provide promotional materials for employees	Beginning December 1992

<sup>1</sup> Program activities are described in detail in the text.

<sup>2</sup> Activity and task schedules beginning in the short-term planning period (1991-1995) will continue through the medium-term planning period (1996-2000).

Table 7-2  
**RECYCLING**  
**Public Education Activities**

**RESIDENTIAL**

<b>Program</b>	<b>Program Activities<sup>1</sup></b>	<b>Activity Implementation Tasks</b>	<b>Schedule<sup>2</sup></b>
Single-Family Curbside Collection	Curbside recycling public education; new residents program; public presentations; promotional materials; environmental education curriculum; environmental shopping campaign; contests and displays; utility bill inserts; newspaper advertisements; newsletter	Disseminate a recycling pamphlet; establish a "New resident" information program; conduct public presentations; disseminate promotional materials and educational materials through schools and community organizations; implement a "Buy Recycled" campaign; implement school and poster contests; publicize program	Beginning Late 1991
Multi-Family Residential recycling	Apartment and Condominium public education; promotional materials; environmental education curriculum; environmental shopping campaign; new residents program; contests and displays; utility bill announcements; newspaper advertisements; newsletter	Distribute a multi-family dwelling recycling guide and informational brochures; telephone landlords and home owners associations to offer technical assistance; disseminate promotional and educational materials through schools and community organizations; implement a "Buy Recycled" campaign; implement school and poster contests on recycling; publicize above activities	Beginning Mid 1992
Buy-Back Centers	Newsletter and brochures	Publicize locations and materials accepted in newsletter and brochures	Early 1992

<sup>1</sup> Program activities are described in detail in the text.

<sup>2</sup> Activity and task schedules beginning in the short-term planning period (1991-1995) will continue through the medium-term planning period (1996-2000).

Table 7-2 (Cont'd.)  
**RECYCLING**  
**Public Education Activities**

COMMERCIAL/INDUSTRIAL			
Program	Program Activities <sup>1</sup>	Activity Implementation Tasks	Schedule <sup>2</sup>
Commercial and industrial recycling	Public presentations; business recycling education; promotional materials; public recognition and awards; waste audit program	Disseminate promotional materials to businesses in the City; implement high publicity "Business Recycler" awards; advertise waste audit services; develop and print newsletter articles	Beginning Mid 1992

<sup>1</sup> Program activities are described in detail in the text.

<sup>2</sup> Activity and task schedules beginning in the short-term planning period (1991-1995) will continue through the medium-term planning period (1996-2000).

Table 7-3  
**COMPOSTING**  
**Public Education Activities**

RESIDENTIAL			
Program	Program Activities <sup>1</sup>	Activity Implementation Tasks	Schedule <sup>2</sup>
Residential Curbside Program	Public information program; utility bill inserts; new residents program	Publicize program in newspaper and utility bill announcements include information on curbside program in new resident information program	Beginning Late 1991
COMMERCIAL/INDUSTRIAL			
Program	Program Activities <sup>1</sup>	Activity Implementation Tasks	Schedule <sup>2</sup>
Business assistance	Sample composting contract; waste audit evaluations; Chamber of Commerce	Develop and disseminate sample composting contracts to businesses that require landscapers to deliver yard waste to the Recyclery for composting; promote composting as a method to reduce landfill tipping costs; promote above activities through Chamber of Commerce newsletter and during waste audits	Beginning Late 1992

<sup>1</sup> Program activities are described in detail in the text.

<sup>2</sup> Activity and task schedules beginning in the short-term planning period (1991-1995) will continue through the medium-term planning period (1996-2000).

**Table 7-4**  
**Implementation Costs<sup>1</sup> for**  
**Selected Education and Public Information Programs**

<b>Public Information/Awareness/Outreach</b>	
Planning	\$ 2,000
Implementation	8,000
Operation	10,000
Monitoring	<u>500</u>
Subtotal	20,500
<b>Technical Assistance</b>	
Planning	2,000
Implementation	8,000
Operation	9,500
Monitoring	<u>1,500</u>
Subtotal	21,000
<b>Education</b>	
Planning	2,000
Implementation	15,000
Operation	15,000
Monitoring	<u>1,500</u>
Subtotal	33,500
<b>TOTAL<sup>2</sup></b>	<b>\$75,000</b>
<p>1. Includes costs for one additional staff person and a student intern.</p> <p>2. Costs include source reduction activities described in Section 3, as well as public education costs for increasing participation in recycling and composting programs. (Sections 4 and 5).</p>	





## **8 DISPOSAL FACILITY CAPACITY COMPONENT**

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Integrated waste management includes the environmentally safe disposal of solid wastes that cannot be feasibly diverted from landfilling. Because of the diminishing landfill capacity in the state of California, the Integrated Waste Management Act of 1989 requires that, in their Source Reduction and Recycling Elements, jurisdictions identify their current and future solid waste disposal capacity needs.

This component contains a description of any permitted solid waste disposal facilities within the City of Milpitas, an identification of the needed landfill capacity for 15 years, an identification of any disposal facility within Milpitas that will be closed during the next 10 years, and an identification of any plans to establish new or expanded disposal facilities within the jurisdiction during the next 10 years.

### **8.1 Existing Permitted Solid Waste Disposal Facilities**

There are no existing permitted solid waste disposal facilities within the incorporated limits of the City of Milpitas. The City currently exports all of its solid waste for disposal to permitted solid waste disposal facilities in the City of San Jose. Section 2.4.1 identifies the owner/operator of the Newby Island Landfill in San Jose that accepts wastes from the City.

### **8.2 Solid Waste Disposal Facility Needs Projection**

The needs projection for a solid waste disposal facility provides an estimate of the disposal capacity that is needed in order to accommodate projected solid waste generation within the City of Milpitas for a 15-year period commencing in 1991. The projected solid waste generation for this 15-year period is discussed in Section 2, the Solid Waste Generation Study.

The capacity required for disposal of solid waste generated within the City, and for waste imported to the City, was calculated using the following equation developed by the CIWMB:

$$\text{Additional Capacity}_{\text{Year } n} = [(G + I) - (D + TC + LF + E)]_{\text{Year } n}$$

where

G = The amount of solid waste projected to be generated in Milpitas.

The amount of solid waste generated in Milpitas in 1990 was approximately 85,418 tons. Accounting for projections of population growth, the estimated annual waste generation rates for the City were calculated.

I = The amount of solid waste that is expected to be imported to Milpitas for disposal.

There is no solid waste imported into Milpitas for disposal.

D = The amount diverted through current and proposed source reduction, recycling, and composting programs.

The amount of solid waste diverted from disposal through existing source reduction, recycling, and composting programs in Milpitas in 1990 was approximately 6,381 tons.

TC = The amount of volume reduction occurring through permitted transformation facilities.

The amount of solid waste generated in the City of Milpitas that was volume reduced by transformation in 1990 was approximately 177 tons.

LF = The amount of permitted solid waste disposal capacity that is available in Milpitas for solid waste generated within Milpitas.

There are no permitted solid waste disposal facilities in the City of Milpitas.

E = The amount of solid waste generated in Milpitas that is exported to solid waste disposal facilities in another jurisdiction.

Approximately 78,859 tons of solid waste that was generated in Milpitas in 1990 was exported to solid waste disposal facilities in the City of San Jose.

n = Each year of a 15-year period commencing in 1991.

Results of the solid waste disposal facility needs projection are shown in Tables 8-1 and 8-2. Results indicate that Milpitas will not require additional disposal capacity during the 15-year planning period.

### **8.3 Disposal Facility Phase-Out or Closure**

There are no permitted solid waste disposal facilities in the City of Milpitas. Therefore, no facilities are scheduled for closure. The City currently exports all of its solid waste to waste disposal facilities in the City of San Jose. The largest portion of the City's waste stream is collected by BFI and disposed of at BFI's Newby Island Landfill in San Jose. The City's contract with BFI expires in 2007.

### **8.4 New or Expanded Disposal Facility**

There are currently no plans to establish a new disposal facility in Milpitas during the short- or medium-term planning periods.

### **8.5 Contingency Plan for Exported Waste**

In the event that the City of San Jose is unable to accept waste from Milpitas (at the Newby Island Landfill), the City's solid wastes will be disposed of at either the Kirby Canyon in San Jose or the Durham Road Landfill in Fremont.



Table 8-1

CITY OF MILPITAS  
SOLID WASTE DISPOSAL FACILITY CAPACITY NEEDS PROJECTION (1)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Solid Waste Generated	87,327	89,493	91,712	93,987	96,318	98,706	101,154	103,663	106,234	108,868	111,568	114,335	117,171	120,077	123,055
Solid Waste Imported	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Solid Waste Diverted*	6,523	6,685	6,851	7,021	7,195	7,373	7,556	7,744	7,936	8,132	8,334	8,541	8,753	8,970	9,192
Transformation Reduction	181	184	188	192	195	199	203	207	212	216	220	224	229	234	238
Solid Waste Exported**	80,623	82,624	84,674	86,775	88,927	91,134	93,395	95,712	98,087	100,520	103,014	105,570	108,189	110,873	113,624
Remaining Permitted Disposal Capacity (end of year)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Additional Disposal Capacity Needed (cubic yards)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

(1) All wastes in tons, except additional disposal capacity.

\* Based on current estimated diversion rate of approximately 7.5%.

\*\* Refers to solid waste exported out of the City to Newby Island for disposal.

Table 8-2

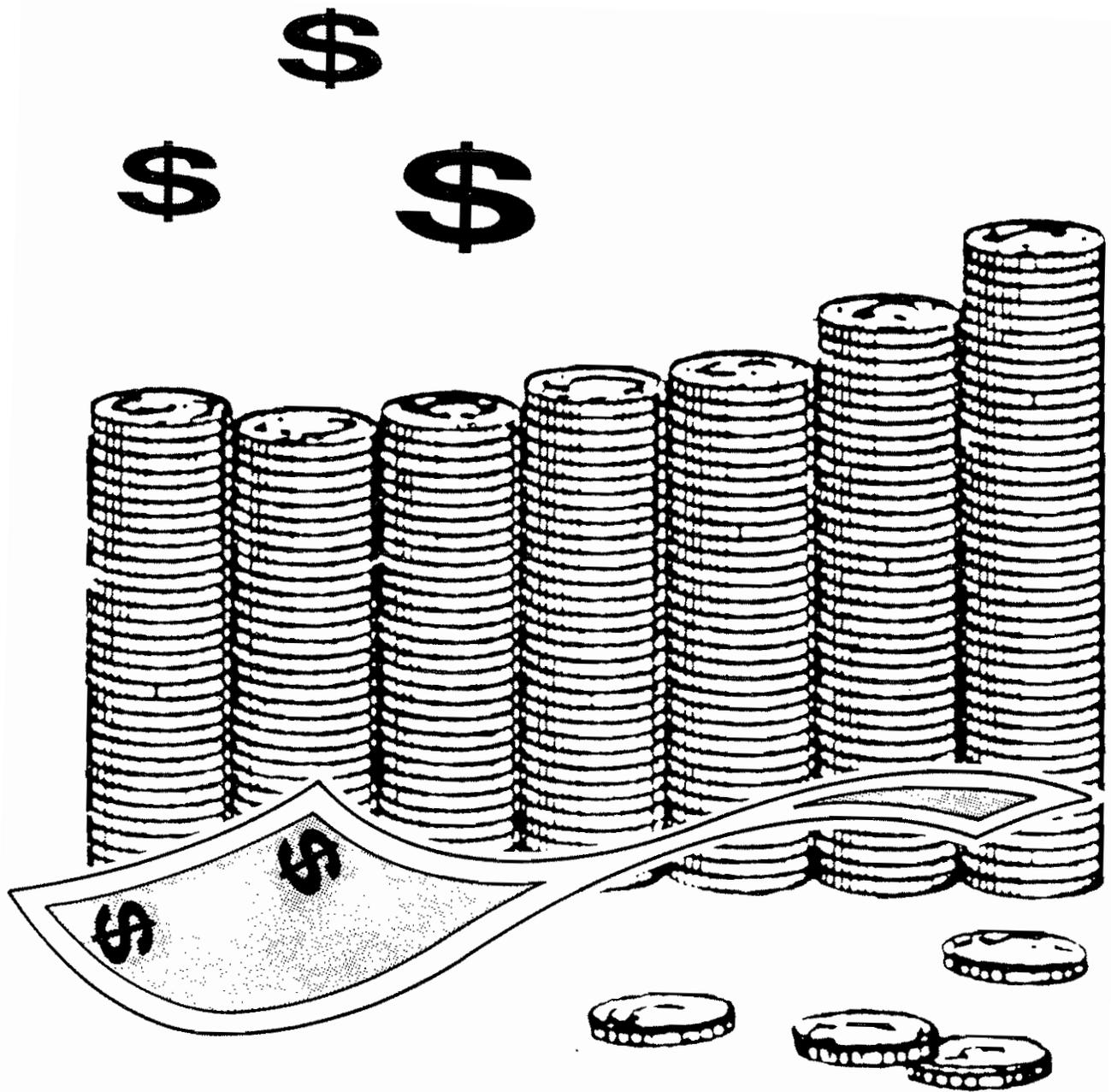
CITY OF MILPITAS  
 SOLID WASTE DISPOSAL FACILITY CAPACITY NEEDS PROJECTION (1)  
 CONSIDERING ASSEMBLY BILL 939 DIVERSION RATES

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Solid Waste Generated	87,536	89,707	91,932	94,212	96,548	98,943	101,397	103,911	106,488	109,129	111,835	114,609	117,451	120,364	123,349
Solid Waste Imported	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Solid Waste Diverted*	11,590	18,569	22,339	24,589	25,199	32,057	38,936	45,097	51,540	52,818	54,128	55,471	56,846	58,256	59,701
Transformation Reduction	181	185	190	194	199	204	209	214	220	225	231	236	242	248	254
Solid Waste Exported**	75,766	70,953	69,403	69,428	71,150	66,681	62,251	58,599	54,728	56,096	57,476	58,902	60,363	61,860	63,394
Remaining Permitted Disposal Capacity (end of year)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Additional Disposal Capacity Needed (cubic yards)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

\* Based on compliance with the SRIPE. Assumes low end of range of tons diverted is achieved (see Section 10).

(1) All values in tons, except additional disposal capacity needed.

\*\* Refers to solid waste exported out of the City to be disposed of.



**FUNDING**



## 9 FUNDING COMPONENT

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The purpose of the funding component is to demonstrate that the City of Milpitas has sufficient funds and allocation of resources to plan, develop, and implement the selected SRRE programs identified in this document.

This section briefly describes (1) the current mechanisms used to fund solid waste programs for the City of Milpitas, (2) estimated costs for the component programs scheduled for implementation in the short-term planning period, (3) additional city staff resources required to implement the programs, (4) revenue sources to support the component programs, and (5) contingency funding sources.

Adequate and long-term funding is an essential component of a successful integrated solid waste management system. Inadequate funding can cause an otherwise effective program to fail. In California, local solid waste management systems are typically funded by one or more of the following methods:

- *Tipping fee* - the amount charged by a transfer station, landfill, or transformation facility to accept a specified amount of waste (usually expressed in terms of tons or cubic yards).
- *Property taxes* - those taxes that are levied on the person or corporation recorded on the deed of record. Property taxes have limitations such as (1) statutory ceilings on tax rates, (2) competing public services such as public education, (3) lack of income or economic activity to support higher taxes, and (4) lack of voter support.
- *User fees* - fees applied to household waste and industrial waste. User fees assess the actual user based on weight and volume or number of containers collected, instead of a flat fee and local tax-financial systems.

## **9.1 Current Funding Sources**

The source of funding for solid waste management activities in Milpitas is the City's General Fund. Revenue sources for the General Fund include the City's franchise fee for refuse collection by BFI. Effective January 1, 1991, the City Council approved a 0.8 percent refuse collection fee increase over the previous year, raising the basic monthly rate per single family dwelling to \$7.45. Of this amount, the franchise fee represents \$0.74, or 10 percent of the basic rate. In fiscal year 1990-1991, the franchise fee is estimated to account for approximately \$417,000 of the General Fund's revenues.

As of January 1, 1991, 1.5 percent of the basic monthly rate per single family was earmarked by the City Council for billing, which is a function of the City's Finance Department. The billing allocation for 1991 represents a reduction of over 150 percent from the 4 percent rate apportioned to billing activities in 1989. This reduction has occurred during a period when a growing number of waste management activities have placed increasing demands on the City's finance department.

The City's curbside recycling program was implemented on January 28, 1991, resulting in an adjustment from the January 1, 1991 rate of \$7.45 per month for a single family to \$8.74 per month. This increase (\$1.29 per month) represents a curbside fee is that paid to the refuse collector, BFI, to provide the curbside collection service. The curbside recycling contract with BFI includes recyclable material revenue sharing. Because the program only recently began, the revenue available from this source is unknown.

## **9.2 Estimated Program Costs**

Estimated costs have been determined for each of the new or expanded programs that have been identified in Sections 3 through 7 for implementation during the short-term planning period. Table 9-1 shows the estimated total program costs (capital and operating) for each of these programs, by year, for 1991 through 1995. Capital costs include both public and private sector equipment purchases, and new or improved structures. Operating costs include both public and private sector operations and maintenance, publications, and other promotional materials, staff time, and other expenses.

One staff position will be added to the City staff by 1992; the need for an additional staff position will be reviewed by the end of calendar year 1992. This new staff member position, along with existing staff, will be responsible for planning, developing, and implementing the programs identified in this document (see Sections 3 through 7). Costs for additional staff are included in the annual operating costs (see Table 9-1).

### **9.3 Revenue Source for New and Expanded Programs**

The source of funding the programs to be implemented during the short-term planning period in the City of Milpitas will be the City's General Fund. It is likely that current revenue sources for the General Fund are not adequate to cover new and expanded programs beyond 1992. The City must identify additional revenue sources. One method of generating the revenues is a rate increase of 20 to 50 percent for all regular garbage service accounts. The City will have the opportunity to adjust garbage rates in 1992 when the City's contract with BFI will be reviewed.

The City can avoid the need to generate all of the additional revenue directly by allowing private operation of recycling and composting programs. However, even with private operation, garbage service accounts would likely see an increase in rates in order for the private operator to cover fixed costs.

Another potential source of funding for new and expanded programs is a Countywide AB 939 fee that would be implemented under the direction of the County's Department of Planning and Development.

### **9.4 Contingency Funding Sources**

The majority of the programs proposed to meet the City's waste diversion targets are to be developed by the private sector and will be funded accordingly. As noted above, collection rates are expected to increase to support additional programs undertaken by the private operator.

Funding sources and mechanisms that could be explored by Milpitas if a shortfall in solid waste management funds occurs are as follows:

- Special taxes or assessment. The City could impose short-term taxes or assessments to develop source reduction and recycling programs.

- Rate structure modification. This includes a subscribed variable rate wherein the level of payment varies with a measure of the volume of waste disposed.
- Community Development Block Grants. Milpitas could apply for the Economic Development Allocation for the Community Development Block Grant Program. Grants are made from the state to local government applicants, which can then loan the funds to businesses to fund specific projects, such as a particular recycling program or business that uses or manufactures products made from recyclable materials.
- Other grant funding sources. These include grants from the California Integrated Waste Management Board for new or existing household hazardous waste management programs or from the California Department of Commerce Office of Competitive Technology to fund technological projects that show promise for commercialization. In 1989, federal, public and private agencies and institutions were awarded 29 grants from a pool of over 240 applicants.

Table 9-1  
 Funds Required for Planning, Operation and Monitoring of New Programs  
 to be Implemented in the Short-Term Planning Period<sup>1</sup>

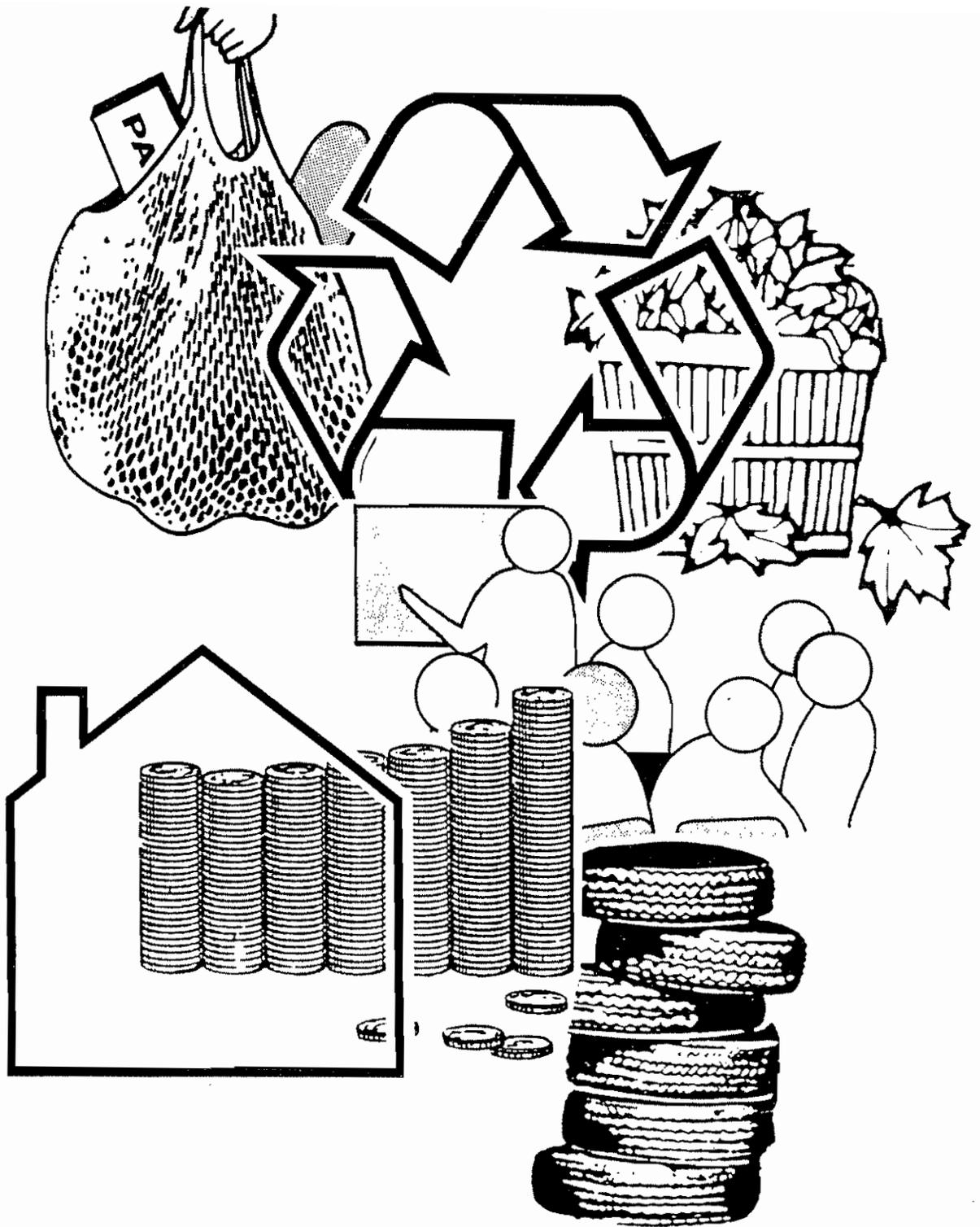
	FY 1991-1992	FY 1992-1993	FY 1993-1994	FY 1994-1995	FY 1995-1996
<b>Source Reduction-Technical Assistance/Public Awareness</b>	2	2	2	2	2
Planning					
Implementation					
Operation					
Monitoring					
<b>Source Reduction-Variable Rate Structure</b>					
Planning			6,000		
Implementation			4,000		
Operation			1,500	1,580	1,660
Monitoring			1,000	1,050	1,100
<b>Source Reduction-Procurement Program</b>					
Planning		6,000			
Implementation		4,000			
Operation		1,000	1,050	1,100	1,160
Monitoring		1,000	1,050	1,100	1,160
<b>Recycling-Develop Multi-family Recycling</b>					
Planning			175,000		
Implementation			100,000	105,000	110,250
Operation			1,000	1,050	1,100
Monitoring					
<b>Recycling-Curbside Collection for Businesses</b>					
Planning			350,000		
Implementation			200,000	210,000	220,500
Operation			1,000	1,050	1,100
Monitoring					

<sup>1</sup> In accordance with AB 939, programs scheduled for the medium-term planning period are not included in this table. Costs are shown only for new programs and thus do not include costs for The Recyclery and Curbside Collection, which were implemented in early 1991. Costs for 1992 and beyond reflect a 5 percent inflation factor. Costs shown are total program costs.

<sup>2</sup> Costs are included in education and public information program.

Table 9-1  
 Funds Required for Planning, Operation and Monitoring of New Programs  
 to be Implemented in the Short-Term Planning Period<sup>1</sup>  
 (Continued)

	FY 1991-1992	FY 1992-1993	FY 1993-1994	FY 1994-1995	FY 1995-1996
<b>Recycling-Inert Solids</b>					
Planning					
Implementation					
Operation	10,000	10,500	11,030	11,580	11,580
Monitoring	1,000	1,050	1,100	1,160	1,160
<b>Composting-Residential Yard Waste Collection</b>					
Planning	5,000	210,000	220,500	231,530	231,530
Implementation	300,000				
Operation	200,000	1,050	1,100	1,160	1,160
Monitoring	1,000				
<b>Composting-Mechanized Yard Waste Separation</b>					
Planning					
Implementation	200,000	15,800	16,600	17,500	17,500
Operation	15,000	1,050	1,100	1,160	1,160
Monitoring	1,000				
<b>Composting-Windrow Composting</b>					
Planning					
Implementation	1,000,000	183,750	192,940	202,580	202,580
Operation	175,000	1,050	1,100	1,160	1,160
Monitoring	1,000				
<b>Special Waste-White Goods Salvaging</b>					
Planning					
Implementation	2,500	2,630	2,760	2,890	2,890
Operation	500	530	550	580	580
Monitoring					
<b>Education and Public Information Program</b>					
Planning	6,000	36,230	38,040	39,940	39,940
Implementation	31,000	3,680	3,860	4,050	4,050
Operation	34,500				
Monitoring	3,500				
<b>TOTAL</b>	<b>1,994,000</b>	<b>1,308,920</b>	<b>812,610</b>	<b>853,320</b>	<b>853,320</b>



**INTEGRATION**



## 10 INTEGRATION COMPONENT

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A jurisdiction must integrate source reduction, recycling, composting, and special wastes programs and activities to achieve the diversion requirements mandated by AB 939. These components must also be integrated as necessary so that solid waste management follows the integrated waste management hierarchy of (1) source reduction, (2) recycling and composting, and (3) environmentally safe transformation and disposal.

This component contains a description of the solid waste management practices that promote integrated waste management in the City of Milpitas, and an explanation of how Milpitas has integrated the source reduction, recycling, composting, and special wastes components. In addition, this component summarizes how the 25 percent and 50 percent diversion mandates will be achieved, and how priorities were established between the components consistent with the requirements of AB 939. This component also contains an integrated schedule.

### 10.1 Integrated Solid Waste Management Practices

The solid waste management practices described in the source reduction, recycling, composting, and special wastes components of this document (Sections 3 through 6), which are to be continued, expanded, or implemented in the City of Milpitas, are designed to comply with the integrated waste management hierarchy established by AB 939. Consistent with this hierarchy, the City will promote source reduction activities targeted at decreasing the amount of solid wastes being generated in the City. For wastes that continue to be generated in the City, recycling and composting programs will contribute to diverting wastes from disposal to the extent feasible. For wastes that cannot be diverted, the City will ensure that they are transformed or disposed of in an environmentally safe manner.

Figure 10-1 summarizes Milpitas' specific source reduction, recycling, composting, transformation, and disposal activities and practices that are designed to achieve integrated waste management.

## **10.2 Component Integration**

The source reduction, recycling, composting, and special wastes components have been integrated so that the programs selected for implementation from each component achieve their maximum potential. Initially, mutually exclusive objectives and target materials for each component were developed to prevent overlapping or duplication of activities or programs selected for one component with those of another component. Moreover, the objectives and target materials identified for each component were structured to avoid duplicating the existing source reduction, recycling, and composting activities in the City. With its focus on mutually exclusive programs and activities, the City of Milpitas' SRRE maximizes the use of all feasible source reduction, recycling, and composting options.

Public education and information, and funding for source reduction, recycling, and composting activities and programs will be integrated for time efficiency and cost effectiveness. Staff time required for public education and information will be shared among the components. All funding requirements will be met by the General Fund until such time as a different funding mechanism for solid waste activities might be developed.

## **10.3 Compliance with Diversion Mandates**

The City of Milpitas currently diverts approximately 7.5 percent of the solid waste generated in the City from disposal through existing diversion programs. The source reduction, recycling, composting, and special wastes activities and programs selected for implementation are designed to achieve the diversion mandates in AB 939 in coordination with existing (and planned expansions of existing) diversion programs.

Presented on the following page is a summary of the City's integration components and their corresponding diversion targets for the short-term and medium-term planning periods.



between the specific components and programs or activities for each target material was based on several regulatory, technical, institutional, and economic considerations. These included

- location of the activity or program in the integrated waste management hierarchy
- effectiveness in reducing the volume, weight, or hazard of the targeted wastes
- consistency with existing waste management practices
- cost effectiveness and ease of implementation

Based on these criteria, the components of this SRRE were prioritized to effectively achieve the mandated diversion goals of 25 percent by 1995 and 50 percent by 2000.

### **10.5 Integrated Schedule**

The schedule for implementing programs during the short-term planning period, shown in Tables 10-12 through 10-16, includes all implementation tasks for new and expanded programs, and identifies the agency responsible for implementation, task and milestone dates, funding source availability, and the target date for achieving the diversion.

Table 10-1

## SOLID WASTE MASS BALANCE FOR 1990

WASTE STREAM	TONS	% OF WASTE STREAM
SOLID WASTE GENERATED	85,418	100
SOLID WASTE DIVERTED		
Source Reduction	64	0.1
Recycling		
Drop-off	336	0.4
Comm/Ind. Collection	5,839	6.8
Composting		
Non-residential	0	0
Special Wastes	<u>143</u>	<u>0.2</u>
Subtotal	6,382	7.5
SOLID WASTE TRANSFORMED	177	0.2
SOLID WASTE DISPOSED	78,859	92.3

Table 10-2

## SOLID WASTE MASS BALANCE FOR 1991

WASTE STREAM	TONS*	% OF WASTE STREAM*
SOLID WASTE GENERATED	87,536	100
SOLID WASTE DIVERTED		
Source Reduction	53	0.1
Recycling		
Drop-off	1,199 - 2,075	1.4 - 2.4
Res. curbside collection	2,214 - 2,460	2.5 - 2.8
Comm/Ind collection	7,852 - 9,603	9 - 11
Composting		
Non-residential	114	0.1
Special Wastes	79	0.1
Subtotal	13,585 - 14,382	13.2 - 16.4
SOLID WASTE TRANSFORMED	254	0.3
SOLID WASTE DISPOSED	73,698 - 72,900	86.5 - 83.3
* A low and high amount is shown in order to indicate that new programs to be implemented have an estimated range of diversion amounts.		

Table 10-3

## SOLID WASTE MASS BALANCE FOR 1992

WASTE STREAM	TONS*	% OF WASTE STREAM*
SOLID WASTE GENERATED	89,707	100
SOLID WASTE DIVERTED		
Source Reduction	54	0.1
Recycling		
Drop-off	1,947 - 2,126	2.2 - 2.4
Res. curbside collection	2,243 - 2,512	2.5 - 2.8
Comm/Ind collection	9,419 - 12,110	10.5 - 13.5
Inert solids processing	1,974 - 2,153	2.2 - 2.4
Composting		
Non-residential	1,731 - 1,911	1.9 - 2.1
Residential curbside	897 - 1,346	1 - 1.5
Special Wastes	<u>305 - 350</u>	<u>0.3 - 0.4</u>
Subtotal	<b>20,480 - 22,561</b>	<b>20.7 - 25.2</b>
SOLID WASTE TRANSFORMED	260	0.3
SOLID WASTE DISPOSED	68,967 - 66,886	79 - 74.5
* A low and high amount is shown in order to indicate that new programs to be implemented have an estimated range of diversion amounts.		

Table 10-4

## SOLID WASTE MASS BALANCE FOR 1993

WASTE STREAM	TONS*	% OF WASTE STREAM*
SOLID WASTE GENERATED	91,932	100
SOLID WASTE DIVERTED		
Source Reduction	55	0.1
Recycling		
Drop-off	1,995 - 2,179	2.2 - 2.4
Res. curbside collection	2,298 - 2,574	2.5 - 2.8
Multi-family collection	92 - 276	0.1 - 0.3
Comm/Ind collection	11,032 - 14,709	12 - 16
Inert solids processing	2,023 - 2,206	2.2 - 2.4
Composting		
Non-residential	2,694 - 2,877	2.9 - 3.1
Residential curbside	1,839 - 2,298	2 - 2.5
Special Wastes	<u>313 - 359</u>	<u>0.3 - 0.4</u>
Subtotal	<b>25,217 - 27,534</b>	<b>24.3 - 30</b>
SOLID WASTE TRANSFORMED	267	0.3
SOLID WASTE DISPOSED	66,448 - 64,132	75.4 - 69.7
* A low and high amount is shown in order to indicate that new programs to be implemented have an estimated range of diversion amounts.		

Table 10-5

## SOLID WASTE MASS BALANCE FOR 1994

WASTE STREAM	TONS*	% OF WASTE STREAM*
SOLID WASTE GENERATED	94,212	100
SOLID WASTE DIVERTED		
Source Reduction	57	0.1
Recycling		
Drop-off	2,044 - 2,233	2.2 - 2.4
Res. curbside collection	2,355 - 2,638	2.5 - 2.8
Multi-family collection	94 - 283	0.1 - 0.3
Comm/Ind collection	11,305 - 15,074	12 - 16
Inert solids processing	2,073 - 2,261	2.2 - 2.4
Composting		
Non-residential	3,703 - 3,891	3.9 - 4.1
Residential	2,638 - 2,826	2.8 - 3
Special Wastes	320 - 367	0.3 - 0.4
Subtotal	28,480 - 29,630	26.1 - 31.5
SOLID WASTE TRANSFORMED	273	0.3
SOLID WASTE DISPOSED	65,458 - 64,309	73.6 - 68.2
* A low and high amount is shown in order to indicate that new programs to be implemented have an estimated range of diversion amounts.		

Table 10-6

## SOLID WASTE MASS BALANCE FOR 1995

WASTE STREAM	TONS*	% OF WASTE STREAM*
SOLID WASTE GENERATED	96,548	100
SOLID WASTE DIVERTED		
Source Reduction	58	0.1
Recycling		
Drop-off	2,095 - 2,288	2.2 - 2.4
Res. curbside collection	2,414 - 2,703	2.5 - 2.8
Multi-family collection	97 - 290	0.1 - 0.3
Comm/Ind collection	11,557 - 15,448	12 - 16
Inert solids processing	2,124 - 2,317	2.2 - 2.4
Composting		
Non-residential	3,794 - 3,987	3.9 - 4.1
Residential	2,703 - 2,896	2.8 - 3
Special Wastes	328 - 377	0.3 - 0.4
Subtotal	29,158 - 30,364	26.1 - 31.5
SOLID WASTE TRANSFORMED	280	0.3
SOLID WASTE DISPOSED	67,111 - 65,904	73.6 - 68.2
* A low and high amount is shown in order to indicate that new programs to be implemented have an estimated range of diversion amounts.		

Table 10-7

## SOLID WASTE MASS BALANCE FOR 1996

WASTE STREAM	TONS*	% OF WASTE STREAM*
SOLID WASTE GENERATED	98,943	100
SOLID WASTE DIVERTED		
Source Reduction	59	0.1
Recycling		
Drop-off	2,147 - 2,345	2.2 - 2.4
Res. curbside collection	3,463 - 4,749	3.5 - 4.8
Multi-family collection	99 - 297	0.1 - 0.3
Comm/Ind collection	16,791 - 20,778	17 - 21
Inert solids processing	2,177 - 2,375	2.2 - 2.4
Composting		
Non-residential	3,888 - 4,086	3.9 - 4.1
Residential	2,770 - 2,968	2.8 - 3
Special Wastes	336 - 386	0.3 - 0.4
SOLID WASTE TRANSFORMED	287	0.3
Subtotal	<b>32,018 - 38,330</b>	<b>32.4 - 38.8</b>
SOLID WASTE DISPOSED	66,925 - 60,612	67.6 - 61.2
* A low and high amount is shown in order to indicate that new programs to be implemented have an estimated range of diversion amounts:		

Table 10-8

## SOLID WASTE MASS BALANCE FOR 1997

WASTE STREAM	TONS*	% OF WASTE STREAM*
SOLID WASTE GENERATED	101,397	100
SOLID WASTE DIVERTED		
Source Reduction	61	0.1
Recycling		
Drop-off	3,214 - 3,417	3.2 - 3.4
Res. curbside collection	3,549 - 4,867	3.5 - 4.8
Multi-family collection	101 - 304	0.1 - 0.3
Comm/Ind collection	22,277 - 31,433	22 - 31
Inert solids processing	2,231 - 2,434	2.2 - 2.4
Composting		
Non-residential	3,985 - 4,188	3.9 - 4.1
Residential	2,839 - 3,042	2.8 - 3
Special Wastes	345 - 395	0.3 - 0.4
SOLID WASTE TRANSFORMED	<u>294</u>	<u>0.3</u>
Subtotal	<b>38,896 - 50,435</b>	<b>38.4 - 49.8</b>
SOLID WASTE DISPOSED	62,501 - 50,962	61.6 - 50.2
* A low and high amount is shown in order to indicate that new programs to be implemented have an estimated range of diversion amounts.		

Table 10-9

## SOLID WASTE MASS BALANCE FOR 1998

WASTE STREAM	TONS*	% OF WASTE STREAM*
SOLID WASTE GENERATED	103,911	100
SOLID WASTE DIVERTED		
Source Reduction	62	0.1
Recycling		
Drop-off	3,294 - 3,502	3.2 - 3.4
Res. curbside collection	3,637 - 4,988	3.5 - 4.8
Multi-family collection	104 - 312	0.1 - 0.3
Comm/Ind collection	28,025 - 32,212	27 - 31
Inert solids processing	2,286 - 2,494	2.2 - 2.4
Composting		
Non-residential	4,084 - 4,292	3.9 - 4.1
Residential	2,910 - 3,117	2.8 - 3
Special Wastes	353 - 405	0.3 - 0.4
SOLID WASTE TRANSFORMED	301	0.3
Subtotal	45,056 - 51,685	43.4 - 49.8
SOLID WASTE DISPOSED	58,855 - 52,226	56.6 - 50.2
* A low and high amount is shown in order to indicate that new programs to be implemented have an estimated range of diversion amounts.		

Table 10-10

## SOLID WASTE MASS BALANCE FOR 1999

WASTE STREAM	TONS*	% OF WASTE STREAM*
SOLID WASTE GENERATED	106,488	100
SOLID WASTE DIVERTED		
Source Reduction	64	0.1
Recycling		
Drop-off	3,376 - 3,589	3.2 - 3.4
Res. curbside collection	3,727 - 5,111	3.5 - 4.8
Multi-family collection	106 - 319	0.1 - 0.3
Comm/Ind collection	34,044 - 38,336	32 - 36
Inert solids processing	2,343 - 2,556	2.2 - 2.4
Composting		
Non-residential	4,185 - 4,398	3.9 - 4.1
Residential	2,982 - 3,195	2.8 - 3
Special Wastes	362 - 415	0.3 - 0.4
SOLID WASTE TRANSFORMED	<u>309</u>	<u>0.3</u>
Subtotal	<b>51,498 - 58,292</b>	<b>48.4 - 54.8</b>
SOLID WASTE DISPOSED	54,991 - 48,197	51.6 - 45.2
<p>* A low and high amount is shown in order to indicate that new programs to be implemented have an estimated range of diversion amounts.</p>		

Table 10-11

## SOLID WASTE MASS BALANCE FOR 2000

WASTE STREAM	TONS*	% OF WASTE STREAM*
SOLID WASTE GENERATED	109,129	100
SOLID WASTE DIVERTED		
Source Reduction	65	0.1
Recycling		
Drop-off	3,459 - 3,678	3.2 - 3.4
Res. curbside collection	3,820 - 5,238	3.5 - 4.8
Multi-family collection	109 - 327	0.1 - 0.3
Comm/Ind collection	34,889 - 37,071	32 - 34
Inert solids processing	2,401 - 2,619	2.2 - 2.4
Composting		
Non-residential	4,289 - 4,507	3.9 - 4.1
Residential	3,056 - 3,274	2.8 - 3
Special Wastes	371 - 426	0.3 - 0.4
SOLID WASTE TRANSFORMED	316	0.3
Subtotal	52,775 - 57,522	48.4 - 52.8
SOLID WASTE DISPOSED	56,354 - 51,607	51.6 - 47.2
* A low and high amount is shown in order to indicate that new programs to be implemented have an estimated range of diversion amounts.		

Table 10-12  
1991 - 1995 Implementation Schedule

Type of Diversion	Targeted Generator	Type of Program	Implementation Tasks	Date	Entity Responsible	Funding Source
Recycling	All	Manual and mechanized recovery operations	Publicize program and sponsor information sessions for businesses Keep abreast of new programs at The Recyclery Coordinate with BFI regarding issues or concerns at The Recyclery.	7/91	Milpitas Community Development Department	General Fund
Recycling	Commercial/Industrial	Expand Existing Programs	Increase education and public information program	1/93	Milpitas Community Development Department	General Fund
Education and Public Information	All	Brochures	Distribute brochures to businesses and residents announcing new recycling programs	10/91	Milpitas Community Development Department	General Fund
		Newsletter	Create a newsletter Develop community interest Disseminate to interested individuals	10/91	Milpitas Community Development Department	General Fund
		New Residents Program	Distribute material to new residents regarding recycling, source reduction, and composting services available	10/91	Milpitas Community Development Department	General Fund
		Internship Program	Develop an internship program with students from surrounding universities	3/92	Milpitas Community Development Department	General Fund
	Residents	Junk mail Reduction	Disseminate information to decrease the amount of junk mail residents receive	7/92	Milpitas Community Development Department	General Fund

Table 10-12  
1991 - 1995 Implementation Schedule  
(Continued)

Type of Diversion	Targeted Generator	Type of Program	Implementation Tasks	Date	Entity Responsible	Funding Source
		Waste Diversion Thermometer	Develop a visible program that tracks the City's waste diversion efforts	3/92	Milpitas Community Development Department	General Fund
Recycling	Industrial/ Institutional	Inert solids	Amend City contracts to include stipulation that City contractors take used asphalt and concrete to materials processor	6/92	Milpitas Community Development Department	General Fund
Source Reduction	Government	Reuse and reduce program	Establish source reduction program in all City offices and operations <ul style="list-style-type: none"> <li>• employee education</li> <li>• double-sided copying</li> <li>• procurement programs</li> </ul>	1/92	Milpitas Community Development Department	General Fund
	All	Technical Assistance	Provide workshops, seminars, and written materials on backyard composting Develop sample mulching and procurement contracts for use by businesses	7/92	Milpitas Community Development Department	General Fund
	All	Public Education	Prepare materials to heighten awareness of source reduction measures the community can adopt to reduce waste	7/92	Milpitas Community Development Department	General Fund
Composting	Residents	Mechanized yard waste separation	Establish a residential yard waste pilot program Publicize program Amend City refuse collection contract Set up program	9/92	Milpitas Community Development Department	General Fund

Table 10-12  
 1991 - 1995 Implementation Schedule  
 (Continued)

Type of Diversion	Targeted Generator	Type of Program	Implementation Tasks	Date	Entity Responsible	Funding Source
Composting	Residents	Yard Waste collection	Establish city-wide yard waste collection program Publicize program	6/93	Milpitas Community Development Department	
	All	Develop windrow composting system				
Education and Public Information	All	Public service announcements, televisions programming/video tape libraries/coordination with community groups/participation in local events/how-to-information/composting education/technical assistance/mailed inserts/workshops/speakers bureau/consumer awareness/promotional materials	Implementation talks are described in detail in Section 7, education and public information	1/92-6/93	Milpitas Community Development Department	General Fund

Table 10-12  
 1991 - 1995 Implementation Schedule  
 (Continued)

Type of Diversion	Targeted Generator	Type of Program	Implementation Tasks	Date	Entity Responsible	Funding Source
	Multi-family Residents	Source-separated	Amend City refuse collection contract Set up pilot programs at different types of multi-family facilities to determine the most effective programs Purchase collection containers Publicize most-effective program	1/93	Milpitas Community Development Department	General Fund
	Commercial/Industrial	Source separated recycling program	Amend City refuse collection contract Interface with merchants and office managers to implement recycling program Purchase collection containers	1/93	Milpitas Community Development Department	General Fund
Source Reduction	All	Public recognition and awards	Publicize program to gather recommendations Select recipients Publicize and award recipients	1/93	Milpitas Community Development Department	General Fund
	Residents	Variable rate structure	Perform rate study Modify contract with hauler Purchase equipment Publicize modified rate structure	6/93	Milpitas Community Development Department	General Fund



## ACRONYMS



## ACRONYMS

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AB	Assembly Bill
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFC	chlorofluorocarbons
CIP	Capital Improvement Project
CIWMB	California Integrated Waste Management Board (formerly the California Waste Management Board)
CoSWMP	County Solid Waste Management Plan
DOC	California Department of Conservation
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
EPS	expanded polystyrene foam
HDPE	high density polyethylene
HHW	household hazardous waste
HHWF	household hazardous waste facility
IWMP	Integrated Waste Management Plan
LDPE	low density polyethylene
LEA	local enforcement agency
MRF	material recovery facility
MSW	municipal solid waste
NRC	National Recycling Coalition

OCC	old corrugated containers
ONP	old newspaper
PCB	polychlorinated biphenyls
PET	polyethylene terephthalate plastic
SB	Senate Bill
SQG	small quantity generator
SRRE	Source Reduction and Recycling Element

## **GLOSSARY OF TERMS**



## GLOSSARY OF TERMS\*

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**Ash** - The residue from the combustion of any solid or liquid material.

**Bottle Bill**<sup>2</sup> - A law requiring deposits on beverage containers.

**Broker**<sup>2</sup> - An individual or group of individuals that act as an agent or intermediary between the sellers and buyers of recyclable materials.

**Buy-Back Recycling Center** - A facility which pays a fee for the delivery and transfer of ownership to the facility of source separated materials, for the purpose of recycling or composting.

**Capital Costs** - Those direct costs incurred in order to acquire real property assets, such as land, buildings and building additions; site improvements; machinery; and equipment.

**Commercial Solid Wastes** - Solid waste originating from stores, business offices, commercial warehouses, hospitals, educational, health care, military, and correctional institutions, non-profit research organizations, and government offices. Commercial solid wastes do not include construction and demolition waste.

**Commercial Unit** - A site zoned for a commercial business and which generates commercial solid wastes.

**Commingled Recyclables**<sup>2</sup> - A mixture of several recyclable materials in one container.

**Composition** - A set of identified solid waste materials, categorized into waste categories and waste types pursuant to 14CCR 18722.

**Compost**<sup>2</sup> - The relatively stable decomposed organic material resulting from the composting process; is also referred to as humus.

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\* Footnotes citing the source of the definitions are presented at the end of the glossary.

**Composting** - A method of waste treatment which produces a product meeting the definition of "compost" in Public Resources Code section 40116.

**Composting Facility** - A permitted solid waste facility at which composting is conducted and which produces a product meeting the definition of "compost" in Public Resources Code section 40116.

**Construction and Demolition Waste** - Solid wastes such as building materials and packaging and rubble resulting from construction, remodeling, repair and demolition operations on pavements, houses, commercial buildings, and other structures. Construction refers to SIC Codes 152 through 1794, 1796, and 1799. Demolition refers to SIC Code 1795.

**Cost-Effective** - A measurement of cost compared to an unvalued output (e.g., the cost per ton of solid waste collected) such that the lower the cost, the more cost-effective the action.

**Cullet<sup>2</sup>** - Clean, generally color-sorted, crushed glass used to make new glass products.

**Curbside Recycling Collection<sup>3</sup>** - The separation of residential wastes into categories at its point of origin or commingled recyclable materials for the purpose of recycling pickup at the street curb.

**Disposal** - "The management of solid waste through landfilling or transformation at permitted solid waste facilities.

**Disposal Capacity** - The capacity (expressed in either weight in tons or its volumetric equivalent in cubic yards) which is (1) either currently available at a permitted solid waste landfill, or (2) will be needed for the disposal of solid waste generated within the jurisdiction over a specified period of time.

**Disposal Site<sup>3</sup>** - General term used for a transfer station or landfill where waste is disposed.

**Diversion Alternative** - Any activity existing (or occurring in the future) which has been, is, or will be implemented by a jurisdiction and could result in or promote the diversion of solid waste through source reduction, recycling or composting.

**Diversion Rate<sup>2</sup>** - A measure of the amount of waste material being diverted for recycling compared with the total amount that was previously thrown away.

**Drop-Off Recycling Center** - A facility that accepts delivery or transfer of ownership of source separated materials for the purpose of recycling or composting, without paying a fee. Donation of materials to collection organizations, such as charitable groups, is included in this definition.

**End Market or End Use** - The use or uses of a diverted material or product which has been returned to the economic mainstream, whether or not this return is through sale of the material or product. The material or product can have a value which is less than the solid waste disposal cost.

**Feasible** - A specified program, method, or other activity can, on the basis of cost, technical requirements and time frame for accomplishment, be undertaken to achieve the objectives and tasks identified by a jurisdiction in a Countywide Integrated Waste Management Plan.

**Generator<sup>4</sup>** - Any person, as defined by section 40170 of the Public Resource Code, whose act or process produces solid waste as defined in Public Resources Code section 40191, or whose act first causes solid waste to become subject to regulation.

**Hazard** - Having one or more of the characteristics that cause a substance or combination of substances to qualify as a hazardous material, as defined by section 66084 of Title 22 of the California Code of Regulations.

**Industrial Solid Waste** - Solid waste originating from mechanized manufacturing facilities, factories, refineries, construction and demolition projects, and publicly operated treatment works, and/or solid wastes placed in debris boxes.

**Landfill<sup>3</sup>** - A disposal site employing an engineered method of disposing solid wastes on land in a manner that minimizes environmental hazards by spreading solid wastes in layers, compacting the waste to the smallest practical volume and applying cover materials at the end of each operating day.

**Manual Separation<sup>4</sup>** - The separation of wastes by hand. Sometimes called hand-picking or hand sorting, manual separation is done in the home or office by keeping food wastes separate from newspaper, or in a recovery plant by picking out large cardboard or metal objects.

**Market Development** - A method of increasing the demand for recovered materials so that end markets for the materials are established, improved or stabilized and thereby become more reliable.

**Market Development Zones<sup>2</sup>** - Areas in a community primed for the establishment of new businesses that will manufacture products made from recycled materials, i.e., an economic development zone formed specifically for manufacturing activities related to recycled products.

**Materials Recovery Facility** - A permitted solid waste facility where solid wastes or recyclable materials are sorted or separated, by hand or by use of machinery, for the purposes of recycling or composting.

**Medium-Term Planning Period** - A period beginning in the year 1996 and ending in the year 2000.

**Municipal Solid Waste or MSW** - All solid wastes generated by residential, commercial, and industrial sources, and all solid waste generated at construction and demolition sites, at food-processing facilities, and at treatment works for water and waste water, which are collected and transported under the authorization of a jurisdiction or are self-hauled.

**Non-Recyclable Paper** - Discarded paper which has no market value because of its physical or chemical or biological characteristics or properties.

**Non-Renewable Resource** - A resource which cannot be replenished, such as those resources derived from fossil fuels.

**Normally Disposed Of** - Those waste categories and waste types which: (1) have been demonstrated by the Solid Waste Generation Study, conducted pursuant to CCR, Title 14, Section 18722, to be in a solid waste stream attributed to the jurisdiction as of January 1, 1990; (2) which are deposited at permitted solid waste landfills or transformation facilities subsequent to any recycling or composting activities at those solid waste facilities; and (3) which are allowed to be considered in the establishment of the base amount of solid waste from which source reduction, recycling, and composting levels shall be calculated, pursuant to the limitations listed in Public Resources Code section 41781(b).

**Permitted Capacity** - That volume in cubic yards or weight in tons which a solid waste facility is allowed to receive, on a periodic basis, under the terms and conditions of that solid waste facility's current Solid Waste

Facilities Permit issued by the local enforcement agency and concurred in by the California Integrated Waste Management Board.

**Permitted Landfill** - A solid waste landfill for which there exists a current Solid Waste Facilities Permit issued by the local enforcement agency and concurred in by the California Integrated Waste Management Board.

**Purchase Preference** - A preference provided to a wholesale or retail commodity dealer which is based upon the percentage amount that the costs of products made from recycled materials may exceed that of similar non-recycled products and still be deemed the lowest bid.

**Rate Structure** - That set of prices established by a jurisdiction, special district (as defined in Government Code section 56036), or other rate setting authority to compensate the jurisdiction, special district or rate setting authority for the partial or full costs of the collection, processing, recycling, composting, and/or transformation or landfill disposal of solid wastes.

**Re-Use** - The use, in the same form as it was produced, of a material which might otherwise be discarded.

**Recovered Materials** - Material which has been retrieved or diverted from disposal or transformation for the purpose of recycling, re-use or composting. "Recovered material" does not include those materials generated from and reused on site for manufacturing purposes.

**Recyclables<sup>2</sup>** - Materials that still have useful physical or chemical properties after serving their original purpose and that can, therefore, be reused or remanufactured into additional products.

**Recycling<sup>2</sup>** - 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.

**Repairability** - The ability of a product or package to be restored to a working or usable state at a cost which is less than the replacement cost of the product or package.

**Residential solid waste** - Solid waste originating from single-family or multiple family dwellings.

**Reusability** - The ability of a product or package to be used more than once in its same form.

**Roll-off Container<sup>2</sup>** - A large waste container that fits onto a tractor trailer that can be dropped off and picked up hydraulically.

**Salvage** - The controlled removal of solid waste materials at a permitted solid waste facility for recycling re-use, composting, or transformation.

**Sanitary Landfill<sup>2</sup>** - Land waste disposal site that is located to minimize water pollution from runoff and leaching. Waste is spread in thin layers, compacted, and covered with a fresh layer of soil each day to minimize pest, aesthetic, disease, air pollution, and water pollution problems.

**Scavenger<sup>2</sup>** - One who illegally removes materials at any point in the solid waste management system.

**Scrap<sup>2</sup>** - Discarded or rejected industrial waste material often suitable for recycling.

**Seasonal** - Those periods of time during the calendar year which are identifiable by distinct cyclical patterns of local climate, demography, trade or commerce.

**Short-Term Planning Period** - A period beginning in the year 1991 and ending in the year 1995.

**SIC Code** - The standards published in the U.S. Standard Industrial Classification Manual (1987).

**Source Reduction<sup>3</sup>** - The design, manufacture, acquisition, and reuse of materials so as to minimize the quantity and/or toxicity of waste produced. Source reduction prevents waste either by redesigning products or by otherwise changing societal patterns of consumption, use, and waste generation.

**Source Separated** - The segregation, by the generator, of materials designated for separated collection for some form of materials recovery or special handling.

**Statistically Representative** - Representative and random samples of units that are taken from a population sample pursuant to the procedures given in Appendix 1 of Article 6.1 of *Planning Guidelines and Procedures for Preparing and Revising Countywide Integrated Waste Management Plans*. For the purposes of this definition, population sample includes, but

is not limited to, a sample from a population of solid waste generation sites, solid waste facilities and recycling facilities, or a population of items of materials and solid wastes in a refuse vehicle load of solid waste.

**Tipping Fee<sup>2</sup>** - A fee, usually dollars per ton, for the unloading or dumping of waste at a landfill, transfer station, recycling center, or waste-to-energy facility, usually stated in dollars per ton; also called a disposal or service fee.

**Ton** - A unit of weight in the U.S. Customary System of Measurement, an avoirdupois unit equal to 2,000 pounds. Also called short ton or net ton.

**Transfer Station<sup>2</sup>** - A permanent facility where waste materials are taken from smaller collection vehicles and placed in larger vehicles for transport, including truck trailers, railroad cars, or barges. Recycling and some processing may also take place at transfer station.

**Transformation Facility** - A facility whose principal function is to convert, combust, or otherwise process solid waste by incineration, pyrolysis, destructive distillation, or gasification, or to chemically or biologically process solid wastes, for the purpose of volume reduction, synthetic fuel production, or energy recovery.

**Volume** - A three dimensional measurement of the capacity of a region of space or a container. Volume is commonly expressed in terms of cubic yards or cubic meters. Volume is not expressed in terms of mass or weight.

**Waste<sup>4</sup>** - Material which is discarded by the generator as no longer useful to the generator.

**Waste Categories** - The grouping of solid wastes with similar properties into major solid waste classes, such as grouping together office, corrugated and newspaper as a paper waste category, as identified by the solid waste classification system contained in 14CCR 18722, except where a component-specific requirement provides an alternative means of classification.

**Waste Diversion** - Diversion of solid waste, in accordance with all applicable federal, state and local requirements, from disposal at solid waste landfills or transformation facilities through source reduction, recycling or composting.

**Waste Stream<sup>2</sup>** - A term describing the total flow of solid waste from homes, businesses, institutions and manufacturing plants that must be recycled, burned, or disposed of in landfills; or any segment thereof, such as the "residential waste stream" or the "recyclable waste stream."

**Waste Type** - Identified wastes having the features of a group or class of wastes which are distinguishable from any other waste type, as identified by the waste classification system contained in 14CCR, section 18722 of Article 6.1, alternative means of classification.

## References

1. Unless otherwise noted, all definitions are from Section 18720, Article 3, Chapter 9, Title 14 of the California Code of Regulations.
2. As defined in the *Decision-Maker's Guide to Solid Waste Management*, U.S. Environmental Protection Agency, November 1989.
3. *Integrated Waste Reduction and Recycling Plan for the City of Lodi*, February 1991, California Waste Removal Systems.
4. *Implementing AB 939 - A Manual for Preparing Source Reduction and Recycling Elements*. Prepared for Solid Waste Management Department, Sanitation Districts of Los Angeles County, January 1991.

**Appendix A**  
**EVALUATION APPROACH**



## EVALUATION APPROACH

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### Evaluation Criteria

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 are identified in the source reduction, recycling, composting, and special wastes components. These criteria reflect a broad range of technical, economic, and socio-political considerations. The evaluation criteria are described below in light of their application to integrated waste management programs. In addition, a rating system is provided for each criterion; a brief explanation of the rating is included for each of the criteria.

#### 1. Effectiveness

*Effectiveness* is the relative effectiveness of the alternative in reducing the amount of targeted material(s) in the solid waste stream. This criterion is rated as follows:

High:	effective
Medium:	negligible effect
Low:	ineffective

#### 2. Hazard<sup>1</sup>

*Hazard* refers to the potential hazards that are created by the alternative. Hazards can include health risks, injury, fire, or others identified for the alternative. A high rating corresponds to few or no potential hazards. This criterion is rated as follows:

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<sup>1</sup> Note that several of the criteria—hazard, institutional barriers, and consequences 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.

- High: There are few or no potential hazards. All potential hazards can be controlled.
- Medium: There are some potential hazards that, for the most part, can be controlled.
- Low: Potential hazards exist that are not completely understood or controllable, or the alternative increases the potential hazards.

### **3. Ability to Accommodate Change**

*Ability to Accommodate Change* refers to the alternative's ability to accommodate changing economic, technological, and social conditions. This criterion is rated as follows:

- High: The alternative is anticipated to be readily adaptable in meeting changing conditions. Significant changes in the program are not anticipated.
- Medium: The alternative is anticipated to demonstrate a moderate ability to respond to changing conditions. Significant changes in the program may be required.
- Low: The alternative has a limited ability to respond to changing conditions. Limitations may include inflexible or unpredictable markets for diverted materials, existing contracts with waste management companies, operational limitations, unwillingness of the public to participate in programs, or others identified for the alternative.

### **4. Consequences on the Waste Stream**

*Consequences on the Waste Stream* reflects the impacts of the alternative on the waste stream. These impacts include shifts in the type of waste generated or the composition of the wastes, as well as other characteristic changes, such as waste density, moisture content, and heating value. This criterion is rated as follows:

- High: The alternative would not result in the creation of non-recyclable, unmarketable, or otherwise undesirable materials, or materials that are not creditable under AB 939.
- Medium: The alternative would result in the creation of little non-recyclable, unmarketable, or otherwise undesirable materials, or materials that are not creditable under AB 939.
- Low: The alternative would significantly shift solid waste production toward non-recyclable, unmarketable, and otherwise undesirable materials; or materials that are not creditable under AB 939.

## 5. Implementation Period

*Implementation Period* refers to the potential for implementing the alternative in the short-term or medium-term planning periods. This criterion is rated as follows:

- High: Implementation of the alternative is anticipated to be completed by 1995.
- Medium: Implementation of the alternative is anticipated to be completed by 2000.
- Low: Implementation of the alternative could not be completed until after 2000.

## 6. Facility Requirements

*Facility Requirements* refers to the need for expanding existing facilities or building new facilities to support the implementation of the alternative. This criterion is rated as follows:

- High: The alternative can be easily integrated into existing facilities.
- Medium: Existing facilities must be expanded or altered to accommodate implementation of the alternative.

Low: New facilities must be developed to accommodate implementation of the alternative.

## **7. Consistency with Local Plans and Policies**

*Consistency with Local Plans and Policies* reflects the alternative's consistency with local conditions, including local plans, policies, or ordinances. This criterion is rated as follows:

High: There are no existing local plans, policies, or ordinances that would impede the implementation of the alternative.

Medium: The alternative would require minor changes to existing local plans, policies, or ordinances for implementation.

Low: The alternative would require major changes to existing local plans, policies, or ordinances for implementation.

## **8. Institutional Barriers**

*Institutional Barriers* refers to the potential for institutional barriers (such as long-term franchise agreements or other contracts), to impact the implementation of the alternative. This criterion is rated as follows:

High: There are no existing institutional barriers to the alternative.

Medium: The alternative is impacted by existing institutional barriers over which the jurisdiction maintains some control.

Low: The alternative is impacted by existing institutional barriers that are not under the control of the jurisdiction.

## **9. Estimated Cost**

*Estimated Cost* reflects the estimated order-of-magnitude implementation costs of the alternative, including capital costs and operating costs. A high rating corresponds to a relatively low order-of-magnitude cost. This criterion is rated as follows:

High:	\$0-50,000
Medium:	\$50,000-200,000
Low:	> \$200,000

## 10. End Uses

*End Uses* reflects the availability of markets for the diverted materials. This criterion is rated as follows:

High:	Available end uses are relatively stable.
Medium:	End uses are available, but are subject to moderate fluctuations. The potential for the development of short-term markets may exist.
Low:	End uses are currently unavailable or unreliable, though the potential for the development of long-term or medium-term markets may exist.



**Appendix B**  
**COMPARABLE JURISDICTION WASTE**  
**GENERATION DATABASE**



Table D-1. SUMMARY OF WASTE GENERATED COMPOSITION FOR THE CITY OF PALO ALTO  
(WEIGHT PERCENT, 1990)

	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	SELF-HAUL
<b>PAPER: (total)</b>	<b>48.89</b>	<b>48.52</b>	<b>17.83</b>	<b>2.56</b>
corrugated containers	4.38	10.42	5.99	0.85
newsprint	17.08	4.30	1.90	0.12
high grade ledger paper	2.32	7.77	1.42	0.00
mixed paper	14.58	19.90	6.41	0.66
other paper	10.53	6.12	2.12	0.93
<b>PLASTICS: (total)</b>	<b>5.88</b>	<b>10.05</b>	<b>4.73</b>	<b>3.72</b>
HDPE containers	0.49	1.38	0.01	0.00
PET containers	0.47	0.06	0.04	0.01
film plastics	2.56	3.55	1.79	0.19
other plastics	2.46	5.06	2.87	3.52
<b>GLASS: (total)</b>	<b>6.82</b>	<b>3.70</b>	<b>1.04</b>	<b>0.05</b>
refillable bev. containers	0.26	0.00	0.01	0.00
CA redemption value	3.21	2.29	0.09	0.00
other recyclable glass	2.52	0.53	0.08	0.00
other non-recyclable glass	0.83	0.87	0.87	0.05
<b>METALS: (total)</b>	<b>3.80</b>	<b>5.75</b>	<b>18.42</b>	<b>13.89</b>
aluminum cans	0.50	0.32	0.04	0.02
bi-metal containers	0.01	0.23	0.00	0.00
tin cans	0.95	0.00	0.00	0.00
other ferrous	1.74	4.52	15.83	12.79
other aluminum	0.57	0.59	0.00	0.00
other non-ferrous	0.02	0.00	0.90	1.08
white goods	0.01	0.09	1.64	0.00
<b>YARD WASTE: (total)</b>	<b>23.10</b>	<b>14.96</b>	<b>10.22</b>	<b>18.26</b>
<b>OTHER ORGANICS: (total)</b>	<b>10.57</b>	<b>13.21</b>	<b>31.73</b>	<b>38.00</b>
food waste	5.38	5.09	0.31	0.80
tires/rubber	0.35	0.81	0.00	0.00
wood wastes	1.99	5.57	21.51	18.25
agricultural crop residues	0.00	0.42	0.00	0.00
manure	0.00	0.00	0.00	0.00
textiles/leather	1.54	1.33	9.91	18.95
other misc. organics	1.31	0.00	0.00	0.00
<b>OTHER WASTES: (total)</b>	<b>0.83</b>	<b>3.75</b>	<b>16.03</b>	<b>23.52</b>
inert solids	0.42	3.67	15.99	23.52
household hazardous wastes	0.41	0.08	0.05	0.00
<b>SPECIAL WASTES: (total)</b>	<b>0.00</b>	<b>0.06</b>	<b>0.00</b>	<b>0.00</b>
ash	0.00	0.00	0.00	0.00
sewage sludge	0.00	0.00	0.00	0.00
industrial sludge	0.00	0.00	0.00	0.00
asbestos	0.00	0.00	0.00	0.00
auto shredder waste	0.00	0.00	0.00	0.00
auto bodies	0.00	0.00	0.00	0.00
other special waste	0.00	0.06	0.00	0.00
<b>TOTAL</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

Table B-2 SUMMARY OF WASTE GENERATED COMPOSITION FOR THE CITY OF SUNNYVALE  
(WEIGHT PERCENT, 1990)

	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	SELF HAUL
<b>PAPER: (total)</b>	<b>43.62</b>	<b>54.62</b>	<b>35.45</b>	<b>10.67</b>
corrugated containers	5.46	22.98	13.42	3.37
newsprint	13.77	4.39	1.79	0.13
high grade ledger paper	0.80	2.57	6.20	1.61
mixed paper	14.55	13.65	8.87	0.00
other paper	9.04	11.03	5.17	5.55
<b>PLASTICS: (total)</b>	<b>6.98</b>	<b>11.72</b>	<b>16.05</b>	<b>5.79</b>
HDPE containers	0.76	1.48	2.90	0.00
PET containers	0.42	0.11	0.01	0.28
film plastics	2.73	3.92	3.69	1.82
other plastics	3.08	6.21	9.45	3.69
<b>GLASS: (total)</b>	<b>5.70</b>	<b>3.31</b>	<b>2.23</b>	<b>0.05</b>
refillable bev. containers	1.46	1.16	0.29	0.00
CA redemption value	1.49	1.49	0.25	0.00
other recyclable glass	2.34	0.30	1.54	0.05
other non-recyclable glass	0.42	0.36	0.15	0.00
<b>METALS: (total)</b>	<b>3.88</b>	<b>4.32</b>	<b>6.53</b>	<b>5.29</b>
aluminum cans	0.66	0.33	0.17	0.00
bi-metal containers	0.00	0.00	0.00	0.00
tin cans	1.56	1.56	0.28	0.00
other ferrous	1.10	2.25	5.64	5.17
other aluminum	0.13	0.10	0.26	0.12
other non-ferrous	0.14	0.04	0.18	0.00
white goods	0.29	0.04	0.00	0.00
<b>YARD WASTE: (total)</b>	<b>23.26</b>	<b>4.70</b>	<b>2.59</b>	<b>12.41</b>
<b>OTHER ORGANICS: (total)</b>	<b>15.35</b>	<b>20.92</b>	<b>10.11</b>	<b>19.86</b>
food waste	7.81	17.65	1.30	0.29
tires/rubber	1.35	1.28	0.21	0.01
wood wastes	0.96	0.37	7.82	14.65
agricultural crop residues	0.00	0.00	0.00	0.00
manure	0.00	0.00	0.00	0.00
textiles/leather	1.35	0.71	0.63	3.19
other misc. organics	3.88	0.91	0.15	0.72
<b>OTHER WASTES: (total)</b>	<b>1.21</b>	<b>0.41</b>	<b>27.04</b>	<b>46.93</b>
inert solids	0.88	0.32	26.54	43.84
household hazardous wastes	0.34	0.09	0.50	3.09
<b>SPECIAL WASTES: (total)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
ash	0.00	0.00	0.00	0.00
sewage sludge	0.00	0.00	0.00	0.00
industrial sludge	0.00	0.00	0.00	0.00
asbestos	0.00	0.00	0.00	0.00
auto shredder waste	0.00	0.00	0.00	0.00
auto bodies	0.00	0.00	0.00	0.00
other special waste	0.00	0.00	0.00	0.00
<b>TOTAL</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

Table B-3 SUMMARY OF WASTE GENERATED COMPOSITION FOR THE CITY OF SANTA CLARA  
(WEIGHT PERCENT, 1990)

	RESIDENTIAL	COMMERCIAL	INDUSTRIAL
<b>PAPER: (total)</b>	<b>40.32</b>	<b>42.68</b>	<b>32.80</b>
corrugated containers	5.47	17.28	17.30
newspaper	11.61	2.51	1.90
high grade ledger paper	1.08	6.99	2.70
mixed paper	14.35	9.79	6.00
other paper	7.80	6.10	4.90
<b>PLASTICS: (total)</b>	<b>5.82</b>	<b>4.54</b>	<b>7.80</b>
HDPE containers	1.25	0.87	2.20
PET containers	0.30	0.20	0.00
film plastics	1.76	1.56	2.40
other plastics	2.51	1.91	3.20
<b>GLASS: (total)</b>	<b>5.18</b>	<b>3.30</b>	<b>1.10</b>
reliable bev. containers	1.16	0.43	0.00
CA redemption value	2.64	1.82	0.70
other recyclable glass	1.05	1.04	0.30
other non-recyclable glass	0.32	0.00	0.10
<b>METALS: (total)</b>	<b>2.17</b>	<b>8.80</b>	<b>4.40</b>
aluminum cans	0.28	0.12	0.20
bi-metal containers	0.14	0.00	0.00
tin cans	0.91	0.78	0.30
other ferrous	0.38	7.37	2.80
other aluminum	0.28	0.09	0.20
other non-ferrous	0.00	0.03	0.00
white goods	0.17	0.42	0.90
<b>YARD WASTE: (total)</b>	<b>21.23</b>	<b>5.81</b>	<b>8.40</b>
<b>OTHER ORGANICS: (total)</b>	<b>23.27</b>	<b>29.70</b>	<b>40.60</b>
food waste	13.55	11.87	1.80
tires/rubber	0.09	2.01	4.60
wood wastes	1.84	6.70	15.70
agricultural crop residues	0.00	0.00	0.00
manure	0.34	0.00	0.00
textiles/leather	1.08	0.17	0.90
other misc. organics	6.37	8.94	17.60
<b>OTHER WASTES: (total)</b>	<b>2.01</b>	<b>5.18</b>	<b>4.90</b>
inert solids	1.25	4.49	1.10
household hazardous wastes	0.77	0.69	3.80
<b>SPECIAL WASTES: (total)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
ash	0.00	0.00	0.00
sewage sludge	0.00	0.00	0.00
industrial sludge	0.00	0.00	0.00
asbestos	0.00	0.00	0.00
auto shredder waste	0.00	0.00	0.00
auto bodies	0.00	0.00	0.00
other special waste	0.00	0.00	0.00
<b>TOTAL</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

Table B-4 SUMMARY OF WASTE GENERATED COMPOSITION FOR THE CITY OF MILPITAS  
(WEIGHT PERCENT)

	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	SELF	TOTAL
<b>PAPER: (total)</b>	<b>44.23</b>	<b>48.61</b>	<b>38.69</b>	<b>6.67</b>	<b>25.93</b>
corrugated containers	5.11	16.89	12.24	2.11	9.30
newspaper	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
<b>PLASTICS: (total)</b>	<b>6.28</b>	<b>6.77</b>	<b>6.93</b>	<b>4.75</b>	<b>7.61</b>
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
<b>GLASS: (total)</b>	<b>5.96</b>	<b>3.43</b>	<b>1.46</b>	<b>0.05</b>	<b>2.15</b>
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
<b>METALS: (total)</b>	<b>3.28</b>	<b>6.29</b>	<b>9.78</b>	<b>9.59</b>	<b>8.06</b>
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
<b>YARD WASTE: (total)</b>	<b>32.53</b>	<b>9.49</b>	<b>7.07</b>	<b>15.33</b>	<b>11.95</b>
<b>OTHER ORGANICS: (total)</b>	<b>18.40</b>	<b>21.28</b>	<b>27.48</b>	<b>26.43</b>	<b>24.84</b>
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
<b>OTHER WASTES: (total)</b>	<b>1.33</b>	<b>3.12</b>	<b>15.89</b>	<b>35.23</b>	<b>16.38</b>
inert solids	0.85	2.83	14.54	33.68	15.27
hazardous wastes	0.51	0.29	1.45	1.54	1.11
<b>SPECIAL WASTES: (total)</b>	<b>0.00</b>	<b>0.02</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
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
<b>TOTAL</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

\* Numbers are rounded.

**Appendix C**  
**CONVERSION FACTORS**  
**(National Recycling Coalition Densities for Recyclables)**



## Figure 4: Sample Weight to Volume Conversion Factors for Recyclables

<u>Material</u>	<u>Volume</u>	<u>Weight in Pounds</u>
Newsprint, Loose	one cubic yard	360 - 800
Newsprint, compacted	one cubic yard	720 - 1,000
Newsprint	12" stack	35
Corrugated cardboard, loose	one cubic yard	300
Corrugated cardboard, baled	one cubic yard	1000 - 1200
Glass, whole bottles	one cubic yard	600 - 1,000
Glass, semi crushed	one cubic yard	1,000 - 1,800
Glass, crushed (mechanically)	one cubic yard	800 - 2700
Glass, whole bottles	one full grocery bag	16
Glass, uncrushed to manually broken	55 Gallon Drum	125 - 500
PET soda bottles, whole, loose	one cubic yard	30 - 40
PET soda bottles, whole, loose	gaylord	40 - 53
PET soda bottles, baled	30" x 48" x 60"	500
PET soda bottles, granulated	gaylord*	700 - 750
PET soda bottles, granulated	semi-load	30,000
Film, baled	30" x 42" x 48"	1,100
Film, baled	semi-load	44,000
HPDE (dairy only), whole, loose	one cubic yard	24
HPDE (dairy only), baled	30" x 48 x 60"	500-800
HPDE (mixed), baled	30" x 48 x 60"	600-900
HPDE (mixed), granulated	gaylord	800 - 1,000
HPDE (mixed), granulated	semi-load	42,000
Mixed PET & Dairy, whole, loose	one cubic yard	average 32
Mixed PET, Dairy and other rigid, whole, loose	one cubic yard	average 38
Mixed rigid, no film or Dairy, whole loose	one cubic yard	average 49
Mixed rigid, no film, granulated	gaylord	500 - 1,000
Mixed rigid & film, densified by mixed plastic mold technology	one cubic foot	average 60
Aluminum cans, whole	one cubic yard	50 - 74
Aluminum cans, whole	1 one full kraft paper grocery bag	average 1.5
Aluminum cans	one 55 gal plastic bag	13 - 20

\* Gaylord size most commonly used 40" x 48" x 36"

**Figure 4: Sample Weight to Volume Conversion Factors for Recyclables**

<u>Material</u>	<u>Volume</u>	<u>Weight in Pounds</u>
Ferrous cans, whole	one cubic yard	150
Ferrous cans, flattened	one cubic yard	850
Leaves, uncompacted <sup>8</sup>	one cubic yard	250 - 500
Leaves, compacted	one cubic yard	320 - 450
Leaves, vacuumed	one cubic yard	350
Wood chips	one cubic yard	500
Grass clippings	one cubic yard	400 - 1500
Used Motor Oil	one gallon	7
Tire - Passenger Car	one	12
Tire - Truck	one	60
Food Waste, solid and liquid fats	55 gallon drum	412

## VI. Conclusion

"Standard" is defined as "something considered by an authority or by general consent as a basis of comparison; an approved model; a rule or a principle that is used as a basis for judgement ...."<sup>9</sup>

While we believe that the recommendations presented here represent the best possible way of reporting and using data, we realize that complete agreement on every individual point isn't necessary for this work to serve as a "standard." Even where there may be disagreement about the application of a particular term or formula, the difference is made clearer by having a standard against which to contrast the alternative. The NRC offers these definitions, reporting guidelines, and calculation methods in that sense of the term: to serve as a common point of departure.

These concepts will have the best utility if indeed they do achieve widespread adoption, that is, if we all indeed begin to "speak the same language." To accomplish this, your participation is greatly needed to encourage the widespread testing and adoption of the NRC's National Measurement

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Standards and Reporting Guidelines. Your reports of experience in applying these concepts in your programs, and your comments and criticism on this document, are invited and will be appreciated, for the preparation of future updates.

## VII. Notes

<sup>1</sup> "The National Policy on Recycling" was adopted by the National Recycling Coalition at its Fifth Annual Recycling Congress in Seattle Washington, in November of 1986. Copies of this brochure are available from the NRC.

<sup>2</sup> At the 1989 Membership Meeting, and in workshops held during the 1989 Congress, consensus could not be reached on these terms because some members expressed the opinion that a definition for integrated waste management must also include a specified hierarchy of priorities for waste management options, whereas others argued that this should be left unspecified. Furthermore, consensus could not be reached in defining the waste management hierarchy, because of lack of agreement regarding the ranking of incineration with energy recovery versus landfilling. These comments were consistent with other comments previously received throughout several drafts of the Standards document. Unchallenged was this portion of the definition:

"The waste management hierarchy is the prioritization of waste management strategies as follows: 1. Decreasing the generation of waste through source reduction, and 2. Decreasing disposal by maximizing materials recovery. "

<sup>3</sup> The Glossary of Recycling Terms and Acronyms, contains more than 300 terms and is available for \$5 from Resource Recycling, P.O. Box 10540, Portland, Oregon 97210; 503-227-1319

<sup>4</sup> This description is a direct paraphrase of comments provided by the Glass Packaging Institute.

<sup>5</sup> This is a direct paraphrase of commentary provided by Resource Integration Systems/Resource Conservation Consultants.

<sup>6</sup> A detailed methodology for deriving current recycling rates has been developed by Gilmore Research Group and The Matrix Management Group



**Appendix D**  
**DIVERSION SURVEY FORMS**





# CITY OF MILPITAS RECYCLING SURVEY

to  
Recycling Collectors and Brokers  
operating within or receiving materials from within  
the City of Milpitas

*The information in this survey will be kept confidential and will be used to prepare a report for the City of Milpitas to comply with the California Integrated Solid Waste Management Act of 1989*

COMPANY NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

TELEPHONE: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_ TITLE: \_\_\_\_\_

TYPE OF BUSINESS: (Please check all that apply.)

- |  |   |
|--|---|
| <input type="checkbox"/> Collector/Hauler  | <input type="checkbox"/> Broker                     |
| <input type="checkbox"/> Dealer/Packer   | <input type="checkbox"/> End market/Manufacturer    |
| <input type="checkbox"/> Convenience Zone Redemption Center                        | <input type="checkbox"/> Scrap Metal Dealer         |
| <input type="checkbox"/> Buy-Back Center   | <input type="checkbox"/> Auto Wrecker               |
| <input type="checkbox"/> Donation Center   | <input type="checkbox"/> Asphalt/Concrete Recycler  |
| <input type="checkbox"/> Non-profit Organization                                   | <input type="checkbox"/> Demolition Debris Recycler |
| <input type="checkbox"/> Commercial Composter                                      | <input type="checkbox"/> Wood Waste Chipper         |
| <input type="checkbox"/> News Bin Operator   | <input type="checkbox"/> Confidential Paper Service |
| <input type="checkbox"/> Other Commercial Recycler (Specify) _____                 |   |
| <input type="checkbox"/> Special Waste Recycler (See listing below; specify) _____ |   |

When completed, please return this survey in the enclosed postpaid envelope to:  
Katherine Dever, EMCON Associates, 1921 Ringwood Avenue, San Jose, California 95131.  
If you have questions regarding this survey, call Ms. Dever at 408/453-7300.

- On the following page, please include the TOTAL TONS of MATERIAL COLLECTED, BY TYPE, for a recent twelve month period from an aggregate of accounts WITHIN THE CITY OF MILPITAS jurisdiction ONLY, NOT from other sources.  
Twelve month period used is from \_\_\_\_\_ to \_\_\_\_\_
- Source of the material: (Please indicate % if more than one source.)  
Residents \_\_\_\_\_ Government \_\_\_\_\_ Commercial Businesses \_\_\_\_\_ Industry \_\_\_\_\_
- 3a. Anticipated increase in recycling tonnage for 1991: \_\_\_\_\_ % or
- 3b. Anticipated decrease in recycling tonnage for 1991: \_\_\_\_\_ %
- Amount of residue: \_\_\_\_\_ % of total amount collected which is not recyclable and is discarded.



# CITY OF MILPITAS SOURCE REDUCTION SURVEY

COMPANY NAME: \_\_\_\_\_ TELEPHONE: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
CONTACT PERSON: \_\_\_\_\_ TITLE: \_\_\_\_\_



When completed, please return **both** this survey and the recycling survey together in the enclosed postpaid envelope to:  
Katherine Dever, EMCON Associates, 1921 Ringwood Avenue, San Jose, California 95131  
If you have questions regarding this survey, call Ms. Dever at 408/453-7300.

## REDUCE MATERIAL VOLUME

1. Does your company have a duplex copier? Yes \_\_\_\_\_ No \_\_\_\_\_  
If yes, what percentage of the copies made are two-sided? \_\_\_\_\_ %  
What quantity of white office or xerographic paper do you purchase? per year \_\_\_\_\_ per month \_\_\_\_\_  
The above is an example of reducing material volume. Using the enclosed Source Reduction chart, are you practicing any additional means of reducing your office waste? If yes, please describe below.  
\_\_\_\_\_  
\_\_\_\_\_

## INCREASE PRODUCT DURABILITY

2. Does your company provide or use maintenance contracts to extend the life of facility equipment?  
Yes \_\_\_\_\_: Provide \_\_\_\_\_ Use \_\_\_\_\_ No \_\_\_\_\_: Provide \_\_\_\_\_ Use \_\_\_\_\_  
The above is an example of increasing product durability. Using the enclosed chart, are you practicing any additional means of increasing durability of products or materials you use or produce? If yes, please describe below.  
\_\_\_\_\_  
\_\_\_\_\_

**MATERIAL REUSE**

3. Do you provide ceramic or non-disposable coffee mugs for your employees? Yes \_\_\_ No \_\_\_  
Are you using silverware in your food service area? Yes \_\_\_ No \_\_\_

The above are examples of materials reuse. Using the enclosed chart, are you practicing any additional means of reusing supplies in your office setting? If yes, please describe below.

\_\_\_\_\_  
\_\_\_\_\_

**MATERIAL REUSE**

4. Do you/your groundskeeper mulch, chip, or compost landscape clippings on-site? Yes \_\_\_ No \_\_\_  
If yes, please determine the number of cubic yards composted per month: \_\_\_\_\_

**GENERAL SOURCE REDUCTION**

5. Please refer to the enclosed chart which suggests methods for reducing solid waste disposal. If you are practicing any of these means, or any others which you think are source reduction, please describe below.

\_\_\_\_\_  
\_\_\_\_\_

**COMPANY SOURCE REDUCTION POLICIES**

6. Do you have a company policy to use any of the following source reduction methods? Please place a check by all those that apply.

- \_\_\_ purchase material/products with recycled content
- \_\_\_ purchase durable materials
- \_\_\_ purchase recyclable materials
- \_\_\_ purchase reusable materials
- \_\_\_ provide source reduction educational programs for employees or for the general public
- \_\_\_ provide employee incentive program for source reduction suggestions/practices
- \_\_\_ set manufacturing goals to reduce the amount of solid waste created and save on disposal costs



# CITY OF MILPITAS BUSINESS RECYCLING SURVEY

*The information in this survey will be kept confidential and will be used to prepare a report for the City of Milpitas to comply with the California Integrated Solid Waste Management Act of 1989*

COMPANY NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

TELEPHONE: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_ TITLE: \_\_\_\_\_

TYPE OF BUSINESS: \_\_\_\_\_ NUMBER OF EMPLOYEES AT THIS SITE: \_\_\_\_\_

SITED IN: \_\_\_\_\_ Commercial Zone \_\_\_\_\_ Industrial Zone \_\_\_\_\_ Other Zone

*When completed, please return this survey, along with the Source Reduction Survey, in the enclosed postpaid envelope to:*

*Katherine Dever, EMCON Associates, 1921 Ringwood Ave., San Jose, California 95131  
If you have questions regarding this survey, please call Ms. Dever at 408/453-7300.*

*Thank you for completing these surveys.  
You are helping the City of Milpitas comply with State law and achieve its recycling goals!*

1. Do you currently have recycling activity at your site? Yes\_\_\_No\_\_\_
2. Do you plan to expand or implement recycling activity? Yes\_\_\_No\_\_\_
3. If yes, when? \_\_\_\_\_ What materials? (Write "Planned" on the list on the following page by the material you plan to collect and estimate the amount you expect to collect next year.)
4. Do you need assistance with your program? Yes\_\_\_No\_\_\_
5. Do you expect the amount of material collected for recycling to increase\_\_\_ or decrease\_\_\_ in 1991? By what percent?\_\_\_%
6. Please select a recent twelve month period in which you have been collecting materials for recycling. Twelve month period selected is from\_\_\_\_\_ to \_\_\_\_\_
7. What was the total amount of waste sent for disposal from your facility for the reporting period selected in question number 6?\_\_\_\_\_ Tons
8. Does the amount of waste your facility generates have a seasonal fluctuation or definite periods of large increases, e.g. more in summer, or annual file cleaning in January? If yes, please note here:

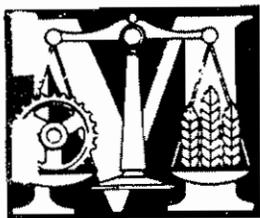
(over)

9. On the chart below, please report the total weight, volume or number of each material collected for recycling for the twelve month period selected in question 6.

Materials Collected for Recycling	Amount Collected (specify pounds, tons, cubic yards, gallons, or number)	Name of Collector or Facility Accepting Recyclable Materials
<u>PAPER</u>		
Corrugated cardboard	_____	_____
White ledger	_____	_____
Computer paper	_____	_____
Colored ledger	_____	_____
Shredded, Confidential, Security	_____	_____
Newspaper	_____	_____
Magazines	_____	_____
Mixed or other paper	_____	_____
Kraft paper (e.g. paper grocery bags)	_____	_____
<u>METALS</u>		
Aluminum (AL) cans	_____	_____
Ferrous metals and tin cans	_____	_____
Non-ferrous metals incl. AL scrap	_____	_____
White goods (appliances, etc.)	_____	_____
Bi-metal containers	_____	_____
<u>GLASS</u>		
California Redemption Value glass	_____	_____
Other recyclable glass	_____	_____
Refillable glass beverage containers	_____	_____
<u>ORGANICS</u>		
Yard waste (leaves, grass, prunings)	_____	_____
Wood waste incl. pallets	_____	_____
Tires and rubber products	_____	_____
Textiles and leather	_____	_____
<u>PLASTICS</u>		
HDPE containers (milk jugs)	_____	_____
PET containers (soda bottles)	_____	_____
Film plastics (shrink wrap, bags)	_____	_____
Polystyrene (foam)	_____	_____
Specify other (e.g. toner cartridges)	_____	_____
<u>INERT SOLIDS</u>		
Rock, Concrete, Brick	_____	_____
Sand, Soil, Dirt	_____	_____
<u>SPECIAL WASTES</u>		
Batteries	_____	_____
Oil	_____	_____
Auto shredder waste	_____	_____
Ash	_____	_____
Industrial sludge	_____	_____
Asbestos	_____	_____
Other (specify)	_____	_____
<u>OTHER ORGANICS</u>		
Food waste	_____	_____
Agricultural crop residues	_____	_____
Manure	_____	_____

**Appendix E**  
**LETTER from MILPITAS**  
**CHAMBER of COMMERCE**





# MILPITAS CHAMBER OF COMMERCE

SOUTH MILPITAS BLVD., SUITE # 110 • MILPITAS, CA 95035 • (408) 262-2613

RECEIVED  
CITY MANAGER'S OFFICE

May 20, 1991

MAY 28 1991  
*De. II*  
*WCA*  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Mr. Peter McHugh, Mayor  
City of Milpitas  
913 Jungfrau Court  
Milpitas, CA 95035

Dear Mayor McHugh:

The Milpitas Chamber of Commerce Board of Directors at their May 14th meeting approved a recommendation of the Chamber's Government Affairs Committee to support the Solid Waste Reduction Plan for Milpitas. The Chamber believes in the effort to reduce solid waste and in recycling. Furthermore, the recycling enterprise for industrial and commercial businesses should be implemented as soon as possible.

Sincerely,

MILPITAS CHAMBER OF COMMERCE

Frank De Smidt  
Chairman  
Government Affairs Committee

Gaye Morando  
Executive Manager

Dan Youngs  
President

cc: City Manager

