File Copy

CITY OF WEST SACRAMENTO

SOURCE REDUCTION AND RECYCLING ELEMENT
FINAL DRAFT

JUNE 1992

91-263

CITY OF WEST SACRAMENTO

SOURCE REDUCTION AND RECYCLING ELEMENT
FINAL DRAFT

JUNE 1992

91-263

PRINTED ON RECYCLED PAPER

TABLE OF CONTENTS

SECTION 1

EXECUTIVE SUMMARY

The Source Reduction and Recycling Element (SRRE) for the City of West Sacramento was developed in accordance with the requirements of the California Integrated Waste Management Act of 1989 (AB 939). The primary purpose of the SRRE is essentially to function as a guide to evaluate source reduction, recycling, and composting alternatives; provide a framework in making program selections; and ultimately provide an integrated waste management plan to reduce solid waste disposal by 25 percent by 1995 and 50 percent by the year 2000.

SRRE CONTENTS

The development of the SRRE was based on AB 939 regulations and accompanying legislation which define content requirements for each waste management plan. Specific plan components are the following:

- Source Reduction Component - This component identifies waste reduction programs to assist residential and commercial/industrial waste sectors in reducing the quantity of waste generated.

- Recycling Component - The Recycling Component identifies and evaluates recycling programs targeting the residential and commercial/industrial waste sectors.

- Composting Component - This component evaluates feasible collection and processing alternatives for the diversion of green waste.

- Special Waste Component - The Special Waste Component identifies diversion options for waste types considered to be a "special waste" such as sewage sludge, industrial waste, etc.

- Education and Public Information Component - This component describes educational and promotion efforts designed to facilitate selected waste diversion programs.

- Facility Capacity Component - This component identifies waste disposal facilities utilized by the City and projects future waste capacity needs.

- Funding Component - The Funding Component summarizes program costs during the short-term planning period (1991 through 1995) and identifies funding sources.

- Integration Component - The Integration Component demonstrates how the selected programs will result in a 25 and 50 percent waste reduction and provides an implementation schedule by task.

WASTE CHARACTERIZATION

The initial stage in the development of the SRRE was a waste characterization study conducted in April of 1991. The purpose of this study was to identify the types and quantities of waste materials currently disposed of and diverted from disposal by residential, commercial and industrial waste generators in the City.

The Solid Waste Generation Study (SWGS) indicates that approximately 46,418 tons of waste is currently disposed of in the City on an annual basis. Approximately 37 percent is generated from residential sources, commercial/industrial sources account for an estimated 52 percent, and self-haul sources dispose of approximately 11 percent of the City's waste stream.

Waste diversion efforts within the City currently divert approximately 23.9 percent of the waste stream through source reduction, recycling, composting, and transformation activities. Approximately 13 percent of the City's current diversion is the result of inert waste recycling taking place at the Yolo County Central Landfill; however, the California Integrated Waste Management Board may not allow inert waste diversion to be counted towards the City's waste diversion goals. This issue will likely be resolved in 1992. Waste incineration (transformation) activities in the City account for approximately 4 percent of the waste stream which can be counted towards waste diversion goals in the medium-term planning period.

PROGRAMS SELECTED

Waste management program selections by the City are based on the City's desire to provide West Sacramento residents and businesses the opportunity to participate in waste diversion programs on a voluntary basis. Selections are also based on providing the most cost effective programs available to achieve the City's waste diversion goals and to participate in County efforts to provide regional waste management programs. Participation in these programs allows the City to take full advantage of economies of scale in the development of regional processing facilities and to provide consistent waste management programs throughout the County.

The City of West Sacramento has developed an integrated waste management plan that places preferences on source reduction, recycling, and composting programs as management practices for waste generated and disposed of in the jurisdiction. Selected programs provide the means for residential and commercial/industrial waste generators to participate in waste diversion programs through source reduction efforts and material collection programs provided by the City and the franchised waste hauler.

The City's solid waste management plan establishes the following programs to meet state

mandated diversion goals.

Source Reduction Programs

Source reduction programs selected by the City are designed to reduce the quantity of waste generated and disposed of in the City. Selected programs will also provide examples of source reduction methods to local business through City demonstration programs and model non-procurement and procurement policies. The source reduction programs which have been selected for implementation by the City are summarized below.

Quantity Based Variable Rates or User Fees

Rate structure modifications have been selected for possible implementation in the medium term to provide financial incentives to residents to reduce the amount of solid waste generated in the home. Through this program, residents will become more conscious of waste generation and may alter waste generation habits through purchasing decisions, backyard composting, product reuse, and other source reduction activities.

This alternative will reduce the amount of solid waste generated and consequently the amount of waste going to landfills. In addition, variable rate structures provide a strong incentive to separate and divert materials from the waste stream when diversion programs are available. This alternative will be most effective in conjunction with both recycling and yard waste collection programs providing an incentive for increased participation.

Backyard Composting

Through this alternative the City will encourage backyard composting of yard and food waste by homeowners through public education programs and seminars. Though the City anticipates targeting yard waste through curbside collection in the short-term planning period, education efforts to promote backyard composting will serve to reduce the quantity of yard waste collected, transported, and composted at the County regional facility thereby reducing overall program costs.

Educational Programs

This alternative has been selected since it is vital to the success of the other source reduction alternatives. Educational efforts will target generators within the City, including businesses, homeowners, and the general public.

Direct community and business involvement and participation in carefully implemented programs will reduce the amount of solid waste discarded. Changes in waste stream composition will depend on the effectiveness of the public education effort and on the materials targeted for reduction by those responding to the message of these programs. The most likely areas for

significant impact would be programs aimed at backyard composting, commercial purchasing and procurement programs, office source reduction, and consumer purchasing awareness. The waste stream materials that are anticipated to be most affected by these types of programs are yard waste, office paper, plastic packaging, corrugated cardboard, other packaging materials, and disposable products.

Awards and Public Recognition

This alternative has been selected to generate public support for source reduction on the part of business and private individuals by recognizing individuals, groups, or businesses that actively engage in source reduction and/or minimization efforts supporting the community's source reduction efforts. This selection serves as a complement to other source reduction alternatives such as public education and technical assistance, and may involve local community organizations such as the Boy Scouts, Girls Scouts, Rotary Club, Lion's Club, the PTA, and local police and fire fighters youth associations.

Government Non Procurement Source Reduction Policies

This alternative has been selected for implementation in the short-term planning period providing the City the opportunity to develop and implement a model source reduction program that can be used as an example for private, public, and commercial entities in the area. The City's administrative offices and their use of paper will be the primary target, however, other materials may be targeted as well.

Government Procurement Policies

This alternative has been selected for implementation in the short-term planning period. The City will seek to establish a policy with respect to City procurement practices establishing specifications for product durability, recyclability, recycled material content, and environmental impacts.

This alternative has been selected since it targets the materials used by administrative offices, as well as equipment purchased by other operations such as police, public works, etc. Materials that will be targeted through this program include: paper products and packaging, plastic products and packaging, all disposable products, office supplies, tires, and food service items.

Recycling Programs

The City has recently implemented a residential curbside collection program servicing all single family residences in the jurisdiction. In an effort to provide for greater levels of diversion through recycling activities, the City will also expand the residential collection program to multi-family residences and facilitate current commercial/industrial recycling programs through program promotion and technical assistance and, through participation in regional integrated

waste management programs, take advantage of County regional processing facilities planned for the short and medium-term planning periods. Summarized below are the recycling programs selected for implementation by the City.

Multi-Unit Residential Recycling

Selected for implementation in the short-term planning period, this program will target recyclable glass, aluminum cans and foil, PET & HDPE and bi-metal food and beverage containers.

Commercial/Industrial Collection Program

Through this alternative, the City's recycling coordinator will facilitate commercial/industrial waste diversion through recycling program promotion and in-person contact with prospective West Sacramento businesses. The recycling coordinator, in conjunction with the franchised waste hauler, will also provide technical assistance to establish material separation and recycling collection programs. Commercial/industrial recycling programs will likely target materials with readily available markets. Other materials may be targeted on a site specific basis.

The hauler will also be directed in the short-term planning period to collect restaurant waste and other food-rich-waste refuse separately for diversion to the Yolo County Central Landfill's anaerobic composting facility. Food waste diverted to this program will be reduced in volume through anaerobic digestion but will not be counted as diversion.

Intermediate Processing Center

This facility alternative has been selected for implementation in the short-term planning period for processing of paper and cardboard. The City's hauler, Waste Management of West Sacramento, will own and operate this facility to process paper and cardboard collected through waste recovery programs.

Automated Material Recovery Facility

This alternative has been selected by the City for implementation in the medium-term planning period in a cooperative integrated waste management effort with Yolo County and the Cities of Woodland and Winters. Through this alternative, the City has committed non-source separated commercial/industrial wastes to be diverted to the County materials recovery facility proposed for development in the medium-term planning period.

A feasibility study is scheduled to be undertaken in 1992 by the Yolo County Department of Public Works and Transportation to determine facility parameters, economics, and targeted waste streams for the proposed facility. At this time, policy issues will be developed to determine the County's role in facility ownership, operation, and waste flow controls. Construction of the

facility is not expected to take place until 1996. The cost of development, construction, and operation will be funded through the County Sanitation Enterprise Fund.

Specific waste types to be targeted at the facility will be determined based on available markets, market specifications, and material availability.

Composting Programs

In conjunction with the residential curbside collection program the City will also provide for the collection of yard waste from the residential sector. Yard waste generated from the commercial and industrial waste sectors will also be targeted through a separate bin service program. The City will divert source separated collected yard waste to a regional composting facility at YCCL. This operation provides the City the opportunity to achieve maximum diversion levels and also the ability to participate in cooperative regional marketing efforts. Expansion of the existing facility is expected to take place in 1992.

Selected programs are briefly summarized below.

Residential Yard Waste Collection

This alternative has been selected for implementation in the short-term planning period. The City will revise the current franchise agreement to offer these services. At this stage in the planning process it is anticipated that residential households will be provided with containers for the separate collection of yard waste.

Commercial/Industrial Collection

This alternative has been selected for implementation in the short-term planning period. The City will revise the current franchise agreement to provide for the source separation and collection of yard waste generated from commercial and industrial accounts. Containers will likely be provided on a site-specific basis for separate yard waste collection and transportation to the YCCL regional composting facility.

Special Waste Programs

In keeping with the City's policy to participate in regional County integrated waste management programs, the City will participate in the County's landfill salvaging program as well as support County efforts to promote and/or require that asphalt and concrete be source separated prior to disposal at YCCL. These programs are briefly described below.

Landfill Salvaging

The YCCL is currently in the process of developing a "Self-Haul Bin Transfer Operation"

recovering white goods, wood waste, yard waste and other materials in sufficient quantity to target for diversion. The operation is scheduled to commence during the 4th quarter of 1992. Through this alternative the City will promote the use of this facility and encourage residents of West Sacramento to divert white goods and other wastes not targeted through current diversion programs though this recovery operation.

Concrete and Asphalt Recycling

Through this alternative the City will promote the source separation of inert wastes through public education efforts. Promotions may be in the form of brochures or in-person contact targeting construction/demolition companies doing work in the City of West Sacramento. The City will also support County efforts in the development of an ordinance to mandate source separation of inert and other wastes. The City will also assist the County in regional market development efforts and will consider revising current construction specifications requiring percentages of recovered asphalt/concrete materials for new construction.

Bulky Item Collection Days

This alternative has been selected for implementation in the medium-term as a means of mitigating illegal dumping. Bulky Item Collection Days are specified days during the year on which residents may set out bulky items and/or all general refuse for no additional charge. These programs generally work well in jurisdictions with quantity-based variable refuse rates, as they allow residents to dispose of extra wastes at no extra charge, mitigating the incidence of illegal dumping.

Education and Public Information Programs

To facilitate the selected waste management programs, the City has identified the following education and public information efforts to maximize levels of waste diversion. The combined focus of these programs will target all waste generators in the City. These programs are briefly summarized below.

Residential Sector Promotional Campaign

An instructional/information brochure will be developed. Brochures will be distributed to every household, explaining how to participate in West Sacramento waste diversion programs. This brochure will also serve as a handout at presentations to service clubs and civic organizations prior to and after the recycling programs are operating.

School Curriculum

In cooperation with the West Sacramento School District, the City will select and assist in the implementation of specific educational programs for all elementary grades (K-6).

School Tours

In cooperation with the City's authorized hauler, tours will be arranged to provide students the opportunity to visit the nearby Yolo County Landfill and Recycling Processing Facilities. Student understanding of the technical and operational aspects of the recycling and composting process is important, not only for their benefit, but to provided them with accurate information as they share their knowledge with parents and friends. Additional student tours can be set up with local businesses and institutions which have special recycling programs or process recycled materials.

Business Recognition Program

The City, in cooperation with the West Sacramento Chamber of Commerce or other business organizations, will establish recycling recognition events. A full spectrum of awards can be presented to those firms establishing recycling and source reduction programs with special acknowledgements going to major diversion efforts or other significant achievements.

Media Advertising

On a regular basis, the City will purchase advertising space in local newspapers to show the progress and success of the various recycling and source reduction programs. The "thermometer" type of ads provide an ongoing indication of a program's achievement.

Media Releases

In addition to a paid advertising campaign, the City will produce and transmit appropriate releases to all media throughout the West Sacramento area regarding the various aspects of the recycling and source reduction programs.

Community Events

The City, in cooperation with its local service clubs and volunteer organizations, will take part in promoting recycling at community events and other local activities such as the Community Day and Safety Day. In most cases, promotional information will be offered to attendees.

Video

The City will produce a video, or series of videos, to use in presentations to service clubs, and civic organizations or for on-the-air opportunities through local cable TV operations. In addition to generic information, specific videos can be developed to target groups, such as horse owner groups, and the construction and building industry.

PROGRAM FUNDING

In order to accomplish the stated goals and objectives, sufficient funding and resource allocation must be available for program planning and development. This can be accomplished by expanding existing funding sources to include additional means of revenue. At this stage in the planning process, all programs will be funded through general refuse, recycling, and yard waste collection fees. Table 1-1 shows the estimated costs of the selected programs.

Table 1-1. Total Estimated Program Costs

Component	Costs 1992	Costs 1993	Costs 1994	Costs 1995	Costs 1996
Source Reduction	$200	$5,250	$1,200	$43,700	$51,200
Recycling	$22,700	$544,100	$539,400	$539,400	$539,400
Composting	$161,000	$631,900	$697,900	$697,900	$697,900
Special Wastes	$6,700	$2,000	$2,000	$2,000	$19,000
Education	$77,500	$92,500	$73,500	$73,500	$73,500
Total	$268,100	$1,275,750	$1,314,000	$1,356,500	$1,381,000

WASTE DIVERSION PROJECTIONS THROUGH SRRE IMPLEMENTATION

Table 1-2 illustrates how each program contributes to meet the City's waste diversion goals in the short and medium-term planning periods. Diversion estimates for most source reduction programs have not been provided due to the difficulty in quantifying diversion levels for each individual program.

Table 1-2. Diversion Rate Projections (percent)

Program	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Source Reduction Diversion Programs										
Existing Source Reduction	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Quantity Based Variable Rates										
Backyard Composting			0.11	0.16	0.20	0.28	0.36	0.40	0.50	0.60
Awards and Recognition										
Non-procurement										
Government Procurement policies										
Total Source Reduction	0.06	0.06	0.17	0.22	0.26	0.34	0.42	0.46	0.56	0.66
Recycling Diversion Programs										
Existing Recycling	19.7	19.7	19.7	19.7	19.7	19.8	19.8	19.8	19.8	19.8
SFD Curbside Recycling		0.4	2.0	2.7	3.3	3.3	3.3	3.3	3.3	3.3
MFD Recycling			0.4	0.6	0.7	0.9	0.9	0.9	0.9	0.9
Commercial/Industrial Recycling		1.2	2.4	3.5	4.7	5.9	5.9	5.9	5.9	5.9
Automated Material Recovery							4.0	8.1	10.7	13.4
Total Recycling	19.7	22.2	24.5	26.5	28.5	29.9	33.9	38.0	40.6	43.3
Composting Diversion Programs										
Curbside Yard Waste Collection			0.3	1.3	2.0	2.2	2.2	2.2	2.1	2.0
Commercial/Industrial Collection				0.2	0.6	1.0	0.9	0.9	0.9	0.9
Total Composting	---	---	0.3	1.5	2.6	3.2	3.1	3.1	3.0	2.9
Special Waste Diversion Programs										
Landfill Salvaging		0.9	2.9	4.0	4.0	3.9	3.9	3.9	3.9	3.9
Concrete/Asphalt Recycling		0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total Special Waste	---	1.0	3.1	4.2	4.2	4.1	4.1	4.1	4.1	4.1
Existing Transformation	---	---	---	---	---	4.0	4.0	4.0	4.0	4.0
TOTAL DIVERSION	19.7	23.3	28.1	32.4	35.5	41.5	45.5	49.7	52.3	55.0

SECTION 2

AB 939 OVERVIEW

2.1 PURPOSE

The amount of solid waste generated in California, coupled with diminishing landfill space and potential adverse environmental impacts from landfilling have created an urgent need for state and local agencies to develop a new integrated waste management program called the California Integrated Waste Management Act of 1989, better known as AB 939. The goals of AB 939 are to:

- Specify the responsibilities of local government;
- Maximize all feasible source reduction, recycling, and composting options;
- Improve regulation of existing solid waste landfills;
- Ensure that new solid waste landfills are environmentally sound; and
- Streamline permitting procedures for solid waste management facilities.

2.2 REQUIREMENTS

AB 939 requires both city and county governments to develop and implement solid waste management plans through 2005. The bill also establishes guidelines and deadlines for the required documents.

The bill requires each incorporated city and county unincorporated area to develop plans to divert 25 percent of all solid waste from landfill disposal and transformation by 1995, called the "short term planning period", and 50 percent by the year 2000, called the "medium term planning period".

In addition, each county is required to develop a siting element and county-wide Integrated Waste Management Plan (IWMP). The Siting Element shall provide information documenting that the County has a minimum of 15 years of combined permitted disposal capacity. If the County cannot meet the required 15 year minimum permitted disposal capacity the Siting Element shall identify solid waste management strategies for the transformation or disposal of excess solid waste. The Siting Element shall also provide some detailed information concerning the existing solid waste disposal facilities as well as any plans for expansions that may be necessary to meet the State's requirements for this element.

The County's IWMP shall consist of all the cities' SRRE's and Household Hazardous Waste

Elements (HHWE's) prepared and submitted to the County; the County's SRRE and HHWE (for the unincorporated area); a summary of the County's significant waste management issues and problems; and the County-wide Siting Element. Based on the County's current landfill capacity situation, the IWMP is due on January 1, 1994.

2.3 APPROVAL PROCESS

The process by which the Source Reduction and Recycling Element is approved by the local jurisdiction ensures opportunity for public comment. The first step is publication and circulation for comment of a preliminary draft element. Approval of the preliminary draft must be at a public hearing that is advertised in the local paper at least thirty days in advance of the hearing. The comment period on the Preliminary Draft Source Reduction Recycling Element is 45 days. Comments may be received in writing or orally at the public hearing. During this comment period, the State Integrated Waste Management Board and the County's Local Task Force (LTF) reviews and comments on the document.

Following the comment period on the preliminary draft element, a final draft element is prepared that addresses all comments received. This is sent to the LTF only for 15 days for review and comment. A second public hearing must be advertised at least thirty days in advance of the date at which time the local jurisdiction may approve the final element with changes per the comments received.

After the second hearing, a Final Source Reduction and Recycling Element is prepared and adopted at a third public hearing held by the local jurisdiction.

In summary, there are three points in the process at which the public may have direct input into the preparation of the Source Reduction Recycling Element. They are:

- The public hearing approving the Preliminary Draft Source Reduction and Recycling Element;
- The public hearing approving the Final Draft Source Reduction and Recycling Element; and
- The public hearing adopting the Final Source Reduction and Recycling Element.

After each jurisdiction has approved and submitted their Source Reduction and Recycling Element to the County, the County Board of Supervisors must hold a public hearing to approve the Integrated Waste Management Plan for the County. This document incorporates all the local jurisdictions' elements with the County's plan for the unincorporated area. When approved, it must be submitted to the State of California Integrated Waste Management Board for approval. The California Integrated Waste Management (CIWMB) has 120 days from the day of receipt to approve or disapprove the plans. A notice of disapproval will include specific

recommendations for correction.

2.4 ENFORCEMENT

At least every two years the CIWMB will review each city/county SRRE and hold a public hearing in the local agency's jurisdiction (when possible). If the CIWMB determines that the city/county has failed to implement the programs and achieve the required diversion rates, the Board will issue an order of compliance with specific deadlines. Failure to comply can result in daily fines of up to $10,000 being imposed by the State.

2.5 REVISION PROCESS

After adoption of the Final Source Reduction and Recycling Element by both the local jurisdiction and the State Board, the jurisdiction shall monitor the programs to be implemented in the element to document the amount of waste reduced as a result of the element. An annual report summarizing the jurisdiction's progress toward achieving the mandated goals shall be submitted to the State Board. This report shall serve as the basis for determining if revisions to the adopted element are necessary.

The annual report shall be submitted within 90 days of the anniversary date the Board approved the element. The contents of the annual report shall be based on data gathered during the year following the SRRE's adoption, or the most recent revision by the Board.

If, in the process of implementing the adopted Source Reduction Recycling Element the jurisdiction finds it necessary to review the element, this may be done during or prior to the annual review of the SRRE. All revisions to the adopted SRRE must be submitted to the State Board for approval. Requests for revisions must address the reasons for the revisions. These may include:

- Monitoring of programs finds targeted materials are not being diverted from the waste in the qualities originally projected;
- Demographics of jurisdiction have changed, altering the waste stream;
- Data base used for adopted SRRE is found to be inaccurate; and
- Implementation of programs/facilities cited in SRRE are delayed due to permitting, and/or funding.

Revisions to the adopted SRRE must be approved by the same process as adoption of the SRRE, as described in Section 2.3, Approval Process, above.

SECTION 3

WASTE CHARACTERIZATION COMPONENT

As specified in Section 18722(a) of the California Code of Regulations (CCR), each jurisdiction must prepare an Initial Solid Waste Generation Study which provides data to allow a jurisdiction to fully understand, in quantifiable terms, its current solid waste disposal and diversion practices, as well as forecast future solid waste generation rates. This information is then used as the basis for planning all future waste handling, disposal and diversion programs and is used throughout this SRRE. This Solid Waste Characterization Component presents the findings of the Solid Waste Generation Study that was performed by EBA Wastechnologies in the Spring and Summer of 1991. The study was completed as a part of a regional study that included the Cities of Davis, Woodland, West Sacramento and Winters, as well as the unincorporated area of Yolo County. The study was performed in accordance with the requirements presented in Section 18724 of the CCR.

The Waste Generation Study characterizes the waste which is generated from residential, commercial, industrial, and other waste sources in the City. For the purpose of this study, waste generated from the above sources is defined as follows:

- Residential solid waste - waste originating from single-family and multi-family dwellings, condominiums, and other residential sources.
- Commercial solid waste - waste originating from retail businesses, offices, warehouses, distribution centers, etc.
- Industrial solid waste - waste originating from manufacturing facilities and construction and demolition companies.

As required by AB 939, the Waste Generation Study includes the following elements:

- Waste Disposal Characterization
- Waste Diversion Characterization
- 15-year Waste Generation Projection

The Waste Disposal Characterization provides estimates of the composition and quantity of solid waste disposed of annually. The quantities of waste disposed of are reported both in terms of weight and landfill in-place volume estimates. The Waste Diversion Characterization provides estimates of the composition and quantity of solid waste currently being diverted (recycled, composted, and transformed) from each jurisdiction. The quantity of waste which is diverted can be applied to the overall waste diversion goals of 25 and 50 percent. Only those wastes

which are normally disposed of at permitted solid waste disposal facilities can be included. Waste diverted to transformation (incineration) facilities is not applicable to the short-term 25 percent goal, but may account for up to 10 percent of the medium-term 50 percent diversion goal.

The 15-year Waste Generation Projection is based on the quantities of waste which are currently disposed of and diverted from the waste stream. This rate of waste generation is then projected for the next 15 years based on available planning data for the jurisdictions. The waste projection also estimates the quantity of waste which must be diverted to comply with the 25 and 50 percent diversion goals.

3.1 SUMMARY OF CURRENT CONDITIONS

As shown in Table 3-1, the results of the study conclude that the City of West Sacramento currently generates solid waste at a rate of 60,962 tons per year. Of that amount, approximately 23.9 percent of the material (14,545 tons per year) is being recycled, reused, or composted. The remaining 76.1 percent (46,417 tons per year) is being landfilled in the Yolo County Central landfill (YCCL).

Table 3-1. Summary of Current Solid Waste Disposal, Diversion and Generation Rates

Waste Type (Major Categories)	Disposed (tons per year)	Diverted (tons per year)	Total Generated (tons per year)	Diversion Rate (% of total waste generated)
Paper	13,040	2,961	16,001	4.86
Plastic	3,510	13	3,523	0.02
Glass	1,650	579	2,229	0.95
Metal	3,900	513	4,413	0.84
Yard Waste	4,140	0	4,140	0.00
Other Organic Waste	11,782	2,484	14,266	4.07
Other Non-Organic Waste	5,095	7,995	13,090	13.11
Special Waste	3,300	0	3,300	0
Total	46,417	14,545	60,962	23.85

However, it should be noted that most of the City's current diversion comes from the recycling of inert solids such as concrete and asphalt, included as "Other Non-Organic Waste" in Table 3-1 (represents a 13.11 percent diversion rate). Thus material is used at the YCCL as wet weather decking. Consideration is currently being given by State Legislature to eliminate some of these materials from inclusion in the diversion rate calculation. If such a change were to occur, the City's diversion rate might be reduced by as much as 13.1 percentage points, bringing it down to 10.8 percent, well below the mandated diversion rate requirements.

One other material type that is a large contributor to the current diversion rate is wood waste (included in the "Other Organic Waste" category). Wood waste is a large component of the waste stream that is brought to the landfill, however the material is processed at the landfill and then sold for fuel, resulting in a 3.8 percent diversion rate.

Thus, only a 6.67 percent diversion is being achieved through the more conventional diversion programs which target materials, such as paper, aluminum cans, food cans, and plastic. As presented in Table 3-1, significant amounts of these types of materials are currently being landfilled.

3.2 BACKGROUND INFORMATION

3.2.1. Demographic Profile for Yolo County

The City of West Sacramento is one of four incorporated cities located within Yolo County. The following information was obtained from the Yolo County Population and Housing Estimates published by the California Department of Finance Demographic Research Unit, April 26, 1990. Population and housing estimates for each jurisdiction are summarized in Tables 3-2 and 3-3.

Table 3-2. Population Characterization By Jurisdiction

Jurisdiction	1980	1990	Percent Change	Annual Growth Rate
Davis	36,640	45,310	23.7	1.53
West Sacramento	0	27,331	-	0.07*
Winters	2,652	4,545	71.4	10.05
Woodland	30,235	39,797	31.6	3.54
Unincorporated Area	43,847	22,193	50.6	- 1.81*
County Total	113,374	139,176	22.8	2.23

* Prior to January 1, 1987, West Sacramento was part of the unincorporated area of Yolo County. This accounts for the small or negative annual growth rates reported.

Table 3-3. Housing Characteristics by Jurisdiction

Jurisdiction	Single Family	2 to 4 Units	5 Plus Units	Mobile Homes	Percent MFD*(5+)
Davis	9,282	1,752	6,741	373	37
West Sacramento	6,981	851	2,558	1,555	21
Winters	1,243	142	195	59	12
Woodland	9,482	1,010	3,794	649	25
Unincorporated Area	4,445	366	1,136	375	18
County Total	31,433	4,121	14,424	3,011	--

* MFD - Multi-family Dwellings

3.2.2. Current Waste Handling Practices

The City of West Sacramento contracts for collection services with East Yolo Waste Disposal Company. Refuse collection services and service fee structures include the following:

- Residential accounts are provided with unlimited can service at curbside at a monthly service rate. Commercial accounts and residential units other than single-family dwellings receive can service on a scheduled basis. Service fees are based on a cost per unit for the first can with a lesser amount charged for each additional can set out.

- Bin service is provided to commercial accounts. Service fees are based on a cost per cubic yard which remains constant regardless of container size utilized.

- A spring cleanup program is offered annually to all residents. Roll-off boxes are located at central points in the City for residents to discard bulky items such as furniture, appliances, etc.

All waste collected is transported to the Yolo County Central Landfill (YCCL).

Five certified recycling centers are located in the City.

3.3 WASTE DISPOSAL CHARACTERIZATION

This section summarizes the project approach and presents the quantity and composition of wastes disposed of from residential, commercial, and industrial waste sources for West Sacramento.

3.3.1. Project Approach

The estimated quantities of waste disposed of from residential, commercial, and industrial waste sources were based on information obtained from waste haulers servicing the individual cities, field data obtained through sampling, and annual tonnage disposal information obtained from YCCL waste disposal data.

Waste composition for the different waste sources in the City were estimated through a combination of field sampling at the point of generation for residential single-family units and sampling and visual characterization at the point of disposal for commercial, industrial, residential multi-family, and other waste sources.

A summary of the methodology used to estimate the quantity and composition of waste generated and disposed of from West Sacramento.

3.3.1.1. Waste Quantity

Sources and methods for estimating the quantity of waste generated from residential, commercial, industrial, and other waste sources are summarized below.

Residential Sources

The quantity of waste disposed of from single-family dwellings (SFD) for the City of West Sacramento was based on available information obtained from the contract waste hauler servicing the City.

The average waste generation rate for multi-family dwellings in the City of West Sacramento was based on available hauler data for April 1990. The average disposal rate per unit per week was estimated to be 38 pounds.

Commercial, Industrial, and Institutional Sources

The quantity of waste disposed of from commercial, industrial, and institutional sources for the City of West Sacramento was based on available information obtained from the contract waste hauler servicing the City, and YCCL waste disposal records.

In addition to individual hauler disposal data for each City, the County maintains records of the quantity of waste disposed of from companies that haul their own waste to the landfill. This data is referred to as "nonaccount" waste disposal data. The quantity of waste disposed of from nonaccount waste generators was allocated to jurisdictions based on the City where each company is located. Approximately 20 percent of these companies consist of construction and demolition firms which generated up to 70 percent of the nonaccount waste disposed of during 1990. It is likely that some of the waste generated by these construction/demolition firms did not originate from the jurisdictions they are located in; however, information is not available on its source.

Self-Haul Sources

Approximately 7 percent of the waste disposed of in Yolo County is from self-haul sources. Self-haul sources consist of individuals who haul their own waste utilizing pick-up trucks, automobiles, and small trailers. A study recently conducted by YCCL estimates the average quantity of waste disposed of per self-haul vehicle to be 644 pounds. During the waste sampling period, approximately 1,500 individuals hauling their own waste to the landfill were surveyed by YCCL personnel to identify the jurisdiction they were from. Based on the above information

and the total number of self-haul vehicles which disposed of waste in 1990, the quantity of self-haul waste disposed of from each jurisdiction was estimated.

Estimates of Waste Disposed (by volume)

Estimates of the volume of waste disposed of from each jurisdiction were based on an in-place landfill density study recently conducted by the YCCL. Estimates for in-place density were approximately 1,200 pounds per cubic yard. This value was applied to the quantity of waste disposed (by weight) for each jurisdiction to arrive at disposed volume estimates.

3.3.1.2. Waste Composition

The number of samples obtained for each jurisdiction during the field sampling program was based on the following:

- The formula for normal approximation as defined in "Sample Weights in Solid Waste Composition Studies," A. L. Klee and D. Carruth, American Society of Civil Engineers, Journal of the Sanitary Engineering Division, Volume 96, August 1970.

- Quantity and availability of waste disposed of from waste generation sources.

Using the formula for normal approximation, the number of samples to be taken is based on the waste type which is expected to contribute the largest percentage of material to the overall waste composition. Assuming a maximum percentage composition value of 35 percent, what normally would be expected for waste paper, the number of samples necessary for statistically valid sampling with corresponding levels of precision are as follows:

Number of Samples	Precision Level (+/- percent)
19	3
7	5
2	10

Sources of information and methods for estimating the composition of waste disposed of from residential, commercial, industrial, and other waste sources are summarized below.

Residential Waste Sources

Residential sources of waste generation included single-family and multi-family dwellings for each jurisdiction and the Unincorporated Area as well as low income housing and dormitories located at UC Davis.

Single Family Dwellings Waste Composition

A total of 147 residential samples were obtained from SFDs from the study jurisdictions. Samples were obtained at random from areas within each City identified as being low, medium, and high income areas. The waste generated from one household was considered to be a single sample. Collected samples were transported to YCCL for sorting.

The residential samples collected from the Cities of West Sacramento, Winters, and Woodland (109 samples) were combined for statistical analysis to arrive at an estimate of the percent of Household Hazardous Waste (HHW) generated on a regional basis. This value, 0.7 percent, was then used to estimate the quantity of HHW disposed of from the above jurisdictions. The waste composition for SFDs for each City was readjusted to account for the change in the HHW percent value. Recorded weights for HHW included the weight of the container.

Residential waste disposed of from the Unincorporated Area of the County was sampled at the point of disposal. A total of 5 samples averaging 242 pounds were obtained. Based on an average pounds per household rate of 45 pounds per week, the equivalent of 27 households were sampled.

Multi-family Dwelling Waste Composition

A total of 6 samples, averaging 218 pounds, were obtained at the point of disposal (YCCL) from the Cities of Winters and Woodland. These samples were combined for statistical analysis and the composition was considered as being representative for MFDs in the Cities of Winters, Woodland, West Sacramento, and the Unincorporated Area.

Six MFD samples, averaging 244 pounds, were obtained from the City of Davis. The City of Davis offers curbside recycling to MFDs in the City; therefore, these samples were not combined with the regional composition sample grouping.

Residential Waste from the University of California at Davis

U.C. Davis Physical Plant Operations established special collection routes to facilitate the process of obtaining representative samples of the different types of waste generators on the

campus. Two samples of residential waste were obtained; one from campus dormitories and another from low income residential housing.

Commercial/Industrial/Institutional Waste Sources

A total of 94 samples were obtained from commercial, industrial, and institutional sources. The majority of commercial and industrial samples were selected at random at the point of disposal. Samples from roll-off loads were obtained from sections of the discarded loads identified by the field supervisor to be representative of the load. Samples from front-end refuse collection vehicles were obtained by identifying sections of the load which were representative of the waste source targeted (i.e., residential, commercial or industrial). Samples were manually removed in columns or sections of waste to account for light and heavy fractions.

A commercial sample obtained from the City of Winters contained the equivalent of a whole tire inflating the percentage of waste tires in the commercial waste stream composition. To arrive at an accurate estimate of the quantity of waste tires disposed of, a phone survey was conducted of automotive shops and garages which generate waste tires in Winters. From this information, the quantity of waste tires disposed of annually was estimated.

Two samples of commercial waste were obtained from the Unincorporated Area of the County. To arrive at an estimate of the composition representative of the commercial sector, the unincorporated samples were combined with samples obtained from the City of Winters. These samples were representative of waste generated from small businesses, schools, an automotive repair garage, a restaurant, and a farm machinery sales company.

Institutional samples from UCD were obtained from special collection routes designed to collect refuse from similar types of waste generators on campus. These special collection routes targeted the following waste sectors:

- Residential - waste originating from low-income housing and dormitories.
- Kitchen - waste originating from the Coffee House, Memorial Union, dining areas, etc.
- Institutional - waste originating from campus buildings and administration offices.
- Agricultural - waste originating from grounds trailers, Primate Center, Equestrian Center, sheep and beef barns, etc.

Self-Haul Waste Sources

A total of 125 self-haul vehicles were visually surveyed at YCCL for white goods, mixed yard waste, bulky wastes, and construction and demolition debris, with the remaining refuse

characterized as miscellaneous waste. Field personnel made visual estimates of the volume of the targeted self-haul waste types being discarded. These volume estimates were then converted to weight estimates utilizing "loose" volume/weight conversion factors. [1,2]

Seasonal Variations

Monthly waste disposal rates for each jurisdiction over the last four years were charted to identify any fluctuations in the waste stream due to seasonal variations. Monthly waste disposal rates for yard waste generated from the City of Woodland, nonaccounts, and the Esparto Convenience Center were also charted.

3.3.2. FINDINGS AND CONCLUSIONS

Section 3.3.2.1 presents estimates for the composition and quantity of refuse disposed of from West Sacramento. Section 3.3.2.2 presents available seasonal information or monthly variations in waste generation.

3.3.2.1. Waste Generation

Estimates of the total quantity of waste disposed of by waste source for West Sacramento are summarized in Table 3-4.

Table 3-4. Waste Disposal Summary By Source - City of West Sacramento

Source	Tons per year	Percent
Residential SFD	12,218	26.4
Residential MFD	5,034	10.8
Commercial	17,868	38.5
Industrial	6,418	13.8
Self-haul	4,880	10.5
Total	46,418	100.0

Residential Waste Sources

The total quantity of waste generated from the residential sector is approximately 37 percent of the entire waste stream. Based on hauler waste disposal data the average quantity of waste disposed of per household is approximately 60 pounds per week. This estimate was based on

the total number of stops and accumulated tonnage during the month of April. The household waste disposal rate estimated through field sampling was approximately 44 pounds per week. Waste types prevalent in the residential waste stream which can be targeted through source reduction, recycling, and composting programs are newspaper, mixed waste paper, glass, tin, yard waste, and food waste.

Commercial/Industrial Waste Sources

The total quantity of waste disposed of from the commercial and industrial waste sectors account for approximately 39 and 14 percent of the disposed waste stream respectively. Waste types prevalent in the commercial and industrial waste streams are cardboard, film plastic, food waste, and wood waste. Inert waste also makes up a considerable portion of the industrial waste stream at approximately 16.1 percent.

Self-Haul Waste Sources

Based on the results of the YCCL survey, 30 percent of self-haul waste disposed of from the County is generated from the City of West Sacramento. Self-haul wastes account for approximately 10.5 percent of the City's discarded waste stream.

Tables 3-5 through 3-8 summarize the waste composition for residential, commercial, and industrial sources for the City of West Sacramento. Tables 3-9 and 3-10 summarize the quantity of waste disposed by weight and volume.

TABLE 3-5 RESIDENTIAL WASTE COMPOSITION (SFD)
CITY OF WEST SACRAMENTO
DATA SUMMARY/STATISTICAL ANALYSIS
(ALL VALUES % BY WEIGHT)

			Min Value	Max Value	Mean	Std Dev	90% Confidence Interval Lower	90% Confidence Interval Upper
PAPER	**TOTAL**	**33.0%**						
Newspaper			0.0	73.6	11.4	17.9	6.6	16.3
Corrugated			0.0	15.6	3.2	4.0	2.2	4.3
High-Grade			0.0	13.9	0.9	2.4	0.2	1.5
Mixed			0.0	54.3	9.2	10.9	6.3	12.2
Cont. Paper			0.0	24.3	8.2	6.6	6.4	10.0
PLASTIC	**TOTAL**	**7.6%**						
PET			0.0	1.8	0.2	0.4	0.1	0.3
HDPE			0.0	2.4	0.5	0.7	0.3	0.7
Pigmented HDPE			0.0	2.5	0.3	0.6	0.1	0.4
PS			0.0	1.9	0.5	0.4	0.4	0.6
Film			0.0	5.2	2.2	1.3	1.9	2.6
Other Plastic			0.0	26.2	3.9	5.6	2.4	5.4
GLASS	**TOTAL**	**6.7%**						
CA redemption			0.0	20.8	1.2	3.6	0.2	2.2
Other recyclable			0.0	40.7	5.4	8.8	3.0	7.8
Non-recyclable			0.0	0.6	0.1	0.1	0.0	0.1
METAL	**TOTAL**	**6.2%**						
Aluminum cans			0.0	2.5	0.3	0.5	0.1	0.4
Bi-metal/tin			0.0	10.8	2.8	2.9	2.0	3.6
Ferrous metal			0.0	62.7	2.8	10.1	0.0	5.5
Non-ferrous metal			0.0	2.1	0.4	0.5	0.2	0.5
White goods			0.0	0.0	0.0	0.0	0.0	0.0
YARD WASTE	**TOTAL**	**20.1%**			0.0			
Grass, leaves			0.0	95.8	15.4	27.3	8.1	22.9
Prunings			0.0	71.3	4.5	12.5	1.2	7.9
OTHER ORGANIC	**TOTAL**	**19.0%**						
Food			0.0	40.6	14.2	10.6	11.5	17.2
Tires			0.0	0.0	0.0	0.0	0.0	0.0
Rubber			0.0	3.0	0.3	0.6	0.1	0.4
Wood waste			0.0	7.9	0.6	1.7	0.2	1.1
Wood (press board, etc.)			0.0	12.3	0.5	2.1	0.0	1.0
Ag crop residue			0.0	0.0	0.0	0.0	0.0	0.0
Manure			0.0	2.9	0.2	0.7	0.0	0.4
Disposable diapers			0.0	24.3	1.7	5.5	0.2	3.2
Textiles, leather			0.0	9.8	1.4	2.0	0.8	1.9
OTHER WASTE	**TOTAL**	**6.7%**						
Asphalt			0.0	0.5	0.0	0.1	0.0	0.0
Concrete			0.0	0.0	0.0	0.0	0.0	0.0
Inert solids			0.0	61.0	4.7	12.8	1.3	8.2
Composite materials			0.0	1.3	0.1	0.2	0.0	0.1
HHW matl/container			0.0	5.0	0.7	0.8	0.0	0.4
Misc.			0.0	14.5	1.8	2.9	1.0	2.5
SPECIAL WASTE	**TOTAL**	**0.8%**						
Ash			0.0	12.9	0.8	2.8	0.0	1.5
Medical waste			0.0	0.4	0.0	0.1	0.0	0.0
Auto shredder			0.0	0.0	0.0	0.0	0.0	0.0
Auto bodies			0.0	0.0	0.0	0.0	0.0	0.0
Bulky waste			0.0	0.0	0.0	0.0	0.0	0.0
Other special			0.0	0.0	0.0	0.0	0.0	0.0
					100.0			

	Min Value	Max Value	Mean	Std Dev	90% Confidence Interval Lower	90% Confidence Interval Upper
WASTE DISCARDED PER HOUSEHOLD (LBS/WK)	4.7	169.9	43.7	36.9	33.7	53.7

TABLE 3-6 RESIDENTIAL WASTE COMPOSITION (MFD)
REGIONAL WASTE COMPOSITION
DATA SUMMARY/STATISTICAL ANALYSIS
(ALL VALUES % BY WEIGHT)

			Min Value	Max Value	Mean	Std Dev	90% Confidence Interval Lower	90% Confidence Interval Upper
PAPER	**TOTAL**	**42.5%**						
Newspaper			0.0	15.6	8.7	6.3	3.8	13.7
Corrugated			3.8	9.3	6.1	2.0	4.4	7.7
High-Grade			0.2	4.3	1.1	1.4	0.0	2.2
Mixed			2.8	12.0	9.6	3.2	7.1	12.1
Cont. Paper			8.0	51.7	17.0	15.6	4.7	29.4
PLASTIC	**TOTAL**	**8.7%**						
PET			0.0	0.4	0.2	0.1	0.1	0.3
HDPE			0.0	1.7	0.8	0.6	0.3	1.3
Pigmented HDPE			0.0	1.1	0.6	0.3	0.3	0.8
PS			0.3	1.4	0.6	0.4	0.3	0.9
Film			1.6	8.7	3.4	2.4	1.5	5.3
Other Plastic			1.1	5.2	3.1	1.2	2.2	4.1
GLASS	**TOTAL**	**6.2%**						
CA redemption			0.6	4.7	1.6	1.4	0.5	2.7
Other recyclable			0.3	11.7	4.5	3.8	1.5	7.6
Non-recyclable			0.0	0.1	0.0	0.0	0.0	0.0
METAL	**TOTAL**	**4.7%**						
Aluminum cans			0.2	0.9	0.5	0.3	0.3	0.7
Bi-metal/tin			0.2	3.6	2.3	1.2	1.4	3.3
Ferrous metal			0.0	6.6	1.6	2.3	0.0	3.4
Non-ferrous metal			0.1	0.8	0.3	0.2	0.1	0.5
White goods			0.0	0.0	0.0	0.0	0.0	0.0
YARD WASTE	**TOTAL**	**3.3%**						
Grass, leaves			0.0	0.0	0.0	0.0	0.0	0.0
Prunings			0.0	16.1	3.3	5.9	0.0	8.0
OTHER ORGANIC	**TOTAL**	**24.5%**						
Food			5.3	17.0	11.9	3.5	9.1	14.7
Tires			0.0	6.4	1.2	2.3	0.0	3.1
Rubber			0.0	0.2	0.0	0.1	0.0	0.1
Wood waste			0.0	6.7	1.5	2.4	0.0	3.4
Wood (press board, etc.)			0.0	1.1	0.3	0.4	0.0	0.6
Ag crop residue			0.0	0.0	0.0	0.0	0.0	0.0
Manure			0.0	0.1	0.0	0.0	0.0	0.0
Disposable diapers			0.0	11.6	5.0	4.2	1.7	8.4
Textiles, leather			2.3	8.7	4.5	2.1	2.8	6.2
OTHER WASTE	**TOTAL**	**10.0%**						
Asphalt			0.0	0.0	0.0	0.0	0.0	0.0
Concrete			0.0	0.0	0.0	0.0	0.0	0.0
Inert solids			0.0	0.8	0.2	0.3	0.0	0.4
Composite materials			0.0	20.0	5.7	6.9	0.2	11.1
HHW matl/container			0.0	0.5	0.1	0.2	0.0	0.2
Misc.			2.5	6.0	4.0	1.1	3.1	4.9
SPECIAL WASTE	**TOTAL**	**0.1%**						
Ash			0.0	0.0	0.0	0.0	0.0	0.0
Medical waste			0.0	0.6	0.1	0.2	0.0	0.3
Auto shredder			0.0	0.0	0.0	0.0	0.0	0.0
Auto bodies			0.0	0.0	0.0	0.0	0.0	0.0
Bulky waste			0.0	0.0	0.0	0.0	0.0	0.0
Other special			0.0	0.0	0.0	0.0	0.0	0.0
TOTAL					100.0			

AVERAGE SAMPLE WEIGHT: 217.5 LBS.

NO. OF SAMPLES: 6

TABLE 3-7 COMMERCIAL WASTE COMPOSITION
CITY OF WEST SACRAMENTO
DATA SUMMARY/STATISTICAL ANALYSIS
(ALL VALUES % BY WEIGHT)

			Min Value	Max Value	Mean	Std Dev	90% Confidence Interval Lower	90% Confidence Interval Upper
PAPER	**TOTAL**	**29.0%**						
Newspaper			0.0	7.5	0.9	1.6	0.3	1.5
Corrugated			0.0	38.7	14.0	10.6	10.2	17.8
High-Grade			0.0	59.9	6.4	13.1	1.7	11.1
Mixed			0.0	19.6	4.2	4.5	2.6	5.8
Cont. Paper			0.0	14.0	3.5	4.0	2.1	5.0
PLASTIC	**TOTAL**	**9.8%**						
PET			0.0	2.1	0.1	0.4	0.0	0.3
HDPE			0.0	2.3	0.2	0.5	0.0	0.4
Pigmented HDPE			0.0	0.8	0.1	0.2	0.0	0.2
PS			0.0	3.3	0.3	0.7	0.0	0.5
Film			0.0	53.0	5.0	11.0	1.0	8.9
Other Plastic			0.0	15.3	4.1	4.3	2.6	5.7
GLASS	**TOTAL**	**2.4%**						
CA redemption			0.0	2.5	0.6	0.7	0.4	0.8
Other recyclable			0.0	1.4	0.1	0.3	0.0	0.3
Non-recyclable			0.0	30.7	1.6	6.5	0.0	4.0
METAL	**TOTAL**	**11.5%**						
Aluminum cans			0.0	0.5	0.1	0.1	0.0	0.1
Bi-metal/tin			0.0	3.0	0.4	0.8	0.1	0.7
Ferrous metal			0.0	32.8	6.5	9.8	3.0	10.0
Non-ferrous metal			0.0	14.2	1.8	3.8	0.4	3.2
White goods			0.0	58.8	2.8	12.5	0.0	7.3
YARD WASTE	**TOTAL**	**7.1%**						
Grass, leaves			0.0	46.9	4.1	10.4	0.4	7.8
Prunings			0.0	29.6	3.0	7.4	0.3	5.7
OTHER ORGANIC	**TOTAL**	**35.2%**						
Food			0.0	58.7	9.5	19.4	2.5	16.4
Tires			0.0	8.7	0.6	1.9	0.0	1.2
Rubber			0.0	12.3	0.9	2.7	0.0	1.9
Wood waste			0.0	74.2	21.7	23.0	13.4	29.9
Wood (press board, etc.)			0.0	10.2	2.0	3.4	0.7	3.2
Ag crop residue			0.0	0.0	0.0	0.0	0.0	0.0
Manure			0.0	0.0	0.0	0.0	0.0	0.0
Disposable diapers			0.0	0.2	0.0	0.0	0.0	0.0
Textiles, leather			0.0	6.0	0.6	1.4	0.0	1.1
OTHER WASTE	**TOTAL**	**3.9%**						
Asphalt			0.0	0.0	0.0	0.0	0.0	0.0
Concrete			0.0	8.3	0.5	1.8	0.0	1.1
Inert solids			0.0	5.4	0.5	1.4	0.0	1.0
Composite materials			0.0	13.5	1.9	3.8	0.6	3.3
HHW matl/container			0.0	0.7	0.0	0.2	0.0	0.1
Misc.			0.0	3.2	0.9	1.0	0.6	1.3
SPECIAL WASTE	**TOTAL**	**1.2%**						
Ash			0.0	0.0	0.0	0.0	0.0	0.0
Medical waste			0.0	0.4	0.0	0.1	0.0	0.1
Auto shredder			0.0	0.0	0.0	0.0	0.0	0.0
Auto bodies			0.0	0.0	0.0	0.0	0.0	0.0
Bulky waste			0.0	23.7	1.1	5.0	0.0	2.9
Other special			0.0	0.0	0.0	0.0	0.0	0.0
TOTAL					100.0			

AVERAGE SAMPLE WEIGHT: 377.0 LBS.

NO. OF SAMPLES: 21

TABLE 3-8 INDUSTRIAL WASTE COMPOSITION
CITY OF WEST SACRAMENTO
DATA SUMMARY/STATISTICAL ANALYSIS
(ALL VALUES % BY WEIGHT)

			Min Value	Max Value	Mean	Std Dev	90% Confidence Interval Lower	90% Confidence Interval Upper
PAPER	**TOTAL**	**26.6%**						
Newspaper			0.0	7.8	**0.9**	2.1	0.0	1.9
Corrugated			0.0	30.2	**8.3**	9.6	3.8	12.9
High-Grade			0.0	10.2	**1.5**	2.8	0.2	2.8
Mixed			0.0	49.9	**11.3**	17.8	2.8	19.7
Cont. Paper			0.0	29.8	**4.6**	7.9	0.9	8.3
PLASTIC	**TOTAL**	**6.3%**						
PET			0.0	4.0	**0.3**	1.1	0.0	0.9
HDPE			0.0	4.0	**0.4**	1.1	0.0	1.0
Pigmented HDPE			0.0	9.8	**0.9**	2.7	0.0	2.1
PS			0.0	1.9	**0.2**	0.5	0.0	0.5
Film			0.0	6.8	**2.7**	2.4	1.5	3.8
Other Plastic			0.0	8.7	**1.8**	2.3	0.8	2.9
GLASS	**TOTAL**	**1.7%**						
CA redemption			0.0	4.4	**0.7**	1.3	0.1	1.2
Other recyclable			0.0	0.2	**0.0**	0.1	0.0	0.0
Non-recyclable			0.0	9.8	**1.0**	2.7	0.0	2.3
METAL	**TOTAL**	**12.1%**						
Aluminum cans			0.0	0.8	**0.2**	0.2	0.1	0.3
Bi-metal/tin			0.0	84.8	**7.2**	23.4	0.0	18.3
Ferrous metal			0.0	18.6	**4.3**	5.6	1.6	6.9
Non-ferrous metal			0.0	1.9	**0.3**	0.5	0.0	0.5
White goods			0.0	2.3	**0.2**	0.6	0.0	0.5
YARD WASTE	**TOTAL**	**3.5%**						
Grass, leaves			0.0	8.8	**0.7**	2.4	0.0	1.9
Prunings			0.0	21.0	**2.7**	5.9	0.0	5.5
OTHER ORGANIC	**TOTAL**	**30.4%**						
Food			0.0	14.8	**2.2**	4.2	0.2	4.3
Tires			0.0	0.0	**0.0**	0.0	0.0	0.0
Rubber			0.0	7.5	**0.8**	2.1	0.0	1.8
Wood waste			0.0	59.6	**21.9**	19.7	12.5	31.2
Wood (press board, etc.)			0.0	24.5	**5.1**	7.3	1.6	8.6
Ag crop residue			0.0	0.0	**0.0**	0.0	0.0	0.0
Manure			0.0	0.5	**0.0**	0.1	0.0	0.1
Disposable diapers			0.0	0.1	**0.0**	0.0	0.0	0.0
Textiles, leather			0.0	2.7	**0.4**	0.8	0.0	0.7
OTHER WASTE	**TOTAL**	**19.3%**						
Asphalt			0.0	15.6	**1.5**	4.3	0.0	3.6
Concrete			0.0	4.8	**0.4**	1.3	0.0	1.0
Inert solids			0.0	72.2	**16.1**	24.2	4.5	27.6
Composite materials			0.0	9.8	**1.1**	2.7	0.0	2.3
HHW matl/container			0.0	0.1	**0.0**	0.0	0.0	0.0
Misc.			0.0	0.7	**0.2**	0.3	0.1	0.4
SPECIAL WASTE	**TOTAL**	**0.1%**						
Ash			0.0	0.0	**0.0**	0.0	0.0	0.0
Medical waste			0.0	0.0	**0.00**	0.0	0.0	0.0
Auto shredder			0.0	0.0	**0.0**	0.0	0.0	0.0
Auto bodies			0.0	0.0	**0.0**	0.0	0.0	0.0
Bulky waste			0.0	1.0	**0.1**	0.3	0.0	0.2
Other special			0.0	0.0	**0.00**	0.0	0.0	0.0
TOTAL					**100.0**			

AVERAGE SAMPLE WEIGHT: 367.2 LBS.

NO. OF SAMPLES: 12

TABLE 3-9 ESTIMATED WASTE DISPOSAL RATE BY WEIGHT
CITY OF WEST SACRAMENTO
DATA SUMMARY

WASTE TYPE	RESIDENTIAL S.F.D. (TONS/YEAR)	RESIDENTIAL M.F.D. (TONS/YEAR)	RESIDENTIAL TOTAL (TONS/YEAR)	COMMERCIAL (TONS/YEAR)	INDUSTRIAL (TONS/YEAR)	SELF-HAUL (TONS/YEAR)	OTHER WASTE (TONS/YEAR)	TOTAL WASTE (TONS/YEAR)	PERCENT WASTE (BY WEIGHT)
PAPER									
Newspaper	1,393	440	1,833	160	58	0	0	2,052	4.4
Corrugated	394	305	699	2,500	534	0	0	3,733	8.0
High-Grade	106	55	161	1,140	98	0	0	1,399	3.0
Mixed	1,122	483	1,605	747	723	0	0	3,075	6.6
Cont. Paper	998	856	1,854	632	295	0	0	2,781	6.0
PLASTIC									
PET	25	10	35	20	22	0	0	77	0.2
HDPE	59	40	99	37	28	0	0	165	0.4
Pigmented HDPE	35	28	63	15	55	0	0	133	0.3
PS	60	31	91	47	14	0	0	152	0.3
Film	268	171	439	689	171	0	0	1,498	3.2
Other Plastic	471	157	628	739	118	0	0	1,485	3.2
GLASS									
CA redemption	148	82	230	106	42	0	0	378	0.8
Other recyclable	654	228	882	26	1	0	0	909	2.0
Non-recyclable	6	1	7	289	67	0	0	363	0.8
METAL									
Aluminum cans	32	25	57	15	13	0	0	85	0.2
Bi-metal/tin	339	118	457	68	459	0	0	964	2.1
Ferrous metal	339	79	418	1,180	273	0	0	1,851	4.0
Non-ferrous metal	45	14	60	319	16	0	0	395	0.9
White goods	0	0	0	500	12	73	0	585	1.3
YARD WASTE									
Grass, leaves	1,883	0	1,883	732	47	0	0	2,662	5.7
Prunings	554	166	720	534	175	0	0	1,429	3.1
Mixed yard waste	0	0	0	0	0	49	0	49	0.1
OTHER ORGANIC									
Food	1,740	599	2,339	1,693	144	0	0	4,176	9.0
Tires	0	61	61	99	0	0	0	161	0.3
Rubber	33	1	34	167	51	0	0	251	0.5
Wood waste	76	78	154	3,873	1,403	0	0	5,430	11.7
Wood (press board, etc.)	58	14	72	353	327	0	0	752	1.6
Ag crop residue	0	0	0	0	0	0	0	0	0.0
Manure	25	1	26	0	3	0	0	28	0.1
Disposable diapers	210	254	464	2	1	0	0	467	1.0
Textiles, leather	167	227	394	100	23	0	0	517	1.1
OTHER WASTE									
Asphalt	2	0	2	0	99	0	0	101	0.2
Concrete	0	0	0	54	26	0	0	109	0.2
Inert solids	577	11	587	94	1,030	0	0	1,712	3.7
Composite materials	8	285	292	344	69	0	0	705	1.5
HHW mat/container	85	4	90	7	1	0	0	97	0.2
Misc.	214	203	417	169	16	1,769	0	2,371	5.1
SPECIAL WASTE									
Ash	93	0	93	0	0	0	0	93	0.2
Medical waste	1	6	7	4	0	0	0	11	0.0
Auto shredder	0	0	0	0	0	0	0	0	0.0
Auto bodies	0	0	0	0	0	0	0	0	0.0
Bulky waste	0	0	0	202	5	85	0	292	0.6
Other special	0	0	0	0	0	0	0	0	0.0
Construction/Demolition	0	0	0	0	0	2,904	0	2,904	6.3
TOTAL	12,218	5,034	17,252	17,606	6,418	4,880	0	46,418	100.0

TABLE 3-10 WASTE DISPOSAL RATE BY VOLUME
CITY OF WEST SACRAMENTO
DATA SUMMARY

WASTE TYPE	TOTAL WASTE (TONS/YEAR)	VOLUME GENERATED (YD^3/YEAR)	PERCENT BY VOLUME
PAPER			
Newspaper	2,052	3,419	4.42
Corrugated	3,733	6,222	8.04
High-Grade	1,399	2,332	3.01
Mixed	3,075	5,125	6.62
Cont. Paper	2,781	4,635	5.99
PLASTIC			
PET	77	129	0.17
HDPE	165	274	0.35
Pigmented HDPE	133	222	0.29
PS	152	253	0.33
Film	1,498	2,497	3.23
Other Plastic	1,485	2,475	3.20
GLASS			
CA redemption	378	630	0.81
Other recyclable	909	1,515	1.96
Non-recyclable	363	605	0.78
METAL			
Aluminum cans	85	142	0.18
Bi-metal/tin	984	1,641	2.12
Ferrous metal	1,851	3,086	3.99
Non-ferrous metal	395	658	0.85
White goods	585	976	1.26
YARD WASTE			
Grass, leaves	2,662	4,437	5.74
Prunings	1,429	2,381	3.08
Mixed yard waste	49	81	0.11
OTHER ORGANIC			
Food	4,176	6,960	9.00
Tires	161	268	0.35
Rubber	251	419	0.54
Wood waste	5,430	9,050	11.70
Wood (press board, etc.)	752	1,253	1.62
Ag crop residue	0	0	0.00
Manure	28	47	0.06
Disposable diapers	467	778	1.01
Textiles, leather	517	861	1.11
OTHER WASTE			
Asphalt	101	168	0.22
Concrete	109	182	0.24
Inert solids	1,712	2,853	3.69
Composite materials	705	1,175	1.52
HHW matl/container	97	162	0.21
Misc.	2,371	3,951	5.11
SPECIAL WASTE			
Ash	93	155	0.20
Medical waste	11	19	0.02
Auto shredder	0	0	0.00
Auto bodies	0	0	0.00
Bulky waste	292	487	0.63
Other special	0	0	0.00
Construction/Demolition	2,904	4,839	6.26
TOTAL	**46,418**	**77,363**	**100.0**

3.3.2.2. Seasonal Variations

Seasonal variations in monthly refuse disposal quantities were tabulated for each jurisdiction in Yolo County. This included waste generated from residential, commercial, and industrial waste sources. This information was used to provide an indication on the variability of the waste stream and regional basis for each of the jurisdictions in the County.

For the residential waste stream, peak waste generation occurs during the period of March through September.

For the commercial / industrial waste stream, monthly waste generation rates are highest during the period of March through November with decreases in the quantity of waste disposed during December, January, and February.

Waste generated from agricultural sources are greatest during the period from July through February. Companies processing tomato products generate higher quantities of waste during the period of July through September.

3.4 WASTE DIVERSION CHARACTERIZATION

The Waste Diversion Characterization study provides estimates of the composition and quantity of solid waste diverted (recycled, composted, transformed) during the year 1990. The quantity of waste which is diverted is applied to the overall waste diversion goals of 25 and 50 percent. Only those wastes which are normally disposed of at permitted solid waste disposal facilities are included. Waste diverted to transformation (incineration) facilities is not applicable for the short-term 25 percent goal, but may account for up to 10 percent of the medium-term 50 percent diversion goal.

3.4.1. Project Approach

The quantity of waste diverted through source reduction, recycling, composting, and transformation was estimated through a combination of available waste diversion data and recycling surveys. Recyclable material brokers, certified recycling centers, major employers, grocery operations, diaper services, and tire retailers were surveyed to identify existing waste diversion. The quantity of waste diverted through certified recycling centers was based on information provided by the Department of Conservation - Division of Recycling. Information with respect to City sponsored recycling programs were obtained through contract haulers servicing the area or by formal surveys.

The quantity of wood and yard waste diverted at YCCL was estimated through available tonnage records and a survey of self-haul sources. Clean loads of wood and yard waste delivered to YCCL are currently diverted and processed as wood fuel. The total quantity of waste processed at the facility during 1990 was approximately 7,000 tons. During the period of April 1 through June 1, 1991, YCCL personnel surveyed 478 individuals hauling wood and yard waste to the recovery facility to determine the jurisdiction from which the waste originated.

The quantity of inert waste diverted for landfill construction purposes was estimated through available YCCL tonnage data. The quantity of inert waste allocated to each jurisdiction was based on the jurisdiction's population.

The quantity of waste diverted by the use of diaper services was estimated through a phone survey of diaper service companies servicing the study jurisdictions. Based on the number of clients per week and the average number of diapers used per client, the quantity of waste diverted through this source reduction activity was estimated.

Estimates of waste diversion for West Sacramento are summarized in Table 3-11. Table 3-12 presents estimates of the total generated and percent diversion.

Table 3-11. City of West Sacramento Waste Diversion

Waste Type	Source Reduction (TPY)	Recycling Residential (TPY)	Recycling Commercial (TPY)	Transformation (TPY)
Newspaper			2,523.0	
Cardboard			226.0	
High-grade			206.0	
Mixed Paper			6.0	
PET		12.4		
Other Plastic			1.0	
CA Glass		497.6	81.3	
Aluminum		443.6	69.1	
Diapers	35.8			
Food			6.0	
Tires				85.05
Inert Waste			7,995.0	
Wood Waste			39.9	2,317.3
Total	35.8	953.6	11,153.3	2,402.4

Table 3-12 **TOTAL WASTE GENERATION SUMMARY CITY OF WEST SACRAMENTO**

WASTE TYPE	WASTE DISPOSED (TONS/YEAR)	WASTE DIVERTED (TONS/YEAR)	TOTAL GENERATED (TONS/YEAR)	PERCENT DIVERSION
PAPER				
Newspaper	2,052	2523.0	4574.6	4.14
Corrugated	3,733	226.0	3959.2	0.37
High-Grade	1,399	206.0	1605.1	0.34
Mixed	3,075	6.0	3081.0	0.01
Cont. Paper	2,781	0.0	2780.9	0.00
PLASTIC				
PET	77	12.4	89.5	0.02
HDPE	165	0.0	164.7	0.00
Pigmented HDPE	133	0.0	133.1	0.00
PS	152	0.0	151.8	0.00
Film	1,498	0.0	1498.4	0.00
Other Plastic	1,485	1.0	1485.8	0.00
GLASS				
CA redemption	378	578.9	957.0	0.95
Other recyclable	909	0.0	909.0	0.00
Non-recyclable	363	0.0	363.1	0.00
METAL				
Aluminum cans	85	512.7	598.2	0.84
Bi-metal/tin	984	0.0	984.3	0.00
Ferrous metal	1,851	0.0	1851.4	0.00
Non-ferrous metal	395	0.0	394.8	0.00
White goods	585	0.0	585.3	0.00
YARD WASTE				
Grass, leaves	2,662	0.0	2662.5	0.00
Prunings	1,429	0.0	1428.9	0.00
Mixed yard waste	49	0.0	48.8	0.00
OTHER ORGANIC				
Food	4,176	6.0	4182.1	0.01
Tires	161	85.1	245.6	0.14
Rubber	251	0.0	251.4	0.00
Wood waste	5,430	2357.2	7787.5	3.87
Wood (press board, etc.)	752	0.0	751.7	0.00
Ag crop residue	0	0.0	0.0	0.00
Manure	28	0.0	28.2	0.00
Disposable diapers	467	35.8	502.4	0.06
Textiles, leather	517	0.0	516.8	0.00
OTHER WASTE				
Asphalt	101	0.0	100.9	0.00
Concrete	109	0.0	109.2	0.00
Inert solids	1,712	7995.0	9706.5	13.11
Composite materials	705	0.0	705.1	0.00
HHW matl/container	97	0.0	97.1	0.00
Misc.	2,371	0.0	2370.7	0.00
SPECIAL WASTE				
Ash	93	0.0	93.2	0.00
Medical waste	11	0.0	11.3	0.00
Auto shredder	0	0.0	0.0	0.00
Auto bodies	0	0.0	0.0	0.00
Bulky waste	292	0.0	292.2	0.00
Other special	0	0.0	0.0	0.00
Construction/Demolition	2,904	0.0	2903.6	0.00
TOTAL	**46,418**	**14,545**	**60,963**	**23.9**

3.5 WASTE GENERATION PROJECTIONS

The waste generation projections are based on population growth and estimates of tons of waste generated per capita. Waste generated per capita includes waste disposed of and diverted by residential, commercial, industrial, and other waste sources.

Projections for population growth were provided by City and County Planning Departments and are summarized in Table 3-13. The quantity of waste generated per person annually, tons per capita (TPC), is based on the quantity of waste generated during 1990. It was assumed that the per capita generation rate increases annually at a rate of 1.5 percent.

Table 3-13. Population Projections

Jurisdiction	Population (1991)	Population (1995)	Annual Growth Rate (1991-1995) (%)	Population (2010)	Annual Growth Rate (1995-2010) (%)
West Sacramento	28,898	32,000	3.2	67,000	5.1

Tables 3-14 through 3-18 present 15 year waste generation, disposal, and diversion projections under current waste management conditions and anticipated disposal and diversion projections with SRRE implementation.

TABLE 3–14. WASTE GENERATION PROJECTIONS
CITY OF WEST SACRAMENTO

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
PAPER																
Newspaper	4,575	4,792	5,019	5,258	5,507	5,769	6,154	6,565	7,003	7,471	7,970	8,502	9,069	9,675	10,321	11,010
Corrugated	3,959	4,147	4,344	4,550	4,766	4,993	5,326	5,682	6,061	6,466	6,897	7,358	7,849	8,373	8,932	9,529
High–Grade	1,605	1,681	1,761	1,845	1,932	2,024	2,159	2,303	2,457	2,621	2,796	2,983	3,182	3,394	3,621	3,863
Mixed	3,081	3,227	3,381	3,541	3,709	3,885	4,145	4,421	4,717	5,031	5,367	5,726	6,108	6,516	6,951	7,415
Cont. Paper	2,781	2,913	3,051	3,196	3,348	3,507	3,741	3,991	4,257	4,541	4,845	5,168	5,513	5,881	6,274	6,693
PLASTIC																
PET	90	94	98	103	108	113	120	128	137	146	156	166	178	189	202	216
HDPE	165	172	181	189	198	208	222	236	252	269	287	306	326	348	371	396
Pigmented HDPE	133	139	146	153	160	168	179	191	204	217	232	247	264	282	300	320
PS	152	159	167	175	183	191	204	218	232	248	265	282	301	321	343	365
Film	1,498	1,570	1,644	1,722	1,804	1,890	2,016	2,150	2,294	2,447	2,610	2,785	2,971	3,169	3,381	3,606
Other Plastic	1,486	1,556	1,630	1,708	1,789	1,874	1,999	2,132	2,275	2,426	2,588	2,761	2,946	3,142	3,352	3,576
GLASS																
CA redemption	957	1,003	1,050	1,100	1,152	1,207	1,287	1,373	1,465	1,563	1,667	1,779	1,897	2,024	2,159	2,303
Other recyclable	909	952	997	1,045	1,094	1,146	1,223	1,304	1,391	1,484	1,584	1,689	1,802	1,922	2,051	2,188
Non–recyclable	363	380	398	417	437	458	488	521	556	593	632	675	720	768	819	874
METAL																
Aluminum cans	598	627	656	687	720	754	805	858	916	977	1,042	1,112	1,186	1,265	1,350	1,440
Bi–metal/tin	984	1,031	1,080	1,131	1,185	1,241	1,324	1,413	1,507	1,607	1,715	1,829	1,951	2,082	2,221	2,369
Ferrous metal	1,851	1,939	2,031	2,128	2,229	2,335	2,491	2,657	2,834	3,024	3,225	3,441	3,670	3,915	4,177	4,456
Non–ferrous metal	395	414	433	454	475	498	531	566	604	645	688	734	783	835	891	950
White goods	585	613	642	673	705	738	787	840	896	956	1,020	1,088	1,160	1,238	1,320	1,409
YARD WASTE																
Grass, leaves	2,662	2,789	2,921	3,060	3,205	3,358	3,582	3,821	4,076	4,348	4,638	4,948	5,278	5,631	6,007	6,408
Prunings	1,429	1,497	1,568	1,642	1,720	1,802	1,922	2,051	2,187	2,333	2,489	2,655	2,833	3,022	3,224	3,439
Mixed yard waste	49	51	54	56	59	62	66	70	75	80	85	91	97	103	110	117
OTHER ORGANIC																
Food	4,182	4,381	4,589	4,807	5,035	5,274	5,626	6,001	6,402	6,830	7,286	7,772	8,291	8,844	9,435	10,065
Tires	246	257	270	282	296	310	330	352	376	401	428	456	487	519	554	591
Rubber	251	263	276	289	303	317	338	361	385	410	438	467	498	532	567	605
Wood waste	7,788	8,157	8,545	8,950	9,375	9,820	10,476	11,175	11,922	12,718	13,567	14,472	15,439	16,469	17,569	18,742
Wood (press board, etc.)	752	787	825	864	905	948	1,011	1,079	1,151	1,228	1,310	1,397	1,490	1,590	1,696	1,809
Ag crop residue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manure	28	30	31	32	34	36	38	40	43	46	49	52	56	60	64	68
Disposable diapers	502	526	551	577	605	634	676	721	769	820	875	934	996	1,062	1,133	1,209
Textiles, leather	517	541	567	594	622	652	695	742	791	844	900	960	1,025	1,093	1,166	1,244
OTHER WASTE																
Asphalt	101	106	111	116	121	127	136	145	154	165	176	188	200	213	228	243
Concrete	109	114	120	126	131	138	147	157	167	178	190	203	216	231	246	263
Inert solids	9,707	10,168	10,650	11,156	11,686	12,240	13,058	13,929	14,859	15,851	16,910	18,039	19,243	20,528	21,899	23,361
Composite materials	705	739	774	810	849	889	949	1,012	1,079	1,151	1,228	1,310	1,398	1,491	1,591	1,697
HHW matl/container	97	102	107	112	117	122	131	139	149	159	169	180	192	205	219	234
Misc.	2,371	2,483	2,601	2,725	2,854	2,990	3,189	3,402	3,629	3,872	4,130	4,406	4,700	5,014	5,349	5,706
SPECIAL WASTE																
Ash	93	98	102	107	112	117	125	134	143	152	162	173	185	197	210	224
Medical waste	11	12	12	13	14	14	15	16	17	18	20	21	22	24	26	27
Auto shredder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Auto bodies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulky waste	292	306	321	336	352	369	393	419	447	477	509	543	579	618	659	703
Other special	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction/Demolition	2,904	3,042	3,186	3,337	3,496	3,662	3,906	4,167	4,445	4,742	5,058	5,396	5,756	6,141	6,551	6,988
TOTAL	60,963	63,859	66,889	70,066	73,393	76,877	82,011	87,484	93,327	99,557	106,204	113,294	120,858	128,927	137,537	146,719

TABLE 3–16. CURRENT WASTE DISPOSAL PROJECTIONS
CITY OF WEST SACRAMENTO

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
PAPER																
Newspaper	2,052	2,149	2,251	2,358	2,470	2,587	2,760	2,944	3,141	3,350	3,574	3,813	4,067	4,339	4,629	4,938
Corrugated	3,733	3,911	4,096	4,291	4,494	4,708	5,022	5,357	5,715	6,097	6,504	6,938	7,401	7,895	8,422	8,985
High–Grade	1,399	1,466	1,535	1,608	1,684	1,764	1,882	2,008	2,142	2,285	2,437	2,600	2,774	2,959	3,156	3,367
Mixed	3,075	3,221	3,374	3,534	3,702	3,878	4,137	4,413	4,707	5,022	5,357	5,715	6,096	6,503	6,937	7,401
Cont. Paper	2,781	2,913	3,051	3,196	3,348	3,507	3,741	3,991	4,257	4,541	4,845	5,168	5,513	5,881	6,274	6,693
PLASTIC																
PET	77	81	85	89	93	97	104	111	118	126	134	143	153	163	174	186
HDPE	165	172	181	189	198	208	222	236	252	269	287	306	326	348	371	396
Pigmented HDPE	133	139	146	153	160	168	179	191	204	217	232	247	264	282	300	320
PS	152	159	167	175	183	191	204	218	232	248	265	282	301	321	343	365
Film	1,498	1,570	1,644	1,722	1,804	1,890	2,016	2,150	2,294	2,447	2,610	2,785	2,971	3,169	3,381	3,606
Other Plastic	1,485	1,555	1,629	1,707	1,788	1,872	1,997	2,131	2,273	2,425	2,587	2,759	2,944	3,140	3,350	3,573
GLASS																
CA redemption	378	396	415	435	455	477	509	543	579	618	659	703	750	800	853	910
Other recyclable	909	952	997	1,045	1,094	1,146	1,223	1,304	1,391	1,484	1,583	1,689	1,802	1,922	2,051	2,188
Non–recyclable	363	380	398	417	437	458	488	521	556	593	632	675	720	768	819	874
METAL																
Aluminum cans	85	90	94	98	103	108	115	123	131	140	149	159	169	181	193	206
Bi–metal/tin	984	1,031	1,080	1,131	1,185	1,241	1,324	1,413	1,507	1,607	1,715	1,829	1,951	2,082	2,221	2,369
Ferrous metal	1,851	1,939	2,031	2,128	2,229	2,335	2,491	2,657	2,834	3,024	3,225	3,441	3,670	3,915	4,177	4,456
Non–ferrous metal	395	414	433	454	475	498	531	566	604	645	688	734	783	835	891	950
White goods	585	613	642	673	705	738	787	840	896	956	1,020	1,088	1,160	1,238	1,320	1,409
YARD WASTE																
Grass, leaves	2,662	2,789	2,921	3,060	3,205	3,358	3,582	3,821	4,076	4,348	4,638	4,948	5,278	5,631	6,007	6,408
Prunings	1,429	1,497	1,568	1,642	1,720	1,802	1,922	2,050	2,187	2,333	2,489	2,655	2,833	3,022	3,224	3,439
Mixed yard waste	49	51	54	56	59	62	66	70	75	80	85	91	97	103	110	117
OTHER ORGANIC																
Food	4,176	4,374	4,582	4,800	5,028	5,266	5,618	5,993	6,393	6,820	7,275	7,761	8,279	8,832	9,422	10,051
Tires	161	168	176	185	193	202	216	230	246	262	280	298	318	340	362	386
Rubber	251	263	276	289	303	317	338	361	385	410	438	467	498	532	567	605
Wood waste	5,430	5,688	5,958	6,241	6,537	6,848	7,305	7,793	8,313	8,868	9,460	10,092	10,765	11,484	12,251	13,069
Wood (press board, etc.)	752	787	825	864	905	948	1,011	1,079	1,151	1,228	1,310	1,397	1,490	1,590	1,696	1,809
Ag crop residue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manure	28	30	31	32	34	36	38	40	43	46	49	52	56	60	64	68
Disposable diapers	467	489	512	536	562	588	628	670	714	762	813	867	925	987	1,053	1,123
Textiles, leather	517	541	567	594	622	652	695	742	791	844	900	960	1,025	1,093	1,166	1,244
OTHER WASTE																
Asphalt	101	106	111	116	121	127	136	145	154	165	176	188	200	213	228	243
Concrete	109	114	120	126	131	138	147	157	167	178	190	203	216	231	246	263
Inert solids	1,712	1,793	1,878	1,967	2,060	2,158	2,302	2,456	2,620	2,795	2,982	3,181	3,393	3,620	3,861	4,119
Composite materials	705	739	774	810	849	889	949	1,012	1,079	1,151	1,228	1,310	1,398	1,491	1,591	1,697
HHW matl/container	97	102	107	112	117	122	131	139	149	159	169	180	192	205	219	234
Misc.	2,371	2,483	2,601	2,725	2,854	2,990	3,189	3,402	3,629	3,872	4,130	4,406	4,700	5,014	5,349	5,706
SPECIAL WASTE																
Ash	93	98	102	107	112	117	125	134	143	152	162	173	185	197	210	224
Medical waste	11	12	12	13	14	14	15	16	17	18	20	21	22	24	26	27
Auto shredder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Auto bodies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulky waste	292	306	321	336	352	369	393	419	447	477	509	543	579	618	659	703
Other special	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* Construction/Demolition	2,904	3,042	3,186	3,337	3,496	3,662	3,906	4,167	4,445	4,742	5,058	5,396	5,756	6,141	6,551	6,988
TOTAL	46,418	48,623	50,930	53,349	55,882	58,535	62,444	66,611	71,060	75,804	80,865	86,263	92,023	98,166	104,722	111,714

TABLE 3–15. CURRENT WASTE DIVERSION PROJECTIONS
CITY OF WEST SACRAMENTO

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
PAPER																
Newspaper	2,523	2,643	2,768	2,900	3,037	3,182	3,394	3,621	3,862	4,120	4,395	4,689	5,002	5,336	5,692	6,072
Corrugated	226	237	248	260	272	285	304	324	346	369	394	420	448	478	510	544
High–Grade	206	216	226	237	248	260	277	296	315	336	359	383	408	436	465	496
Mixed	6	6	7	7	7	8	8	9	9	10	10	11	12	13	14	14
Cont. Paper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PLASTIC																
PET	12	13	14	14	15	16	17	18	19	20	22	23	25	26	28	30
HDPE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pigmented HDPE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Film	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Plastic	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
GLASS																
CA redemption	579	606	635	665	697	730	779	831	886	945	1,008	1,076	1,148	1,224	1,306	1,393
Other recyclable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non–recyclable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
METAL																
Aluminum cans	513	537	563	589	617	647	690	736	785	837	893	953	1,016	1,084	1,157	1,234
Bi–metal/tin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ferrous metal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non–ferrous metal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White goods	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YARD WASTE																
Grass, leaves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prunings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mixed yard waste	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER ORGANIC																
Food	6	6	7	7	7	8	8	9	9	10	10	11	12	13	14	14
Tires	85	89	93	98	102	107	114	122	130	139	148	158	169	180	192	205
Rubber	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wood waste	2,357	2,469	2,586	2,709	2,838	2,973	3,171	3,383	3,609	3,849	4,106	4,381	4,673	4,985	5,318	5,673
Wood (press board, etc.)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag crop residue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Disposable diapers	36	38	39	41	43	45	48	51	55	58	62	67	71	76	81	86
Textiles, leather	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER WASTE																
Asphalt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Inert solids	7,995	8,375	8,772	9,189	9,625	10,082	10,755	11,473	12,239	13,056	13,928	14,858	15,850	16,908	18,037	19,241
Composite materials	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HHW matl/container	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Misc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SPECIAL WASTE																
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Medical waste	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Auto shredder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Auto bodies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulky waste	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other special	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction/Demolition	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	14,545	15,236	15,959	16,717	17,510	18,342	19,567	20,873	22,266	23,753	25,339	27,030	28,835	30,760	32,814	35,005

TABLE 3–17. WASTE DIVERSION THROUGH SRRE IMPLEMENTATION
CITY OF WEST SACRAMENTO

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
PAPER																
Newspaper	2,523	2,643	3,032	3,830	4,365	4,942	5,366	5,769	6,203	6,651	7,132	7,608	8,116	8,657	9,236	9,852
Corrugated	226	237	581	957	1,368	1,816	2,345	3,024	3,784	4,433	5,152	5,496	5,863	6,254	6,672	7,117
High–Grade	206	216	362	521	695	884	1,110	1,397	1,718	1,995	2,300	2,454	2,618	2,792	2,979	3,178
Mixed	6	6	136	277	432	601	799	1,156	1,558	1,892	2,265	2,416	2,577	2,749	2,933	3,129
Cont. Paper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PLASTIC																
PET	12	13	19	30	38	46	52	67	84	99	115	122	130	139	148	158
HDPE	0	0	11	36	52	70	81	105	131	154	179	190	203	217	231	247
Pigmented HDPE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Film	0	0	11	24	38	53	70	335	635	875	1,144	1,220	1,301	1,388	1,481	1,580
Other Plastic	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
GLASS																
CA redemption	579	606	665	777	858	946	1,027	1,104	1,187	1,272	1,364	1,455	1,553	1,656	1,767	1,885
Other recyclable	0	0	115	424	603	799	889	948	1,012	1,080	1,152	1,229	1,311	1,398	1,492	1,591
Non–recyclable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
METAL																
Aluminum cans	513	537	570	623	666	713	768	827	890	955	1,025	1,093	1,166	1,244	1,327	1,416
Bi–metal/tin	0	0	79	245	361	487	582	748	933	1,092	1,268	1,352	1,443	1,539	1,642	1,752
Ferrous metal	0	0	94	198	311	434	578	963	1,396	1,751	2,147	2,291	2,444	2,607	2,781	2,967
Non–ferrous metal	0	0	18	39	61	85	113	207	313	400	496	530	565	603	643	686
White goods	0	0	128	605	634	664	709	756	806	860	918	979	1,044	1,114	1,188	1,268
YARD WASTE																
Grass, leaves	0	0	0	247	921	1,532	1,996	2,209	2,322	2,488	2,674	2,853	3,043	3,246	3,463	3,694
Prunings	0	0	0	73	319	601	850	925	972	1,034	1,109	1,183	1,262	1,346	1,436	1,532
Mixed yard waste	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER ORGANIC																
Food	6	6	7	7	7	8	8	9	9	10	10	11	12	13	14	14
Tires	85	89	93	98	102	107	114	122	130	139	148	158	169	180	192	205
Rubber	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wood waste	2,357	2,469	2,586	2,709	2,838	2,973	3,171	4,838	6,714	8,266	9,996	10,664	11,376	12,135	12,945	13,810
Wood (press board, etc.)	0	0	0	0	0	0	0	121	259	369	492	524	559	597	637	679
Ag crop residue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Disposable diapers	36	38	39	41	43	45	48	51	55	58	62	67	71	76	81	86
Textiles, leather	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER WASTE																
Asphalt	0	0	22	80	84	88	94	100	107	114	121	129	138	147	157	167
Concrete	0	0	24	88	92	96	103	110	117	125	133	142	152	162	172	184
Inert solids	7,995	8,375	8,772	9,189	9,625	10,082	10,755	11,473	12,239	13,056	13,928	14,858	15,850	16,908	18,037	19,241
Composite materials	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HHW matl/container	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Misc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SPECIAL WASTE																
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Medical waste	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Auto shredder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Auto bodies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulky waste	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other special	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction/Demolition	0	0	462	1,451	2,279	2,388	2,501	2,620	2,795	2,981	3,180	3,393	3,619	3,861	4,119	4,394
TOTAL	14,545	15,236	17,828	22,569	26,794	30,459	34,131	39,986	46,370	52,149	58,512	62,418	66,585	71,030	75,774	80,833

TABLE 3–18. WASTE DISPOSAL THROUGH SRRE IMPLEMENTATION
CITY OF WEST SACRAMENTO

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
PAPER																
Newspaper	2,052	2,149	1,987	1,428	1,143	827	788	795	800	820	838	894	954	1,017	1,085	1,158
Corrugated	3,733	3,911	3,763	3,593	3,398	3,177	2,981	2,657	2,277	2,033	1,746	1,862	1,987	2,119	2,261	2,412
High–Grade	1,399	1,466	1,399	1,323	1,237	1,140	1,049	906	739	627	496	529	564	602	642	685
Mixed	3,075	3,221	3,245	3,264	3,277	3,284	3,345	3,265	3,159	3,139	3,103	3,310	3,531	3,767	4,018	4,287
Cont. Paper	2,781	2,913	3,051	3,196	3,348	3,507	3,741	3,991	4,257	4,541	4,845	5,168	5,513	5,881	6,274	6,693
PLASTIC																
PET	77	81	79	73	70	67	68	61	53	48	41	44	47	50	54	57
HDPE	165	172	170	153	146	138	140	132	121	115	108	116	123	132	140	150
Pigmented HDPE	133	139	146	153	160	168	179	191	204	217	232	247	264	282	300	320
PS	152	159	167	175	183	191	204	218	232	248	265	282	301	321	343	365
Film	1,498	1,570	1,633	1,698	1,766	1,837	1,946	1,815	1,659	1,572	1,467	1,565	1,669	1,781	1,899	2,026
Other Plastic	1,485	1,555	1,629	1,707	1,788	1,872	1,997	2,131	2,273	2,425	2,587	2,759	2,944	3,140	3,350	3,573
GLASS																
CA redemption	378	396	385	323	294	261	261	270	278	290	303	323	345	368	392	418
Other recyclable	909	952	882	621	491	348	334	356	380	405	432	460	491	524	559	596
Non–recyclable	363	380	398	417	437	458	488	521	556	593	632	675	720	768	819	874
METAL																
Aluminum cans	85	90	86	65	54	42	36	31	26	22	17	19	20	21	22	24
Bi–metal/tin	984	1,031	1,001	886	824	754	743	665	574	515	447	477	509	543	579	617
Ferrous metal	1,851	1,939	1,937	1,930	1,918	1,901	1,912	1,694	1,439	1,273	1,078	1,150	1,227	1,309	1,396	1,489
Non–ferrous metal	395	414	415	415	415	413	418	360	291	245	191	204	218	232	248	264
White goods	585	613	514	67	70	74	79	84	90	96	102	109	116	124	132	141
YARD WASTE																
Grass, leaves	2,662	2,789	2,921	2,813	2,284	1,825	1,586	1,612	1,754	1,860	1,964	2,095	2,235	2,384	2,544	2,713
Prunings	1,429	1,497	1,568	1,570	1,401	1,201	1,072	1,125	1,216	1,300	1,380	1,472	1,571	1,676	1,788	1,907
Mixed yard waste	49	51	54	56	59	62	66	70	75	80	85	91	97	103	110	117
OTHER ORGANIC																
Food	4,176	4,374	4,582	4,800	5,028	5,266	5,618	5,993	6,393	6,820	7,275	7,761	8,279	8,832	9,422	10,051
Tires	161	168	176	185	193	202	216	230	246	262	280	298	318	340	362	386
Rubber	251	263	276	289	303	317	338	361	385	410	438	467	498	532	567	605
Wood waste	5,430	5,688	5,958	6,241	6,537	6,848	7,305	6,337	5,208	4,451	3,570	3,809	4,063	4,334	4,624	4,932
Wood (press board, etc.)	752	787	825	864	905	948	1,011	957	892	859	818	872	931	993	1,059	1,130
Ag crop residue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manure	28	30	31	32	34	36	38	40	43	46	49	52	56	60	64	68
Disposable diapers	467	489	512	536	562	588	628	670	714	762	813	867	925	987	1,053	1,123
Textiles, leather	517	541	567	594	622	652	695	742	791	844	900	960	1,025	1,093	1,166	1,244
OTHER WASTE																
Asphalt	101	106	89	36	38	40	42	45	48	51	55	58	62	66	71	75
Concrete	109	114	96	38	39	41	44	47	50	54	57	61	65	69	74	79
Inert solids	1,712	1,793	1,878	1,967	2,061	2,158	2,303	2,456	2,620	2,795	2,982	3,181	3,393	3,620	3,861	4,119
Composite materials	705	739	774	810	849	889	949	1,012	1,079	1,151	1,228	1,310	1,398	1,491	1,591	1,697
HHW matl/container	97	102	107	112	117	122	131	139	149	159	169	180	192	205	219	234
Misc.	2,371	2,483	2,601	2,725	2,854	2,990	3,189	3,402	3,629	3,872	4,130	4,406	4,700	5,014	5,349	5,706
SPECIAL WASTE																
Ash	93	98	102	107	112	117	125	134	143	152	162	173	185	197	210	224
Medical waste	11	12	12	13	14	14	15	16	17	18	20	21	22	24	26	27
Auto shredder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Auto bodies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulky waste	292	306	321	336	352	369	393	419	447	477	509	543	579	618	659	703
Other special	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction/Demolition	2,904	3,042	2,724	1,886	1,216	1,274	1,405	1,547	1,650	1,760	1,878	2,003	2,137	2,280	2,432	2,594
TOTAL	46,418	48,623	49,061	47,497	46,598	46,418	47,880	47,498	46,957	47,408	47,692	50,876	54,273	57,896	61,763	65,886

3.6 WASTE TYPE DESCRIPTIONS

PAPER

Newspaper: Post consumer newspaper and shredded newsprint, including newspaper inserts such as magazine, comics, etc.

Corrugated paper: Paperboard containers fabricated from two layers of kraft linerboard sandwiched around a corrugated medium. Kraft paper was also included in this category.

High-Grade paper: Continuous form computer paper, and white and colored ledger.

Mixed paper: All other paper including envelopes, magazine, clipboard, paper packaging, etc.

Contaminated paper: Various grades of paper which had been contaminated with food waste or had a high moisture content.

PLASTIC

HDPE (high-density polyethylene) containers: Nonpigmented plastic containers for milk, water, etc.

PET (polyethylene terephthalate) containers: Beverage containers.

Film plastics: Trash bags, grocery bags, food bags, plastic food wrap, and sheet plastic.

PS (polystyrene) plastics: Food, beverage, packaging, other product containers made of expanded and nonexpanded polystyrene.

Other plastics: Liquid containers and dispensers, food containers, disposable utensils and plates, molded products, extruded pipes, etc.

GLASS

California redemption containers: Glass bottles labeled "California Redemption Value".

Other recyclable containers: All food, beverage, and other glass containers with the exception of California redemption containers.

Other glass: Nonrecyclable glass products such as plate glass, light bulbs, mirrors, and other glass materials.

METALS

Aluminum cans: Redemption and nonredemption aluminum cans; soda, beer, and food containers.

Tin cans: Containers for food, beverage, or other products which include tin.

Ferrous metals: Metal material with magnetic properties.

Nonferrous: Nonmagnetic metals such as scrap aluminum, copper tubing, brass fixtures, aluminum furniture, aluminum foil, etc.

White goods: Large appliances such as dishwashers, hot water heaters, stoves, washer, dryers,etc.

YARD WASTE

Grass / Leaves: Grass clippings, leaves, and other organic waste resulting from landscaping activities.

Pruning: Shrub and brush pruning, small tree clippings (natural wood, up to a diameter of 8 inches), and other landscaping and gardening waste.

Mixed yard waste: Yard waste resulting from the separate yard waste collection.

OTHER ORGANIC MATERIALS

Food waste: Animal, fruit, or vegetable wastes resulting from the preparation, cooking, or handling of food.

Tires / Rubber products: Automobile tires, scrap rubber from manufacturing operations, rubber mats, etc.

Wood waste: Pallets, scrap wood, and dimensional lumber.

Wood Waste (press board, etc.): Wood which has been treated. Materials included particle board, press board, plywood, and wood which had been painted.

Agricultural crop residue: Agricultural crop residue such as rice hulls and tomato by-products from farming or food processing operations.

Manure: Animal excrement.

Disposable Diapers: All diapers consisting of plastic and paper intended for one-time-only use.

Textiles / Leather: Discarded clothing and waste from garment, rug, and leather product manufacturers.

OTHER WASTE

Asphalt waste: A tar-like substance used in paving applications.

Concrete waste: Building material made of cement, sand, gravel, and similar materials.

Other inert solids: Ceramic, rock, brick, gravel, soil, sheet rock, and other similar materials.

Composite materials: Products consisting of several different materials such as metal and plastic. Products characterized as composite materials category included TV sets, food processors, etc.

Household Hazardous Waste (HHW): Waste resulting from products purchased by the general public for household use which may pose a hazard to human health or the environment. Examples of HHW include paint, pesticides, cleaners, batteries, petroleum products, and other similar household products. Recorded weights of HHW included the weight of the containers.

Miscellaneous: A mixture of organic and inorganic materials less than two inches in diameter not easily sorted out for characterization. Contaminated waste paper from fast restaurants was also included.

SPECIAL WASTE

Ash: Waste resulting from the combustion of organic materials.

Medical Waste: Medical waste from the residential and commercial sectors included hypodermic needles, syringes, prescription drugs, bandages, etc. Medical waste disposed of by UCD during the waste characterization study included animal parts, needles, bandages, and vials of blood.

Auto shredder waste: Waste resulting from the shedding of automobiles, trucks, discarded appliances, etc., consisting of a combination of metals, plastics, glass, paints, and other non metallic materials.

Auto bodies: Discarded automobiles and trucks.

Bulky Items: Items such as discarded furniture and mattresses.

Construction / Demolition debris: Construction and demolition debris identified as being

generated from self-haul sources consisted largely of wood, asphalt, inert solids, and metals.

SECTION 4

SOURCE REDUCTION COMPONENT

Source reduction is defined by the California Integrated Waste Management Board as "any action which causes a net reduction in the generation of solid waste. Source reduction includes, but is not limited to, reducing the use of nonrecyclable materials, replacing disposable materials and products with reusable materials and products, reducing packaging, reducing the amount of yard wastes generated, establishing garbage rate structures with incentives to reduce the amount of wastes that generators produce, and increasing the efficiency of the use of paper, cardboard, glass, metal, plastic, and other materials. Source reduction does not include steps taken after the material becomes solid waste or actions which would impact air or water resources in lieu of land, including, but not limited to, transformation." Recycling, composting, and incineration are therefore addressed in separate components.

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

Because source reduction is not a formal waste management practice and materials not used are not weighed or otherwise regularly quantified, it is difficult to assess the actual impact that source reduction programs will have on the waste stream. However, source reduction may be practiced at the business and household levels through selective buying patterns and extending the utilization of products and materials. Because it requires changing attitudes and behavioral patterns, a major effort must focus on education. Source reduction programs also require research, financial incentives and disincentives, regulations, and technological developments.

The Waste Generation Study for The City of West Sacramento identified target materials available for source reduction programs as: yard waste, wood, textiles/leathers, high-grade paper, and appliances. All types of yard waste can be removed from the residential waste stream by backyard composting. The useable life of textiles, leather products, and appliances can be extended by donating them to charities and thrift shops. Extended use of high-grade paper is achieved in offices through the use of waste paper as telephone message pads and scratch paper, the use of double-sided copies, and the use of routing slips rather than memos.

4.1 GOALS AND OBJECTIVES

Source reduction is a critical key in the overall integrated waste management plan. By taking steps to prevent materials from entering the waste stream, the City can avoid costly programs to recycle, compost, or transport and dispose of the material. The City must develop and implement source reduction programs which work well at the municipal level, while providing support to the activities which can best be accomplished on a larger scale at the State and Federal levels. In light of this broad goal, the City of West Sacramento will adopt the following broad objectives outlined in the State regulations for accomplishment during the short- and medium-term planning periods:

- Educating residents and companies regarding the concept of source reduction;
- Devising methods of quantifying source reduction activities;
- Reducing the use of nonrecyclable materials;
- Replacing disposable materials and products with reusable materials and products;
- Reducing the amount of residential yard wastes entering the waste stream;
- Improving the efficiency in using office paper;
- Purchasing repairable products; and
- Increasing the longevity of the materials used in industrial operations by considering durability, reusability, and recyclability as product selection criteria.

The specific programs to be implemented in the planning period by the City to achieve the objectives are listed below. Detailed descriptions of each alternative are given in Section 4.3, Evaluation of Alternatives.

4.2 EXISTING CONDITIONS

Thrift Shops

The City of West Sacramento currently has two thrift shops located within its city limits. In addition, the Salvation Army, Value Village, Desert Industries, the St. Vincent de Paul Society, and the Vietnam Veterans of America Foundation, which do not have stores in the City, make collections in the City. These stores accept most reusable products and recycle many that prove unsalable. Scrap and unsalable textiles are generally baled and exported, and any scrap metals are shipped away to be recycled.

Backyard Composting

It is very difficult to gauge the level of participation in backyard composting; however, it is a normal gardening activity that can be assumed to be occurring at various locations in the community.

Product Substitution

While it is again difficult to quantify, the number of businesses and organizations moving away from disposable food service products and towards reusable is ever-growing. A common change being made is from disposable cups to ceramic cups.

Double-sided Photocopies

This it is again difficult to quantify, but the number of businesses and organizations changing from single-sided copies to double-sided copies and the use of scrap paper as note paper is ever increasing.

Diaper Services

Two diaper services pickup in West Sacramento. While their collection figures are difficult to quantify as they have reservations about sharing proprietary information, partial data extrapolated for these collectors indicate a diaper diversion rate for West Sacramento of approximately 35.8 tons per year.

4.3 EVALUATION OF ALTERNATIVES

There are many ways in which source reduction can be accomplished. This section presents evaluations of 10 source reduction programs that are worthy of consideration. Each program is evaluated by criteria that have been specified by the California Integrated Waste Management Board.

Source reduction alternatives presented in this section fall into four categories: rate structure modifications, economic incentives, technical assistance, and regulatory programs. Rate structure modifications provide financial incentives to reduce the amount of solid waste generated in the home, in businesses, and in industries through increased disposal fees. Economic incentives are ways in which the City can encourage the development of source reduction practices in business, government, and industry and by consumers through establishment of financial incentives and disincentives such as grants, loans, and fines. Technical assistance programs teach businesses, industries, and consumers to recognize and reduce waste at the source. Regulatory programs refer to policies, laws, and regulations adopted by the City to reduce waste generation.

The ten source reduction alternatives described and evaluated in this section are listed by category below:

Rate Structure Modifications

Alternative 1. Quantity-Based Variable Rates or User Fees

Economic Incentives

Alternative 2. Loans, Loan Guarantees, Grants and Contributions

Alternative 3. Commercial Business Compliance Programs

Technical Assistance

Alternative 4. Waste Evaluations/Waste Minimization

Alternative 5. Backyard Composting Programs

Alternative 6. Educational Efforts

Alternative 7. Awards and Public Recognition

Alternative 8. Government Nonprocurement Source Reduction Policies

Regulatory Programs

Alternative 9. Government Procurement Policies

Alternative 10. Product Bans

These alternatives are described below and evaluated in accordance with the California Integrated Waste Management Board specified criteria.

Alternative 1. Quantity-Based Variable Rates or User Fees

Quantity-based variable rates or user fees are primarily intended to encourage source reduction at residential sources, although they may also be applied to commercial (including multi-family dwellings) and industrial waste generators.

The current garbage rate structure in West Sacramento allows residents using the can rate to dispose of an unlimited quantity of refuse per week for a flat fee per month. Because not all of the residents will use all of the capacity at the unlimited quantity per week rate, the effect of such a rate structure is that residents disposing of smaller quantities pay a higher unit rate.

Variable rate fees involve calculating collection and disposal fees based upon the amount of waste collected. This is similar in principle to other service-based utility charges such as water and electricity. As a result, households are charged fees according to the number of cans used, the number of bags collected, or the frequency of collection. These fees are directly

proportional to actual disposal costs rather than collection and disposal costs; consequently, residents have the opportunity to reduce costs by generating less waste.

Among the variants to the rate structure alternative are:

- Use of a base subscription fee to cover fixed collection costs plus a flat per unit volume charge;
- A mini-can rate to encourage reduced volume;
- Fees that rise according to increasing volume;
- Fees that are essentially flat by volume; and
- Charges based upon weight instead of volume.

Implementation of quantity-based variable rates or user fees may require the purchase of new collection equipment, including: trucks, retro-fit dumping equipment, on-board scales, bar coding equipment, stickers, bags, waste wheelers, et al.

Most systems that currently charge a variable fee do so according to volume. The City of Seattle has a well-developed program using this approach. However, given that not every container is necessarily full and the densities of some wastes are different from others, the argument has been made that weight-based systems would be more equitable. Some communities, such as Seattle, are experimenting with these systems; they require more collection time and require the collection vehicle to have a scale and a bar-code reader to read the homeowner's account number from the container.

Cities implementing variable rate programs have frequently found that they do result in reduced quantities of waste; therefore, the revenues generated by the collection are often overestimated and insufficient to cover the fixed costs of the hauler. The solution to this problem is the use of a fixed subscription fee to cover fixed costs, plus a variable rate fee for the actual quantities of waste collected.

Variable rate fees that rise rapidly with increasing volume tend to place a strong economic incentive upon reducing the amount of waste. Variable rate structures thus provide an excellent impetus for participation in recycling and yard waste programs. In fact, it is very important that recycling and yard waste programs be provided in conjunction with a quantity-based collection rate structure to provide alternatives to standard waste collection and disposal. Furthermore, variable rate structures may require both anti-dumping ordinances and anti-scavenging ordinances to deter these activities as the variable rates and the recycling programs will tend to provide incentives for both dumping and scavenging.

This alternative is directed towards residential and household waste generators. Materials targeted for source reduction by this alternative include: paper and plastic packaging, disposable products (pens, diapers, etc.), food waste, yard waste, and wood.

Effectiveness

Rate structure modifications provide financial incentives to residents to reduce the amount of solid waste generated in the home. Residents will become more conscious of waste generation and may alter their habits to reduce the amount of material generated through purchasing decisions, backyard composting, product reuse, and other source reduction activities. Reduced volume through increased compacting is expected as residents increase the amount of material placed into trash containers. Additionally, variable rate structures provide an incentive for increased participation in recycling and community composting programs.

Participation and reduction rates are sensitive to the impact of other alternatives such as public education and awareness programs, expansion of curbside and commercial programs, mandatory recycling laws and separate yard waste collection.

Hazards

No direct environmental hazards are associated with rate structure modifications. However, increased rates for garbage collection may result in illegal dumping, both on public property and in the disposal containers of commercial businesses. Dumping on open, private, or public property can result in environmental and public health hazards. Further, economic incentives to participate in curbside programs may result in more unacceptable materials being placed at the curb for collection and subsequently rejected by the route collector, thereby increasing the potential for litter.

Ability to Accommodate Change

Rate structure modifications can require review, public hearings and independent cost and feasibility studies. Generally speaking, rate changes are met with public resistance. It is, therefore, in the City's interest to structure rates so as to be flexible and require review no more often than is absolutely necessary.

Consequences on Waste Stream Composition

This alternative will reduce the amount of solid waste generated, and consequently the amount of waste going to landfills. In addition, variable rate structures provide a strong incentive to separate and divert items from the waste stream when other programs are available; therefore, this alternative will be most effective in conjunction with both recycling programs and yard waste composting programs. Additionally, this alternative (if volume-based) may result in increased use of compactors, resulting in a more dense waste stream which would be more difficult to sort after collection.

Ability to be Implemented

Changes to rate structure will require the approval of the appropriate agency such as the City

Council or other regulatory body and may require public hearings and extensive review. Implementation may take as long as six months from the time the decision is made to begin rate review.

Need for Facilities

No additional facilities are required for implementation of this alternative. It is assumed that the present facilities will be able to include those items of additional equipment that may need to be accommodated by the program. However, recycling and composting programs that complement this alternative will require facilities.

Consistency with Local Policies, Plans, and Ordinances

While there appear to be no local policies or ordinances prohibiting a change in rate structure, there exists a franchise agreement with the City's waste hauler which would require amendments or renegotiation.

Institutional Barriers to Implementation

The normal waste collection rate-setting and approval process may be a significant barrier to implementation. For further detail, see Public Acceptance below.

Costs

Implementation of this alternative requires (1) a rate study to determine appropriate rate structures for achieving the desired level of source reduction; (2) a determination of whether the proposed rate would support the fixed and variable costs of collection and disposal, once source reduction has begun; (3) review and approval by the regulatory bodies (including a public hearing); (4) generation of informational and educational materials; and (5) modification of existing billing operations. Total projected costs for implementation of this option could range from $15,000 to $140,000 for the City depending upon the type of rate changes made and the extent of public education and monitoring required.

Market Availability

Markets are not necessary for this alternative.

Public Acceptance

The change from a fixed fee system to a variable rate system, especially in conjunction with other source reduction or diversion programs (recycling and yard waste programs), will entail a great deal of effort on the part of the city and the hauler to prepare the public for the new system, explain how it works, explain that it is both necessary and equitable, and explain how it can be conveniently adapted to. Initial public resistance can be mitigated if there is a strong perception that the program is necessary, fair, and results in equal or better service. If the variable rate structure is to be implemented in conjunction with recycling and yard waste programs, it is possible to make these changes in the short term and yet allow time for the public to make adjustments in their behavior. Reducing public resistance and motivating public behavior are aspects of the programs that are contained in the Education and Public Information

Component.

Alternative 2. Loans, Loan Guarantees, Grants and Contributions

Loans, loan guarantees, grants, and contributions enhance the effectiveness of other programs and alternatives. Under this alternative, the City would provide loan guarantees or actual loans or grants to encourage the economic development of businesses, nonprofit groups, or associations that promote source reduction or otherwise encourage waste reduction. In addition, the city can also lend its support in exploring and developing other funding sources such as grants, industry financial support, in-kind support (donations of composting bins or use of facilities for workshop seminars), and private foundation contributions to be used in developing and implementing source reduction methods.

The City may determine that a particular entity qualifies for financial assistance if that entity's program(s) will further the interests of local source reduction efforts. The entity in question might fulfill a role within the community that supports other community programs such as public education, source reduction awareness efforts, and any other aspect or component of the overall waste reduction effort. For example, a community could provide a grant to the local chapter of the Boy Scouts or a community recycling organization to develop and implement composting workshops. These workshops could be scheduled one weekend a month and be timed to coincide with the beginning of other programs and alternatives, such as variable disposal rates and backyard composting programs. The community could also provide funding and meeting rooms for workshops on source reduction techniques given by local chapters of conservation groups for the managers of commercial procurement programs.

This alternative emphasizes the provision of nominal amounts of support to facilitate the primarily volunteer efforts of local or regional groups and associations seeking to foster source reduction efforts at the community level. The City can provide both physical resources and financial assistance to defray some of the costs of providing technical assistance and public education offered by these groups. This is one way that the City can forge a relationship and working partnership with volunteer and community interest groups and associations who seek to further community waste management goals and objectives. This alternative enables the city to take advantage of the expertise and resources of what are essentially volunteer groups.

The targeted source for this alternative depends on the source reduction activity planned by the community group. For example, if the community group is the 4-H Club and the project is a backyard composting workshop, then the targeted source would be residential generators of yard wastes. Potential elements of the waste stream that may be diverted from the landfill include paper products, plastic packaging, food waste, yard waste, and wood.

Effectiveness

This alternative can be highly effective because (1) it requires only nominal financial outlays

from the City for staff and physical resources; (2) it makes use of the in-house expertise and skill of the City staff in researching and developing other funding sources for the target entity (volunteer or community group); and (3) it allows the City to better utilize the existing resources of the community in terms of expertise and organizational support for community source reduction efforts and policies. In the field of waste management, and especially in changing individual generator and household behavior, this kind of an alliance between community groups and waste management authorities is invaluable.

Hazards

No environmental hazards are created by this alternative.

Ability to Accommodate Change

This alternative can be developed and/or administered to be very flexible because it relies on existing community groups that are interested in promoting source reduction efforts through public awareness and technical assistance. As the community, the waste management system, and the waste stream change over time, the expertise and ability of these groups will change also. New techniques and approaches will become available to the City by virtue of the informal relationship between the public agencies and these community groups. This alternative's funding mechanism seeks to capitalize upon the stock of community knowledge and expertise existing at any point in time. Thus, this alternative is easily adaptable to change as new methods and programs are developed.

Consequences on Waste Stream Composition

Direct community support for carefully implemented programs will reduce the amount of solid waste discarded. Changes in the waste stream composition will depend on the materials targeted for reduction by the programs supported and implemented. The most likely candidates for the support provided by this alternative are backyard composting programs, commercial purchasing and procurement programs, office source reduction programs, and consumer purchasing awareness programs. The waste stream materials affected by these types of programs are yard wastes and wood cuttings, office paper and plastic packaging, corrugated cardboard, and other packaging products.

Ability to be Implemented

This alternative can be implemented within the short-term planning period.

Need for Facilities

No facilities are required for this alternative.

Consistency with Local Policies, Plans, and Ordinances

This alternative presents no direct conflicts with current policies, nonfinancial related plans, and ordinances.

Institutional Barriers to Implementation
The ability of local staff to grant funding and loan guarantees and to explore outside funding options would have to be approved most likely through the budgetary process.

Costs
The costs of this alternative would involve the use of City staff resources to develop and administer the program. The program is assumed to fund, at most, ten loans, grants, etc. each year. Staff time of approximately 120 hours per year might be required to develop, approve, implement, and administer each community project funded. For projects in which staff would assist community groups to obtain alternative funding from other sources (State, trade associations, foundations), an additional 80 hours might be required. Other costs include the direct dollar amount of any grants or funding provided by the City. Generally, these operating grants might be provided funds anywhere from $1,000 to $2,500 and would not be expected to exceed a maximum of $4,500. Total cost for this option is from $4,000 to $7,500 per grant or loan.

Market Availability
No markets are required for this alternative.

Public Acceptance
High profile and high impact programs using well-known and respected community groups may gain rapid public acceptance and promote public involvement.

Regional Applicability
This alternative lends itself particularly well to a regional approach, e.g., the county. This would allow for an excellent working and problem-solving relationship to develop, and would take advantage of the presence of many community groups in the region.

Alternative 3. Commercial Business Compliance Programs

Under this alternative the City would require the development and implementation of source reduction programs and practices in local businesses by requiring businesses to complete a short document providing data and information on their waste streams and outlining their present and proposed source reduction practices as part of their business license application. Technical assistance could be provided to businesses for this program in the form of a pamphlet and informational flyer describing the kinds of data and information sought by the City and the financial and other benefits, i.e., health of worker environment, that could accrue to the business.

This alternative targets all commercial waste generators. Materials to be diverted include: paper, plastic, packaging, food waste, yard waste, and wood.

Effectiveness

This alternative could be very effective as it may eventually be used to assess a penalty on businesses that do not participate in waste reduction efforts, thus providing an economic incentive to develop and implement a source reduction program.

Hazards

No hazards are associated with this alternative.

Ability to Accommodate Change

This alternative is readily adaptable to changes in available source reduction technologies and applications. As newer types of manufacturing, processing equipment, packaging or new formats for marketing products become available, this alternative allows businesses to take advantage of them in their procurement planning. As waste reduction practices and waste streams change over time, this alternative will incorporated those changes readily and with little additional effort on the part of either the public or private sector.

Consequences on Waste Stream Composition

Carefully implemented programs will reduce the amount of solid waste disposed of at landfills. Changes in the waste stream composition will depend on the types of businesses that comply and the materials targeted for reduction by the programs they implement.. Changes in the waste stream composition will also depend on the availability of alternative products and on the effectiveness of these procurement programs on the materials targeted for reduction. The most likely materials targeted for reduction are paper and corrugated cardboard packaging, plastic packaging material, and other packaging products.

Ability to be Implemented

This alternative would be implemented in the short term for businesses applying for building permits. After successful implementation the program for new and changed businesses, this alternative would be applied to all businesses in the City.

Need for Facilities

No facilities are required by the City for this alternative. The extent that businesses would require additional or modified facilities to comply with the program cannot be determined at this time.

Consistency with Local Policies, Plans, and Ordinances

This alternative presents no direct conflicts with current policies, plans, and ordinances.

Institutional Barriers to Implementation

Implementing a program to penalize businesses not complying with waste reduction and planning requirements of this alternative would probably require the involvement of more than one governmental entity within the City. This could delay implementation and lead to additional cost and administrative burden. Some degree of coordination between public agencies would be

necessary to ensure that businesses not filing forms were assessed the fine and that businesses attempting to comply with the reporting requirements could do so in the course of making regular business filings and payments.

In addition to the above, the local business community may resist, thereby making implementation impossible.

This program will impact existing plans, budgets and policies of businesses. There will be conflict with the existing procedures, ways of doing things and training that has been done.

Costs

The costs associated with this alternative will be primarily staff time necessary to develop and administer the program. Potentially this program could require one to two people full time for the City. Costs for the businesses required to evaluate their waste stream and develop and implement source reduction programs cannot be determined at this time. However, businesses will benefit from these efforts as a result of lower disposal costs as well as potential cost savings in procurement.

Fees can be collected by staff who currently collect similar revenues from businesses. The tracking of the waste reduction and planning forms could be easily adapted to the processes currently used to monitor business compliance with other local regulations.

There can be considerable investment costs associated with businesses implementing the source reduction measures in new and modified facilities and equipment.

Market Availability

Markets are not required for this alternative.

Public Acceptance

This type of program may be accepted by the public, and the business community in particular, if the program requirements are presented as part of the cost of responsible business practices. Therefore, those being penalized are assumed not to be in compliance with responsible waste management practices. Furthermore, every effort should be made to ensure that the reporting process is brief, provides only the level of data and detail useful to the City, and is easily complied with through regular channels between businesses and the City.

Alternative 4. Waste Evaluations and Waste Minimization

This alternative requires the City to assist selected, larger, commercial/industrial generators in the community to conduct waste evaluations to identify what types and amounts of wastes are being generated and to assist them in identifying and implementing waste minimization techniques. Restricting, or selecting, the number of entities that must complete these evaluations

allows the community to reduce the administrative burden and cost to both the public and private sectors. Additionally, restricting the scope of this program enables the community to ensure greater compliance by focusing on larger generators contributing significantly to the waste stream. Waste evaluations might be restricted to certain categories of commercial generators according to the Standard Industrial Code, employee size, or by the quantity and type of wastes known to be generated by those enterprises.

Data collected from the waste evaluations could be used for several purposes: (1) assessing proper waste disposal fees; (2) controlling the disposal of banned wastes into the waste stream (e.g., some organic wastes, household hazardous wastes, and some special wastes); and (3) establishing a waste generation database from which to measure future progress in waste reduction. These evaluations could be required periodically to provide information on the generator's progress.

This alternative could be required of the selected waste generators as a provision of their permitting, licensing or waste disposal contract (i.e., waste haulers would not be allowed to collect or dispose of wastes generated by entities not meeting certain criteria after a given date). The program could also be voluntary. The waste evaluations could be funded by the generator or be partially funded by the community as a service or through a grant program (see Alternative 2). The primary purpose of the waste evaluation alternative is to increase commercial/industrial awareness of the need for, and benefits of, waste reduction programs and to assist businesses to design and implement programs reducing waste generation.

Effectiveness

This alternative can be effective because it seeks to target a limited number of large waste generators. This alternative reinforces other educational and awareness programs and will generate baseline data on commercial wastes in the community. Furthermore, because of the smaller number of entities and the high contribution to the waste stream, the impact of source reduction programs aimed at these entities can be significant while the administrative burden and cost can be minimal.

The effectiveness of this alternative would be based on the criteria that the City uses to select the participants and the materials generated by each facility. As such, the effectiveness of this alternative is difficult to quantify.

Hazards

No hazards are created by this alternative.

Ability to Accommodate Change

This alternative readily accommodates change in the stock of generators, the types and quantities of wastes generated, and in the City who would administer the program. This alternative provides a mechanism for measuring change in the waste stream and the impact of source reduction programs on commercial generators. This alternative also develops baseline data on

commercial wastes and allows public agencies to make decisions based upon the impact of local programs.

Consequences on Waste Stream Composition
This alternative has no direct effect on the waste stream. However, the alternative provides the data and awareness necessary to implement commercial source reduction programs. The secondary impact of this alternative, therefore, may be a reduction of the materials cited above as being most likely to respond to source reduction efforts.

Ability to be Implemented
This alternative can be implemented in the short-term planning period.

Need for Facilities
No facilities are required for this alternative.

Consistency with Local Policies, Plans, and Ordinances
This alternative presents no direct conflicts with current policies, plans, and ordinances.

Institutional Barriers to Implementation
To require the waste evaluations, the City must ensure that it has the proper authority to do so, including making the evaluation a part of either the business license renewal or the waste disposal contract for the generator. Additionally, a public agency and staff must be designated to oversee the program, ensure compliance, and collect and process the resulting data.

In addition to the above, the local business community may resist, thereby making implementation difficult.

Costs
The costs for this alternative depend on the level of information collected in the waste evaluation. Requiring a full-scale waste generation study by the larger commercial generators would be expensive and probably unnecessary. The wealth of data generated by such an effort might not be required to meet the main goals of this alternative, which are to increase awareness of need for commercial source reduction efforts and to generate data on local commercial waste streams. The City should structure the requirements of this alternative so that target generators can conduct the waste evaluation using in-house staff and expertise, if possible. If necessary, resources may be required for outside consultant services. The overall costs of this alternative should be in the range of 40 to 80 hours for one member of the generator's staff and two to four hours of a City staff member's time. Additional staff time would be needed to process the data from the waste evaluation.

Market Availability
Markets are not necessary for this alternative.

Alternative 5. Backyard Composting Programs

This alternative involves developing programs to encourage backyard composting of yard and food waste by homeowners. Yard waste is the largest component of the residential waste stream; source reduction programs targeted at these wastes can significantly affect the amount of waste going to the landfills. Source reduction and diversion efforts aimed at yard waste could be a major factor in the City's efforts to achieve the waste reduction goals mandated in the AB 939 legislation.

This alternative focuses on residential yard waste composting programs, defined as composting activity taking place on the property of the homeowners or waste generators. This alternative could also be applied to commercial and institutional generators of yard waste, including public agencies. Although residential generators contribute a greater proportion of yard waste to the waste stream, they are also more numerous and require regulatory and economic incentives as well as educational and technical assistance programs to participate. Institutional generators, however, are fewer in number and often have commercial grounds management services to whom yard waste responsibilities could be delegated.

Under this alternative, the City would encourage all generators of yard wastes, especially homeowners, to separate their food and yard wastes from the waste stream and re-use these wastes through composting. The City can foster this approach through a number of activities designed to support backyard composting, as illustrated in the following examples.

(1) Enact an ordinance banning yard wastes from the waste stream. This option would be implemented only in conjunction with an established community composting program providing yard waste collection.

(2) Impose a very high fee for yard waste collection, providing an incentive for the generator to compost the waste on-site. This option would be implemented only in conjunction with an established community composting program providing yard waste collection.

(3) Provide yard waste generators with low-cost bins designed for composting and educational materials on how to start composting.

(4) Develop and/or support educational awareness and technical assistance programs related to backyard composting. These programs could be developed and delivered by public agencies. In addition, the City could make use of other community resources in the form of volunteer and special interest groups capable of providing regular workshops and seminars on composting programs and techniques. These efforts could be funded by community grants.

The fundamental premise of this alternative is that the yard waste does not enter the waste stream at any time and is not collected, processed, or disposed of by the City or its contractors.

This alternative must meet these requirements in order to qualify as a source reduction program. Programs that rely on the City providing collection and composting services for yard wastes do not qualify as source reduction programs and are treated separately.

This distinction serves to highlight the purpose of source reduction alternatives, which is to encourage reduction in the generation of wastes such that the community waste disposal programs are not required to collect, process, or dispose of these wastes. While these two approaches to composting programs serve different goals (reduction versus diversion) they may be complementary when implemented with appropriate rate structures. Further information on alternatives for community composting programs and services can be found in Section 6, Composting Component, of this report.

Effectiveness

It is estimated that very few households will participate in a backyard composting program. However, those households that do compost food and yard wastes will probably achieve high reduction rates in their yard waste streams. Overall, however, yard waste back yard composting will likely not reduce the waste stream by more than 2.5 percent.

Hazards

The City may seek to ensure through educational programs that proper composting techniques are used so that no public health or fire hazards are created. For example, if backyard composting is encouraged, especially with food wastes, the potential exists for rodents, odors, and other health concerns. Education programs will have to be undertaken to ensure proper composting methods are used.

Ability to Accommodate Change

This alternative is fairly easily changed to meet new conditions and situations. This alternative could be adopted and developed and then subsequently changed in size and scope to accommodate changing needs for yard waste reduction and ability to support technical assistance and education programs.

Consequences on Waste Stream Composition

This alternative will alter the mix of organic material in the waste stream as well as the total quantity of waste discarded. The amount of yard waste in the waste stream could decrease by as much as 20 percent, depending on the effectiveness of the yard waste program. The Btu value and the biodegradability of the waste stream may be reduced, potentially effecting both possible future incineration options and methane production.

Ability to be Implemented

This alternative could be implemented in the short-term planning period. Combining disposal/dumping bans, fees, and public education and technical assistance programs could result in a highly effective program within one year.

Need for Facilities
There are no facility requirements for this alternative.

Consistency with Local Policies, Plans, and Ordinances
This alternative presents no direct conflicts with current policies, plans, and ordinances.

Institutional Barriers to Implementation
There are no institutional barriers to implementation of this alternative.

Costs
The costs of this alternative include the expenses for a public awareness and technical assistance program, as well as a subsidy for part of the cost of composting bins to homeowners (perhaps $20 per bin).

Public awareness program costs would vary depending on the scope of the program and the tools used to convey the message. Program expenditures might include:

- Pamphlets and flyers for each household (10 to 25 cents each).
- Door hangers (10 to 25 cents each).
- Public service notices placed in utility bills (5 to 10 cents each).
- Billboard advertisements ($6,000 to $12,000).
- Staff resources to develop, implement, and monitor the program ($8,000 to $20,000).

Additional costs may include loans, loan guarantees and/or grants. See Alternative 2.

Market Availability
It is assumed that the compost is used by the generator.

Alternative 6. Educational Efforts (Also refer to public education component)

This alternative involves (1) educating the public about the need for, and the benefits of, source reduction, and (2) providing information to the public on ways to actually implement source reduction techniques in their personal and business activities. This alternative involves developing and/or sponsoring consumer awareness programs, school curricula, seminars, and public forums that will increase awareness of the solid waste problem, the economic and

environmental benefits of source reduction programs, and of any regulatory requirements that require certain types of source reduction activities. For example, this alternative may also seek to change consumer purchasing patterns to reflect source reduction concerns, by introducing the concepts of "bulk shopping" and "product substitution" to the community.

This alternative requires the City to act as a catalyst for source reduction efforts within the community. The City would serve as a clearinghouse for information on source reduction techniques and provide a means for different segments of the community (public and private, residential, and commercial) to gain structured access to each other to promote the rapid and effective expansion of source reduction activities. For example, the City could provide businesses with specific methods and techniques on how to reduce waste disposal by creating office procedures which minimize the amount of waste paper generated. Source reduction pointers ranging from procurement practices to the use of double-sided copying and using waste paper as scratch paper, could also be provided to the community. Consumer organizations could be encouraged to meet with businesses to develop different approaches to product retailing. Businesses engaged in promoting source reduction (such as bulk-purchase stores or stores catering to yard waste composting activities) could be offered the opportunity to conduct a workshop or seminar.

This alternative is vital to the success of other source reduction alternatives, such as yard waste composting, and is linked in scope and purpose to Alternative 2 on grant funding for community groups seeking to participate in the community's source reduction efforts.

Educational efforts should target all waste generators within the City, including businesses, homeowners, and the general public. Materials targeted for source reduction include: paper products and packaging, plastic products and packaging, food waste, yard waste, wood, nonrecyclable packaging and containers, disposable products such as pens, razors, cameras, beverage containers, disposable diapers, car tires, batteries, and appliances.

Effectiveness

Education can be highly effective relative to dollars spent because (1) it potentially requires only nominal financial outlays from the City and (2) it allows the City to fully utilize the existing resources of the community in terms of expertise and organizational support for community source reduction efforts and policies. In the field of waste management, and especially in changing individual generator and household behavior, this kind of cooperative support between public agencies, community groups, households, and commercial waste generators is invaluable.

Educational programs alone can produce source reduction results; however, such programs are most effective when used to enhance the effectiveness of other source reduction programs in the community.

Hazards

No hazards are created by this alternative.

Ability to Accommodate Change

This alternative is very flexible because it relies on existing community resources in encouraging source reduction efforts through public awareness and technical assistance. As the community, the waste management system, and the waste stream itself change over time, the expertise and abilities of community resources will change also. New techniques and approaches will become available to the City by virtue of the informal relationship between public agencies, businesses, households, and community groups. This alternative is easily adaptable to change as new methods and programs are developed.

This alternative also readily accommodates changes in the waste stream as well as changes in consumer purchasing behavior and available products and alternatives. Indeed, once the public is sensitized to the City's program of heightened environmental awareness, it may in fact be easier to introduce new concepts to further change public behavior.

Consequences on Waste Stream Composition

Direct community and business involvement and participation in carefully implemented programs will reduce the amount of solid waste discarded. Changes in waste stream composition will depend on the effectiveness of the public education effort and on the materials targeted for reduction by those responding to the message of these programs. The most likely areas for significant impact would be programs aimed at backyard composting, commercial purchasing and procurement programs, office source reduction, and consumer purchasing awareness. The waste stream materials that are anticipated to be most affected by these types of programs are yard wastes and wood cuttings, office paper, plastic packaging, corrugated cardboard, other packaging products, and disposable products.

Ability to be Implemented

This alternative can provide a range of options with respect to the scope and duration of the public education effort. Therefore, initial public education efforts can be implemented in the short term. These might include public forums, workshops, flyers, and doorhangers. More involved programs, such as school curricula, could be developed and implemented over the medium term.

Need for Facilities

This alternative requires no facilities.

Consistency with Local Policies, Plans, and Ordinances

This alternative presents no direct conflicts with current policies, plans, and ordinances.

Institutional Barriers to Implementation

This alternative presents no institutional barriers.

Costs
The cost of this alternative will vary dramatically depending upon the scope of implementation. However, many of the other source reduction alternatives, as well as recycling and community composting programs, will depend upon an aggressive and successful public education program. The costs of this alternative would include the use of City staff resources to develop and administer the program. At least one half of one full-time staff member should be devoted to the task of public education programs for the community's source reduction, recycling, and community composting efforts. In addition, there will be costs associated with promotional brochures, pamphlets, flyers, doorhangers, and production costs for any use of the media or outside consultants.

Market Availability
Markets are not required for this program.

Regional Applicability
Public education programs may be appropriately implemented regionally. For example, elements of a source reduction awareness program might include public service messages on radio or television stations; advertisements and press releases might be included in publications with a circulation covering the City.

Alternative 7. Awards and Public Recognition

This alternative involves generating public support for source reduction efforts on the part of business and private individuals by recognizing individuals, groups, or businesses that actively engage in source reduction and/or minimization efforts and that support the community's source reduction programs. This alternative serves as a complement to other source reduction alternatives such as public education, technical assistance, and grant programs and may involve local community organizations such as the Boy Scouts, Girl Scouts, Rotary Club, Lions' Club, the PTA, and local police and fire fighters youth associations.

Effectiveness
No diversion occurs directly as a result of this program. However, the effectiveness of other diversion programs may be increased slightly.

Hazards
No hazards are created by this alternative.

Ability to Accommodate Change
This alternative easily adapts to new circumstances within the City. Programs for public recognition, local pride, and environmental awareness can all be readily changed in their focus, scope, and intensity to accommodate changes in local waste management programs, changes in the waste stream, seasonal variations in waste characteristics, and other factors.

Consequences on Waste Stream Composition
This alternative will have negligible consequences on the waste stream.

Ability to be Implemented
This alternative can be implemented in the short-term planning period.

Need for Facilities
This alternative requires no facilities.

Consistency with Local Policies, Plans, and Ordinances
This alternative presents no direct conflicts with current policies, plans, and ordinances.

Institutional Barriers to Implementation
There are no institutional barriers to implementation of this alternative.

Costs
This alternative may involve publicity and public relations costs associated with awarding recognition and highlighting specific activities within the community. These costs will most likely take the form of expenses for printed media publicity. Some of the exposure necessary for these kinds of recognition programs can be gained free in the form of press coverage of officially sanctioned events sponsored by the City. If awards or prizes of any inherent value are planned (e.g., cash awards), these costs will need to be considered also. In addition, the sponsoring agency for the programs under this alternative will incur the cost of developing and administering the programs. This option can be implemented for the cost of a plaque and staff time to issue a press release and award the plaque. Details related to the implementation of the program are given in Table 4-4.

Market Availability
Markets are not required for this alternative.

Public Acceptance
Public recognition programs are an accepted means of generating public support for, and greater awareness of a community campaign. This is a common tactic in campaigns focusing on health and welfare issues such as blood drives, donations for homeless and indigent citizens, and support for populations such as children or the elderly. Programs to achieve similar results for source reduction programs will find a high degree of public acceptance.

Regional Applicability
Public recognition programs may be appropriately implemented over a regional area encompassing the City. For example, a regional recognition program for businesses implementing source reduction programs might include public service messages on radio or

television stations; awards, announcements, and press releases might be included in publications with a circulation covering the City. Both of these examples would make it worthwhile for the City to combine their efforts for these elements of their programs.

Alternative 8. Nonprocurement Source Reduction Programs By Local Government

Nonprocurement programs involve all methods to implement source reduction that are not associated with purchasing decisions. This alternative requires the local governments to undertake a number of programs aimed at altering the behavior of personnel and the operations to reduce the amount of waste generated on a day-to-day basis. These programs could include education programs familiarizing people with source reduction practices such as: double-sided copying, increasing the use of scratch paper, making fewer drafts of reports, using electronic mail, and so on. This alternative provides an opportunity for the City itself to develop and implement a model source reduction program that can be used as an example for private, public, and commercial entities in the area.

This alternative targets the City's administrative offices and their use of paper; however, other materials may be targeted as well.

Effectiveness

The waste generation study does not provide waste data for governmental offices and operations in the City; however, it is reasonable to assume that these wastes are paper and that the source reduction programs outlined above could reduce this amount by up to 20 percent.

Hazards

No hazards are associated with this alternative.

Ability to Accommodate Change

This alternative is readily adaptable to change. In-house source reduction policies and programs for the City can easily be altered to accommodate changes in available source reduction technologies and processes (procurement programs), changes in the waste stream itself (shifts in the ratio of paper to plastic, etc.), and changes in the emphasis of various source reduction programs by the City.

Consequences on Waste Stream Composition

Direct support by the City for carefully implemented programs will reduce the amount of solid waste discarded. Changes in waste stream composition will depend on the effectiveness of employee education efforts and on the materials targeted for reduction. The most likely areas for significant impact would be from programs aimed at office source reduction programs, primarily paper. The waste stream materials affected by these types of programs are yard wastes and wood cuttings, office paper and plastic packaging, corrugated cardboard, and other packaging products.

Ability to be Implemented
This alternative can be implemented within the short-term planning period.

Need for Facilities
This alternative requires no facilities.

Consistency with Local Policies, Plans, and Ordinances
This alternative presents no direct conflicts with current policies, plans, and ordinances.

Institutional Barriers to Implementation
There are no institutional barriers to implementation of the alternative.

Costs
The primary cost will be for staff time to develop and implement a source reduction policy and program for the City. Some costs will be incurred in preparing and disseminating informational materials to staff, perhaps in the form of pamphlets or flyers posted at appropriate places in the work place. The primary emphasis of this nonprocurement alternative is to change government employee behavior mainly with respect to the use and disposal of paper, plastic, and cardboard products. The costs associated with this alternative are therefore similar to those for developing and implementing any kind of awareness program within an institutional setting, and are assumed to be relatively small. The City would prove valuable in taking the lead in such a program.

Market Availability
Markets are not required for this alternative.

Alternative 9. Adoption of Government Procurement Policies

This alternative involves the City adopting procurement policies that include in the purchasing decision the following criteria: durability, recyclability, reusability, and recycled material content. Additionally, the City could specify that any business or organization holding a contract with it would have to have a source reduction plan or program, provides in addition to using products or materials that met the above criteria. The City could adopt purchasing preferences for recycled products as a part of this program; however, this would not qualify as "source reduction."

This alternative targets the materials used by administrative offices, as well as equipment purchased by other operations such as police, public works, etc. Materials that will be diverted through source reduction include: paper products and packaging, plastic products and packaging, all disposable items, stationery, office supplies, tires, batteries, and food service items.

Effectiveness
The waste generation study does not provide waste data for governmental offices and operations in the City; however, it is reasonable to assume that these wastes are paper and that the source reduction programs outlined above could reduce this amount by up to 20 percent.

Hazards
No hazards are anticipated by implementation of this alternative.

Ability to Accommodate Change
This alternative is readily adaptable to changes in available source reduction technologies and target materials. As new, more environmentally sound, products and packaging become available, the City will be able to take advantage of them, setting an example for the community.

Consequences on Waste Stream Composition
Direct participation by the City in a carefully implemented procurement program will reduce the amount of solid waste generated. Changes in waste stream composition will depend on targeted materials and the availability of alternative products. The most likely materials reduced in the waste stream would be paper and corrugated cardboard packaging, plastic packaging material, other packaging materials, disposable products, and products with relatively short useful lives.

Ability to be Implemented
This alternative can begin to be implemented relatively quickly, although full implementation will require the development of a detailed policy which identifies target materials, product criteria, and suggested product options and alternatives. The City would be a key player in development of this program alternative.

Need for Facilities
No facilities are required for this alternative.

Consistency with Local Policies, Plans, and Ordinances
This alternative presents no direct conflicts with current policies, plans, and ordinances but may require the force of an ordinance to be implemented.

Institutional Barriers to Implementation
Purchasing and procurement program within the City's many public agencies will require coordination in order to achieve city-wide source reduction. While purchasing itself is often centralized within a City's operations, the individual agencies receiving or consuming the goods and services purchased must be fully aware of the program's purpose and assist in identifying products and materials for which alternatives are available. Again, the City could take the lead in the coordination of purchasing policies.

Costs

The costs for this alternative are primarily in staff time to develop purchasing guidelines and identify appropriate substitute products. Additional primary expenditures will be significant in the initial purchasing of more durable, more expensive products to replace those currently in use. These expenditures, however, impact cash flow and can be budgeted to be recouped.

Market Availability

Markets are not required for this alternative.

Alternative 10. Product Bans

The City may ban targeted products and packaging techniques to reduce waste at the source and provide a net environmental benefit. Bans might be considered on products and packaging that do not lend themselves to recycling or source reduction. The criteria for product bans are similar to those used to determine the applicability of advance disposal fees; the product must be disposable or difficult to reuse or recycle and must have environmentally sound substitutes (such as disposable razors, nonrefillable pens, nonreusable beverage containers). For example, some communities (Berkeley, California) have banned polystyrene foam packaging from fast food restaurants. Other communities have banned items such as nonrecyclable beverage containers. Communities that pursue this kind of alternative often adopt a time limit or phase-out period for the ban to take effect, providing time for residential and commercial consumers to adjust to the policy and identify substitutes.

Effectiveness

Product bans are generally not effective or well received on a local level as residents see them as intrusive and capricious and will therefore simply drive to a neighboring jurisdiction to buy the banned product.

Hazards

This alternative presents no known environmental hazard, although it is critical that the substitute for a banned product has a less significant environmental impact than the banned product.

Ability to Accommodate Change

A product ban, while it is in force, can not respond to changes in the market. Additionally, a product ban clearly forces manufacturers, retailers, and consumers to search for alternatives to the banned product. This can take a significant amount of time. Once in place, banned products will have lost their place in the market or will not likely be brought back if the ban were to be removed.

Consequences on Waste Stream Composition

A product ban may significantly reduce the quantities of the banned product in the waste stream. However, the ban may also increase the presence of product substitutes in the waste stream.

The effect of product substitutes must be carefully considered. When implementing a product ban, it is important to ensure that the substitutes do not themselves present problems involving increased volumes or toxicities of wastes going into landfills.

Ability to be Implemented
A product ban can be implemented in the short term. However, the surrounding body must allow for some period of time for consumers, producers, and retailers to adjust to the effects of the ban.

Need for Facilities
No facilities are required for this alternative.

Consistency with Local Policies, Plans, and Ordinances
This alternative may conflict with prevailing local policies.

Institutional Barriers to Implementation
This alternative may meet with considerable public opposition, will likely be difficult to enforce and may therefore be highly unpopular with elected officials charged with its introduction into law.

Costs
The cost of this alternative includes staff time necessary to develop, review, and present for approval by the appropriate forum, the details associated with implementation of a product ban. Costs to local merchants, consumers, and producers are unknown.

Market Availability
No markets are required for this alternative.

Public Acceptance
A product ban can meet with significant resistance if the proposal is not carefully designed and implemented. This alternative not only involves changing behavior on the part of the consumer, but also changing the manufacture and marketing of a product or its substitute. These changes can result in real costs to retailers, manufacturers, and consumers, and these costs will have to be carefully explained and justified. The City should be able to clearly identify the environmental benefits to the community from this type of regulatory alternative before implementation. See Effectiveness

Regional Applicability
Because of the broad nature of this alternative and the impact it has on an entire market area for a product, it is often more effective to implement a product ban on a larger geographic scale such as a region or a county. When considering this alternative, the City should investigate implementing such a program in conjunction with neighboring jurisdictions.

4.4 SELECTION OF PROGRAMS

Summarized below are the programs selected for implementation by the City of West Sacramento. These selections are based on meetings and conversations with City staff over the period of development of the draft SRRE.

Alternative 1. Quantity Based Variable Rates or User Fees

Rate structure modifications have been selected for possible implementation in the medium term to provide financial incentives to residents to reduce the amount of solid waste generated in the home. Residents will become more conscious of waste generation and may alter their habits to reduce the amount of materials generated through purchasing decisions, backyard composting, product reuse, and other source reduction activities.

This alternative will reduce the amount of solid waste generated, and consequently the amount of waste going to landfills. In addition, variable rate structures provide a strong incentive to separate and divert items from the waste stream when other programs are available; therefore, this alternative will be most effective in conjunction with both recycling and yard waste composting programs. Additionally, variable rate structures will provide an incentive for increased participation in recycling and community composting programs.

Because the City's current refuse collection rate is incorporated into a larger utility user fee, a rate study will first be necessary to determine a separate refuse collection fee structure. The City will examine the feasibility of implementation of this program in the medium-term.

Alternative 5. Backyard Composting

Through this alternative the City will encourage backyard composting of yard and food waste by homeowners through public education programs and seminars. Though the City anticipates targeting yard waste through curbside collection in the short-term planning period, education efforts to promote backyard composting will serve to reduce the quantity of yard waste collected, transported, and composted at the County regional facility thereby reducing overall program costs.

This program will be implemented in the short-term planning period. Combining variable refuse collection fees, public education, and technical assistance programs could result in a highly effective program.

Alternative 6. Educational Programs

This alternative has been selected since it is vital to the success of the other source reduction

alternatives. Educational efforts will target generators within the City, including businesses, homeowners, and the general public.

Direct community and business involvement and participation in carefully implemented programs will reduce the amount of solid waste discarded. Changes in waste stream composition will depend on the effectiveness of the public education effort and on the materials targeted for reduction by those responding to the message of these programs. The most likely areas for significant impact would be programs aimed at backyard composting, commercial purchasing and procurement programs, office source reduction, and consumer purchasing awareness. The waste stream materials that are anticipated to be most affected by these types of programs are yard wastes, office paper, plastic packaging, corrugated cardboard, other packaging materials, and disposable products.

This alternative can provide a range of options with respect to the scope and duration of the public education effort. Initial public education efforts can be implemented in the short-term which might include public forums, workshops, flyers, and doorhangers. More involved programs, such as school curricula, could be developed and implemented over the medium term.

Alternative 7. Awards and Public Recognition

This alternative has been selected to generate public support for source reduction on the part of business and private individuals by recognizing individuals, groups, or businesses that actively engage in source reduction and/or minimization efforts and that support the community's source reduction programs. This selection serves as a complement to other source reduction alternatives such as public education, technical assistance, and grant programs and may involve local community organizations such as the Boy Scouts, Girls Scouts, Rotary Club, Lion's Club, the PTA, and local police and fire fighters youth associations.

No diversion occurs directly as a result of this program. However, the effectiveness of other diversion programs will increase.

Alternative 8. Government Non-Procurement Source Reduction Policies

This alternative has been selected for implementation in the short-term planning period providing the City the opportunity to develop and implement a model source reduction program that can be used as an example for private, public, and commercial entities in the area. The City's administrative offices and their use of paper will be the primary target, however, other materials may be targeted as well.

Alternative 9. Government Procurement Policies

This alternative has been selected for implementation in the short-term planning period. The City will seek to establish a policy with respect to City procurement practices establishing specifications for product durability, recyclability, recycled material content, and environmental impacts.

This alternative has been selected since it targets the materials used by administrative offices, as well as equipment purchased by other operations such as police, public works, etc. Materials that will be targeted through this program include: paper products and packaging, plastic products and packaging, all disposable products, office supplies, tires, and food service items.

4.4.1 Cumulative Integrated Effect of Selected Programs in Source Reduction

Due to the difficulty in estimating projected diversion rates for selected programs, diversion estimates have only been provided for backyard composting.

Table 4-1. Waste Diversion Through Source Reduction

Alternative	Short-Term	Medium-Term
Backyard Composting	.2	.6

4.5 PROGRAM IMPLEMENTATION

Table 4-2. Implementation Schedule for Quantity Based Variable Rates or User Fees

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Determine total revenues required from garbage rate	City of West Sacramento	1/95	6/95	$20,000
Develop a new garbage rate	City of West Sacramento	6/95	12/95	$20,000
Develop public information	City of West Sacramento	12/95	12/95	$1,500
Public hearings	City of West Sacramento	1/96	3/96	$4,000
Promotion and education	City of West Sacramento/ Hauler	4/96	8/96	$10,000
Implementation	City of West Sacramento/ Hauler	9/96	---	$35,000
Total	---	---	---	$90,500

Table 4-3. Implementation Schedule for Backyard Composting

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Develop Public Information Literature	City	1st Qtr 1993	1st Qtr 1993	$1,800
Public Workshops	City	1st Qtr 1993	Ongoing	$500/yr
Develop Public Demonstration Project	City	1st Qtr 1993	Ongoing	$500
Press Release	City	1st Qtr 1993	1st Qtr 1993	0
Total	----	----	----	$2,800

Table 4-4. Implementation Schedule for Awards and Public Recognition

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Develop Formal Program of Recognition	City	2nd Qtr 1993	2nd Qtr 1993	$250
Select First Recipient	City	2nd Qtr 1993	Ongoing	$100
Award Plaque, Trophy, etc.	City	2nd Qtr 1993	Ongoing	$100
Total	---	---	---	$450

Table 4-5. Implementation Schedule for Nonprocurement Source Reduction

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Develop Program	City	4th Qtr 1992	4th Qtr 1993	$200
Implement Program at City Hall	City	1st Qtr 1993	1st qtr 1993	$500
Promote Program as a Model for Business Community	City	2nd Qtr 1993	Ongoing	$500
Total	---	---	---	$1,200

Table 4-6. Implementation Schedule for Government Procurement Policies

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Identify Substitute Products and Areas of Waste	City	1st Qtr 1993	Ongoing	0
Create New Purchasing Guidelines	City	1st Qtr 1993	Ongoing	$1,000
Total	---	---	---	$1,000

4.6 MONITORING AND EVALUATION

The selected programs must be monitored and evaluated to assure that the source reduction programs are operating effectively and to quantify reduction for diversion credit. Monitoring and evaluation is necessary to determine the success of selected programs and to provide a measure by which adjustments can be made to increase program effectiveness if it is determined that diversion goals may not be met.

A summary of methods to quantify effectiveness for each selected source reduction program follow:

Alternative 1. Residential Quantity Based Variable Rates or User Fees

Specific data regarding volume and tonnages will be monitored at the landfill gate for residential loads. This information will be compared with available historical gate statistics to determine changes in tonnages. This information should be made available monthly for review by the City.

Alternative 5. Backyard Composting

Data on actual weights of material will be difficult to obtain. It will be possible to derive estimates on source reduction diversion through numbers of residents participating in the composting program. The annual Waste Generation Study could provide a check against these estimates. Reporting will be done on an annual basis by the City for the City Council.

Alternative 7. Awards and Public Recognition

This program will be self regulating in that the very process of providing awards and public recognition requires knowledge that activities and accomplishments have taken place. The number of such recognitions and their significance and impact will indicate the success that the program is achieving in itself. The reduction in waste loads to the disposal facilities is the ultimate indicator of the program's success.

Alternative 8. Non-Procurement Source Reduction Programs

Quantification may be measured in rough terms, by changes in the amounts of material disposed of by the various City governmental agencies. In addition, the annual Waste Generation Study should give an indication of the wastes produced by the City governmental agencies. Reporting could be to the City both quarterly and annually.

Alternative 9. Adoption of Government Procurement Policies

The amount and type of procured material can be tracked to determine reductions in the amounts of targeted materials and changes in the type of materials, e.g., use of recycled materials. The procurement vouchers will contain information that indicates some of these activities.

4.6.1. Shortfall Implementation

If the monitoring activities indicate that the source reduction programs are not meeting their goals and/or the waste diversion goals and objectives are not going to be met, corrective measures will be taken to redirect the efforts and activities to insure that the planned waste diversion is achieved. Particular correction efforts for each of the selected source reduction alternatives are given below.

Residential Quantity Based Variable Rates or User Fees

The rate levels would be investigated to determine what actions need to be taken to reduce the amounts of waste generated from residences.

Backyard Composting

The City's technical assistance program could be intensified and expanded.

Awards and Public Recognition

Public notices could be issued which state that the City wants to be informed concerning activities and groups that should be awarded. Outreach programs on source reduction would be intensified.

Non-Procurement Source Reduction Programs

The City's governmental agencies would be contacted to determine whether their efforts can be improved and whether further educational efforts are needed.

Adoption of Government Procurement Policies

Investigation would establish whether the appropriate materials are no longer procured, are

procured in lesser quantities, and if additional materials should be diverted. Motivation techniques would be used to have the related procurement policies enforced further.

SECTION 5

RECYCLING COMPONENT

Recycling is the process of collecting, sorting, cleansing, treating, and reconstituting materials that would otherwise become solid waste; and then returning them to the economic mainstream in the form of raw material for new products that meet the quality standards established by the marketplace.

The purpose of the Recycling Component is to identify, evaluate, select, and establish an implementation plan for residential, industrial, and institutional recycling programs that will contribute towards meeting and exceeding the required short- and medium-term diversion goals of 25 percent and 50 percent, respectively.

The source of statistical information in this component is derived from the Waste Generation Study which describes the waste characterization for the City of West Sacramento. The tonnages are expected to grow proportionately with community size.

5.1 GOALS AND OBJECTIVES

Based on the data from the Waste Generation Study, current diversion and future waste diversion goals are shown in Table 5-1.

Table 5-1. Current Diversion, Short and Medium Term Recycling Goals*

Jurisdiction	Currently Generated (TPY)	Current (1990) Diversion		Short Term (1995) Goal		Medium Term (2000) Goal	
		TPY	%	TPY	%	TPY	%
West Sacramento	60,936	954	6.5	6,748	8.7	25,037	23.3

TPY = tons per year

* Measured in 1990 constant terms

Objectives of the recycling component are:

- Institute a curbside recycling program for single and multi-family residences in the short-term planning period.

- Implement a commercial/industrial recycling collection program in the short-term planning period.

- Begin processing of paper and cardboard at the West Sacramento Intermediate Processing Center in the short-term.

- Work with Yolo County to develop an Automated Material Recovery Facility at the Yolo County Central Landfill in the medium-term planning period.

5.1.1. Targeted Materials

The Waste Generation Study identified materials disposed of in the Yolo County Central Landfill from the City of West Sacramento. Based upon the results of the Waste Generation Study and the availability of markets for recovered materials, target materials available for diversion through recycling have been defined as:

- Paper products - (newsprint, corrugated cardboard, kraft paper, high-grade and mixed paper) 22.1 percent by weight of the total waste disposed

- Plastics - (HDPE & PET) .9 percent by weight of the waste disposed for the short-term.

- Plastics - (HDPE, PET, films, and polystyrene) 4.4 percent by weight of the waste disposed for the medium-term

- Metals - (aluminum, tin cans, and other metals) 7.7 percent of the total waste disposed by weight

- Glass - (including CA Redemption, other recyclable, and nonrecyclable) 2.8 percent by weight of the waste disposed

Targeting the materials that have established markets should assist the jurisdictions to achieve the overall short- and medium-term diversion goals of 25 percent by 1995 and 50 percent by the year 2000.

5.1.2. Market Development Objectives

An additional objective for all jurisdictions is to increase markets for recycled materials by:

- Studying the establishment of economic incentives to promote the use of recycled materials by business and industry.

- Studying and implementing incentives to promote consumer purchasing of products with recycled material content.

- Educating residential, commercial, and industrial waste generators of the importance of market development in the attainment of county and city objectives.

- Developing procurement policies in the local governments to favor the purchase of recycled content items.

All of these objectives represent ongoing activities which should occur not only during the short and medium terms, but thereafter as well. These objectives can be achieved within the short-term planning period.

5.2 EXISTING CONDITIONS

Several major chain stores have their own balers on site for baling of cardboard. The baled cardboard is "back hauled" to a distribution center by the company's truck or taken away by a private recycling company.

Waste Management of Sacramento diverts a small number of loads of pure corrugated cardboard.

The following diversion programs are operating in West Sacramento.

Facility	Address
RC3852 20/20 Recycle Center / Safeway Store	1298 West Capitol Avenue
RC3881 Sac-Val / Raleys Supermarket	1601 West Capitol Avenue
RC3879 Jim's Redemption Center	3130 Duluth Street
RC4113 Cal-Century Cores and Recycling	518 Glide Avenue, Suite K
RC1281 Capitol Coors Company	2424 Del Monte Street

Table 5-2 shows the current (1990) waste diversion from recycling activities in West Sacramento.

Table 5-2. 1990 Waste Diversion from Recycling Activities

Waste Type	Recycling Residential (TPY)	Recycling Commercial (TPY)	Rate Diversion (%)
Newspaper		2,523.0	4.1
Cardboard		226.0	0.4
High-grade		206.0	0.3
Mixed Paper		6.0	0.0
PET	12.4		0.0
Other Plastic		1.0	0.0
CA Glass	497.6	81.3	0.9
Aluminum	443.6	69.1	0.8
Food		6.0	0.0
Total	953.6	3,118.4	6.5

5.2.1. Anticipated Decrease of Recycling Activities

None of the existing recycling programs described above are expected to close or decrease in activity in the short-term as Source Reduction and Recycling plans develop.

5.2.2. Programs or Activities Providing Markets for Recycled Materials

The City currently does not have programs or provide economic incentives to stimulate markets or give consumers incentives to buy recycled materials in the City. However, redemption fees for "California Redemption" containers provide incentive for individuals to recycle.

5.2.3. Education Programs

There are currently no identifiable school or community recycling education programs in West Sacramento.

5.3 EVALUATION OF ALTERNATIVES

Eight recycling program alternatives have been considered for recovering recyclable materials from the waste stream. These include:

Alternative 1.	Residential Curbside Recycling
Alternative 2.	Multi-unit Residential Recycling
Alternative 3.	Commercial/Industrial Collection Program
Alternative 4.	Drop-Off Recycling
Alternative 5.	Mandatory Recycling Laws
Alternative 6.	Intermediate Processing Center
Alternative 7.	Automated Waste Materials Recovery Facility
Alternative 8.	Landfill Salvaging

Each of the alternatives are treated as though they were the only additional program in the jurisdiction along with current recycling activities. Therefore, by not taking an integrated approach, one can determine the impact of each individual program upon the waste stream. This is done as a means of determining whether a given alternative would significantly contribute to the diversion goals mandated in AB 939.

The listed alternatives are described below and evaluated in accordance with the California Integrated Waste Management Board specified criteria.

Alternative 1. Residential Curbside Collection Program

A single-family residential curbside recycling program involves residents separating their recyclables and setting them at the curbside in clearly-marked containers for collection. This program serves those residences that can easily move recyclables to the curbside such as single-family homes, mobile homes, and two- to four-unit dwellings. Generally, one- or two-person crews collect the materials in specialized collection vehicles. Materials collected by curbside programs include paper, plastic, aluminum cans, tin food and beverage cans, and glass. The recyclable materials are then delivered to a processing facility where they are further separated, shredded, crushed or compacted, and baled for transportation and sale to private salvage companies or manufacturers that use the recyclables as raw materials.

In conjunction with the regular curbside program, service will also be extended to multi-family apartment complexes (five units or more). A multi-family residential collection program serves residents of apartment buildings and condominiums where large-capacity containers are used for collecting recyclables. Residents take recyclables to containers stored in a centralized area accessible to both the residents and the collection vehicles. Recycling containers, are usually stored adjacent to the regular waste disposal area as a convenience to the residents. (See Alternative 2.)

A large part of the materials disposed of at the landfill is corrugated cardboard, which should be included as a material collected in the residential collection program. Participation in the program by residents can be voluntary or mandatory as determined by local government. Once collected, the recyclables are delivered to a processing facility where they are segregated and prepared for sale to brokers or manufacturers.

Material quality is critical to market acceptance of the recovered materials. This is largely impacted by the activity at the materials processing facility to which the recyclables are delivered; however, quality is also impacted by the collection process. For example, newspaper should be collected and stored separately from food and beverage containers to ensure that it is not contaminated by moisture or grease. Another example involves glass collection. Ceramic materials included with the glass will contaminate the load. It is critical that the public be educated about the types of acceptable recyclable materials and be notified when they are setting out improper materials for collection.

Participation rates in a residential recycling program are generally high (60 to 90 percent) due to convenience, peer pressure, community pride, and concern for the environment. Residential and multi-family collection programs are designed according to the individual needs of the community and are based upon community size, materials to be collected and the method by which the materials are to be handled at the processing facility.

The City of West Sacramento has a total population of 27,331, approximately 9,387 single-family residences, mobile homes, and two-and four-unit dwellings and 2,558 multi-family residences in structures of five units or more.

Materials that should be collected by the curbside collection program are newspaper, mixed paper, high grade paper, cardboard, plastic (PET and HDPE), aluminum cans, tin food and beverage cans, aluminum foil and container glass.

Tables 5-3 and 5-4 indicate the amount of residential waste projected to be diverted by curbside recycling.

Table 5-3. Projected Effectiveness Of Curbside Recycling

	Waste Quantity (TPY)	Percentage of Targetable Recyclables	Percentage of Waste Disposed	Percentage of Waste Disposed	Percentage of Waste Generated
Waste Generated	60,936	-	-	-	100
Waste Disposed	46,418	-	-	100	76.2
S.F.D. * Disposed Waste	12,218	-	100	26.3	20.0
Targetable Recyclables	4,272	100	34.9	9.2	6.6
Recovery Estimates	2,972	69.6	24.3	6.4	4.9

* Single Family Dwelling (SFD) -- includes single dwelling, units in building of two to four units and mobile homes. (Taken from Waste Generation Study).

Table 5-4. Projected Diversion Through Curbside Recycling

Material	Quantity Currently Disposed (TPY)	Potential Diversion Rate (%)	Estimated Quantity Diverted (TPY)	Percent Diversion (%)
Newsprint	1,393	80	1,114	1.83
Mixed Paper	1,122	60	673	1.10
High-grade paper	106	60	64	0.10
Corrugated cardboard	394	50	197	0.32
Plastic HDPE, PET	84	60	50	0.08
Aluminum cans	32	90	29	0.05
Tin cans	339	60	203	0.33
Glass	802	80	642	1.05
Totals	4,272	-	2,972	4.86

Hazards

A curbside collection program poses no significant environmental, health, or safety hazards; however, collection may create a slight increase in traffic, noise,litter, and containers left at the curbside may be a concern to some residents.

Ability to Accommodate Change

A curbside collection program can easily adapt to changing economic and technological conditions. As the value of recyclable materials changes, new material may be added to the program. Furthermore, as processing technologies improve and become automated, the program can easily change to a commingled collection method.

Consequences on Waste Stream Composition

An effective curbside collection program will result in a reduction of newsprint, plastic, aluminum cans, tin food and beverage cans, corrugated cardboard, mixed paper, and glass entering the waste stream and being landfilled.

Ability to be Implemented

Most residential curbside collection programs can be implemented in six to 12 months. This time frame does not include development of a materials processing facility or establishment of markets for the materials recovered. The implementation time frame for this facility is discussed in Alternatives 6 and 7.

Need for Facilities

A curbside collection program for the City of West Sacramento will require a material processing facility to receive, separate, crush/compact, bale, and prepare the recyclables for sale to markets in accordance with the material quality specifications required by the buyer. Details associated with this facility are discussed in Alternatives 6 and 7.

Consistency with Local Policies, Plans, and Ordinances

Development of a curbside collection program does not conflict with any local policies, plans, or ordinances.

Institutional Barriers to Implementation

There are no institutional barriers that would prevent implementing a curbside collection program.

Costs

A curbside collection program involves capital expenditures and operation and maintenance costs. Assuming that a private contractor will provide the curbside collection program to the residents, the City will have to either raise revenues to pay for the program or tap revenues already allocated. For a detailed analysis of the City's options for funding the implementation and operation of this program, see the Funding Component, Section 10.

Generally, curbside recycling services cost between $0.85 and $1.75 per household per month, depending upon the material collected. This program, if it includes mixed paper, will be in the high end of the range.

Market Availability

The materials to be collected by the curbside collection program include paper, cardboard, PET and HDPE, aluminum cans, tin food and beverage cans, and glass. The program may be expanded, if warranted, to include mixed paper and aluminum foil.

Currently there is a market for all of these materials through salvage companies that act as brokers, or through manufacturers that purchase the materials directly and use them in their manufacturing processes. Only in the case of HDPE, however, are markets unsure. Given existing trends in the scrap industry and the increasing availability of post-consumer HDPE, it is probable that spot markets will continue to open up. Without significant change in scrap prices, however, subsidies will continue to be necessary for the collection and processing of HDPE.

High material quality is critical to market acceptance of the materials. This is largely impacted by the activity at the materials processing facility to which the recyclables are delivered; however, quality is also impacted by the collection process. For example, newspaper must be collected and stored separately from food and beverage containers to ensure that it is not contaminated by moisture, grease, or other materials the newspaper could absorb. Another example involves glass collection. Ceramic materials included with the glass contaminate the load. It is critical that the public be educated about the types of acceptable recyclable materials and be notified when they are setting out improper materials for collection.

Public vs. Private Operation
This program will be implemented by a private contractor.

Technical Reliability/Public Acceptance
Curbside collection programs provide a great opportunity for recovering recyclable materials from the residential waste stream, as demonstrated in over 250 programs currently in operation nationwide.

Alternative 2. Design, Implementation and Promotion of Multi-Unit Residential Recycling

This alternative has the City developing and implementing through a contractor a multi-unit residential recycling program which will accept all of the materials accepted in the curbside program. This includes paper, plastic, aluminum cans, tin food and beverage cans and glass.

Effectiveness
While multi-unit residential recycling programs tend to collect far less material per unit than curbside programs, they are nonetheless effective at diverting material form the waste stream. Typically a multi-unit program will divert half of the material per unit of a curbside program.

Tables 5-5 and 5-6 indicate the amount of waste projected to be diverted by multi-family recycling.

Table 5-5. Projected Effectiveness Of Multi-Family Residential Recycling

	Waste Quantity (TPY)	Percentage of Targetable Recyclables	Percentage of Waste Disposed	Percentage of Waste Disposed	Percentage of Waste Generated
Waste Generated	60,936	-	-	-	100
Waste Disposed	46,418	-	-	100	76.2
M.F.D. * Waste Disposed	5,034	-	100	10.8	8.3
Targetable Recyclables	1,786	100	36	3.6	2.9
Recoverable Recyclables	758	42.4	15	1.6	1.2

* Multi-Family Dwelling

Table 5-6. Projected Diversion Through Multi-Family Residential Recycling Program

Material	Quantity Currently Disposed (TPY)	Potential Diversion Rate (%)	Estimated Quantity Diverted (TPY)	Percent Diversion (%)
Newsprint	440	60	264	0.43
Mixed Paper	483	25	121	0.20
High-grade paper	55	30	17	0.03
Corrugated cardboard	305	20	61	0.10
Plastic HDPE, PET	50	30	15	0.02
Aluminum cans	25	90	23	0.04
Tin cans	118	60	71	0.12
Glass	310	60	186	0.31
Totals	1,786	-	758	1.25

Hazards

Multi-unit residential recycling programs do not pose any significant environmental, health, or safety hazards. However, an increase in the number and volume of materials collected will require additional truck traffic, increasing the likelihood of traffic congestion, and noise.

Ability to Accommodate Change

A multi-unit residential collection program tends to be less adaptable to changing economic and technological conditions than a curbside program as it is usually more difficult to communicate with tenants in an apartment building than with the residents of a single-family house. However, multi-unit residential collection programs are similar enough that sufficient additional effort by the program operator, property manager, and/or the City to communicate with the tenants will produce results.

Consequences on Waste Stream Composition

A multi-unit residential collection program will reduce the amount of aluminum cans and foil, newsprint and other paper, glass, and plastic soft drink bottles entering the waste stream and being landfilled.

Ability to be Implemented

Creating a multi-unit residential recycling collection program may require the purchase of additional collection vehicles, containers, and the design, printing, and distribution of educational brochures, the development of new markets and the hiring of additional personnel. This can be achieved within 8 months to 18 months.

Need for Facilities

Creating a multi-unit residential recycling collection program and a curbside collection program will necessitate the enhancement or replacement of existing sorting and densifying equipment.

Consistency with Local Policies, Plans, and Ordinances

A multi-unit residential collection program does not conflict with local policies, plans, or ordinances.

Institutional Barriers to Implementation

From the perspective of the City government, there are no institutional barriers that would prevent expansion of the multi-unit residential collection program.

Costs

Creating a multi-unit residential recycling collection program will require collection vehicles. Further, because many of the materials listed herein do not have markets as firm as those currently being collected in other curbside programs in the region, revenues per ton may not match those in other jurisdictions that collect fewer and easier to market materials, thereby furthering the need for the City to review its refuse collection rate structure. In general, multi-unit residential recycling costs range from $0.85 to $1.50 per unit serviced. Costs for this program will be in the upper end of this range if mixed paper is included.

Market Availability

Materials to be collected by the multi-unit residential collection program include corrugated cardboard, tin food and beverage cans, and HDPE in addition to newspaper, container glass, CRV aluminum and plastic. Currently there is a market for all of these materials through salvage companies that act as brokers, or through manufacturers that purchase the materials directly and use them in their manufacturing processes. Only in the case of HDPE, however, are markets unsure. Given existing trends in the scrap industry and the increasing availability of post-consumer HDPE, it is probable that spot markets will continue to open up. Without significant change in scrap prices, however, subsidies will continue to be necessary for the collection and processing of HDPE.

Public vs. Private Operation

A private contractor will likely operate the program.

Technical Reliability/Public Acceptance

Multi-unit residential recycling programs generally are received well by the public. Property managers and owners are often not interested in participation as they see the programs as a burden, yet they do not actively oppose the program. This attitude can be changed through an educational program.

Alternative 3. Increased Commercial and Industrial Collection Programs

Recycling of commercially generated non-special wastes is currently taking place in West Sacramento. The diversion this recycling represents is 6.7 percent of the total waste disposed and is well distributed among the materials most commonly recycled. There are no salient commercial recycling programs being operated by the waste hauler or any other entity in the City. Commercial and industrial wastes represent 52 percent of all wastes disposed from the City of West Sacramento and represent over 75 percent of all recycled wastes. As a percentage of recyclable wastes disposed, those in the commercial and industrial categories represent 56 percent. Given the highly accessible nature of commercial and industrial wastes for source separated and commingled collection, the City should focus on the commercial and industrial sectors for source separated recycling program options.

In pursuit of these goals, the City may consider a number of options for collection and processing, including material recovery facilities (see Alternatives 6 and 7), partially-commingled collection with no sorting or processing, or totally source separated collection. The City may also choose to stimulate the private sector to assume the role of developing and operating any and all collection and processing facilities.

Effectiveness

Commercial source separated recycling programs are highly effective at diverting targeted wastes from the waste stream. Levels of contamination may be higher than in curbside programs as materials are collected in large increments and usually cannot be thoroughly inspected before consolidation with other materials already in the truck.

Tables 5-7 and 5-8 indicate the amount of waste projected to be diverted by commercial recycling.

Table 5-7. Projected Effectiveness Of Commercial Recycling

	Waste Generated (TPY)	Percentage of Targetable Recyclables	Percentage of Commercial Waste Disposed	Percentage of Total Waste Disposed	Percentage of Waste Generated
Waste Generated	60,936	-	-	-	100
Waste Disposed	46,418	-	-	100	76.2
Commercial Waste Disposed	24,286	-	100	52	40.0
Targetable Commercial Recyclables	9,625	100	40	21	15.8
Recoverable Recyclables	3,722	39	15.3	8.0	6.1

Table 5-8. Projected Diversion Through Commercial Recycling

Material	Quantity Currently Disposed (TPY)	Potential Diversion Rate (%)	Estimated Quantity Diverted (TPY)	Percent Diversion (%)
Newsprint	218	40	87	0.14
Mixed paper	1,470	40	588	0.96
Cardboard	3,034	50	1,517	2.49
High-grade paper	1,238	40	495	0.81
Glass	175	40	70	0.11
Aluminum cans	28	25	7	0.01
Tin cans	527	30	158	0.26
Ferrous metals	1,433	30	430	0.71
Non-ferrous metal	335	25	84	0.14
HDPE, PET	107	20	21	0.03
Plastic film	1,060	25	265	0.43
Totals	9,625	-	3,722	6.09

Hazards

An increase in commercial collection activity will not pose any significant environmental, health, or safety hazards. However, the program could create minimal additional traffic and noise problems. Individual businesses or industries may encounter hazards in locating containers of recyclables for pickup.

Costs

The costs for this program will be borne entirely by the commercial waste generators in the City of West Sacramento and will be paid through the commercial garbage rate, which is regulated by the City of West Sacramento.

Ability to Accommodate Change

This alternative is very flexible as the program operator is able to add materials to the list of those collected or change collection operations as processing technologies change.

Consequences on Waste Stream Composition
An effective expanded commercial recycling may remove significant percentages of all paper products, aluminum, glass, wood, ferrous and nonferrous metals, food and yard waste from the waste stream.

Ability to be Implemented
This alternative can be implemented in the short term or within one year.

Need for Facilities
No facilities are required for implementation of this alternative. However, collection of an increased number of materials may require additional processing which in turn may require additional machinery and/or facilities. Waste Management of Sacramento is installing a baler.

Consistency with Local Policies, Plans, and Ordinances
Implementation of this alternative is either consistent with or is not in conflict with local policies, plans and ordinances.

Institutional Barriers to Implementation
There are no institutional barriers that would prevent the expansion of the existing commercial recycling program.

Market Availability
No materials will be collected for which markets do not exist.

Public vs. Private Operation
This alternative will be implemented by a private contractor.

Technical Reliability/Public Acceptance
The source separated collection of commercial wastes is a highly technically reliable option and will receive public acceptance both from the residents of West Sacramento and the business community members if it is perceived as fair and not highly intrusive.

Alternative 4. Drop-off Recycling

Drop-off recycling for the City of West Sacramento would consist of one or more sites located at some as yet unidentified locations within the City.

Effectiveness

In a community that does not have a curbside recycling and/or commercial recycling program and does not plan to develop one, this alternative is highly feasible. Generally, drop-off programs do not work efficiently in conjunction with other programs if they do not target self-haul refuse. A facility located in West Sacramento would not target self-haul refuse as that is done only at the landfill.

To implement this alternative effectively, a drop-off facility would need to provide services not available through source-separated collection programs (e.g. CA redemption buy back and corrugated cardboard and high grade paper scrap services.)

Without these services, a drop-off facility would be in competition with the drop-off facility at the landfill and the redemption centers and scrap dealers in the immediate area.

Hazards

A drop-off site may create traffic congestion, noise, and litter.

Ability to Accommodate Change

Staffed facilities are highly adaptable. Unstaffed facilities, however, are less adaptable as users may not read the signs and instructions, and may deliberately dump general refuse, bulk goods, et. al.

Consequences on Waste Stream Composition

Drop-off centers remove recyclable materials from the waste stream, thus reducing the amount of waste being landfilled.

Ability to be Implemented

Implementation could be accomplished within 12 months to 3 years depending upon siting, design, necessity of CEQA documentation, and local permitting procedures.

Need for Facilities

A drop-off program will require access to a processing facility where materials can be sorted and prepared for sale to brokers or end-users.

Consistency with Local Policies, Plans, and Ordinances

A drop-off recycling program does not conflict with local policies, plans, or ordinances; however, for a site not located within the city, zoning issues may have to be addressed.

Institutional Barriers to Implementation
There are no identifiable barriers that would prevent implementation of this program.

Costs
The costs associated with this alternative range from $25,000 per year for a small unstaffed drop-off site, to the unlimited expense associated with a for-profit scrap merchant operation. Included in these costs are land acquisition/leasing.

Market Availability
Markets would be available for all of the materials recovered through this program.

Public vs. Private Operation
This alternative is designed to be implemented by a private contractor.

Technical Reliability/Public Acceptance
Drop-off recycling programs are highly reliable, yet limited if not implemented at a transfer station or landfill while operated in conjunction with commercial and residential source separated recycling programs. In all cases, however, they enjoy a high degree of public acceptance.

Alternative 5. Institution of Mandatory Recycling Laws

This option would have the City issue ordinances banning from the waste stream those materials that are included in the curbside program and commercial programs, for residences and businesses, respectively.

Effectiveness
The effectiveness of this option may largely depend on the enforcement clause of the ordinance and the level of promotion and enforcement dictated by the City. Assuming active promotion and enforcement, such an ordinance may substantially increase participation in curbside and commercial programs. Without enforcement, this alternative would nonetheless serve as a strong statement from City government regarding the City's commitment to recycling.

Hazards
There are no identifiable hazards associated with this option.

Ability to Accommodate Change
This option is very flexible as it affords the City the ability to add to its list of prohibited items.

Consequences on Waste Stream Composition
Increased recycling as a response to mandatory recycling laws will help the City realize its AB 939 goals by reducing the amount of recyclable materials in the waste stream.

Ability to be Implemented
This alternative will require at least two months for research, writing of the ordinance, and the public hearing.

Should the city choose to enforce its ordinance, enforcement mechanisms will be required, perhaps requiring additional staff, computer programming, et.al. These additional tasks may require up to two years to accomplish.

Need For Facilities
No facilities are required.

Consistency with Local Policies, Plans and Ordinances
Mandatory recycling laws are inconsistent with local policy.

Institutional Barriers to Implementation
Inconsistency with local policies as well as public opposition may prove to be a barrier to implementation of this alternative.

Market Availability
Markets are not required for this alternative.

Public v Private Operation
This ordinance would be presented and passed by a government body; enforcement would be provided by the city.

Costs
The costs of the option range from $500 to $2,000 for implementation of the Ordinance. The costs for enforcement vary from $0/year to in excess of $100,000/year, depending on fines and other funding mechanisms.

Technical Reliability/Public Acceptance
As long as any law mandating recycling is perceived as fair, it will likely be broadly accepted, although some members of the community may oppose it as intrusive. Without an enforcement clause such a law will likely be seen as benign and will serve primarily as a statement by the City of West Sacramento on the importance of resource conservation. With an enforcement clause, however, the ordinance may face considerable opposition from some community organizations.

Alternative 6. Intermediate Processing Center

Intermediate Processing Centers (IPCs) are distribution centers that receive, separate, process, and market recyclable materials. They can be operated in conjunction with drop-offs, curbside

collection programs, industrial/commercial recycling ventures, and buy-back centers processing either separated or commingled recyclables.

An IPC receives separated or commingled materials that are loaded onto a conveyor belt and further separated by hand. Materials sorted for the recycling markets are paper, tin and aluminum cans, plastics, and clear and colored glass.

Processing may be defined as separating materials into categories such as colored glass, clear glass, mixed paper, and high-grade paper. Paper, corrugated cardboard, and plastic bottle processing most often entails baling. Materials are then prepared for transportation through a broker or the processor.

The primary advantage of an IPC is the ability to combine and uniformly process the materials from a municipality or a region to meet quantity and quality requirements imposed by buyers. In general, an IPC is most efficient when large amounts of targeted recyclables are collected.

Effectiveness

IPCs do not have a diversion potential of their own, but rather support other collection programs. For example, materials collected from the curbside, commercial/industrial, and drop-off programs will be used as feedstock sources for the IPC. Projected diversions from these programs are used to determine:

- Facility size and throughput requirements (based upon present and projected future needs)
- Personnel needs
- Revenues from materials
- Processing cost per ton less revenues

Hazards

As in all working situations where large equipment is used, health and safety policies at an IPC should be developed and followed by all employees. Other possible hazards associated with a facility are noise, litter, odor, and traffic.

Ability to Accommodate Change

Changes in the waste stream may require alteration of the operation to accommodate different materials. In an IPC, these changes should be accomplished easily. The facility would be designed to process projected daily tonnages through the year 2010.

Consequences on Waste Stream Composition

An IPC will have no direct effect on the waste stream as it is a processing facility for recyclables, not waste. Impacts on the waste stream relative to the use of an IPC are made by the collection programs feeding the facility.

Ability to be Implemented

Implementation of an IPC can be accomplished in the short-term planning period, 12 to 24 months.

Need for Facilities

An IPC will require site and facility development. Land requirements will likely be 5 to 10 acres. Siting may be adjacent to the County Landfill or at a site within reasonably close proximity to the point of collection. The site should be completely fenced and include a small office for administration. In addition, access to water and electric utilities will be necessary. The IPC should be under a roof to keep materials dry and from blowing around in the wind. The IPC will probably consist of a simple structure within which the following equipment will be located:

- Truck scale for weighing incoming and outgoing material
- Discharge area for receiving materials
- Conveyor system for manual sorting of materials
- Magnetic separator for separating ferrous metals
- Baler (for corrugated cardboard, newspaper, plastic, mixed paper)
- Can densifier
- Forklift

When evaluating the size of the facility, it is best to gain an initial estimate of required throughput using a range. The lower limit of the range should use conservative estimates and present volumes given in the Waste Generation Study. The high end should be an optimistic estimate for long-term needs (15 years).

Consistency with Local Policies, Plans, and Ordinances

See Institutional Barriers to Implementation.

Institutional Barriers to Implementation

There are no foreseeable institutional barriers to implementation for an intermediate processing facility to process materials collected in West Sacramento. However, were materials to be brought into the community from other jurisdictions, opposition may arise from both public and private quarters as a result of the perception that West Sacramento is frequently the home of industrial endeavors unwanted in other communities.

Revenues

Due to fluctuating prices in the market, pricing forecasts for materials collected are subject to constant change. Generally, however, these facilities do not generate revenue; the collection programs generate the revenue. In very few cases, though, do collection programs generate sufficient revenue to cover all costs unless through billing for collection.

Costs

Estimated capital and construction costs including land, the structure, and equipment for such a facility are anticipated to be in the $1,000,000 range. Operating costs are estimated in $250,000 per year range for a city the size of West Sacramento. The costs for developing such a facility will likely be incorporated into the program costs of the various collection programs that will feed the facility.

Market Availability

Currently there is a market for all materials collected by the programs described above through salvage companies that act as brokers, or through manufacturers that purchase the materials directly and use them in their manufacturing processes.

High material quality is critical to market acceptance of the materials. This is largely impacted by the activity at the materials processing facility to which the recyclables are delivered. Therefore, employees and supervisors should be aware of quality requirements imposed by buyers.

Public vs. Private Operation

The facility would likely be operated by a private contractor, but may be owned by the County, the City, or another public entity.

Technical Reliability/Public Acceptance

IPC's have been used successfully throughout the country to divert recyclable materials from the waste stream and prepare them for sale to the buyer.

Alternative 7. Automated Materials Recovery Facility

Automated MRFs are centralized distribution points that receive, separate, process, and market recyclable materials directly from the general waste stream. They are capable of processing mixed municipal waste without prior sorting and to remove targeted recyclable items. In addition, they may be operated in conjunction with both drop-off and curbside collection programs, processing either separated or commingled recyclables. The primary advantage of an automated MRF is the ability to combine and uniformly process a large percentage of materials from a municipality or a region, meeting quantity and quality requirements imposed by the buyers.

An automated MRF can receive the waste stream as it is disposed without the need for prior separation. This can remove the burden of source separation from the waste generator and the need for any separate collection system for source-separated materials such as curbside programs.

Processing begins when the load arrives on the tipping floor. A primary sorter checks the load. Any potentially hazardous materials are removed as are particularly bulky items such as appliances.

Non-compacted loads such as self-haul and roll-off are tipped on a cement floor for separation of wood, dirt, asphalt, cement, yard debris and recyclables by hand and with heavy equipment.

General compacted refuse is deposited onto a conveyor system for both mechanized and manual separation of recyclable materials. Mechanized separation might consist of passing the load over a shaker screen to sort out fine materials, a magnetic separator to remove ferrous items, or air classification items for targeted light materials. Manual separation involves sorters removing targeted items as they pass over the conveyor and placing these items into separate bins for further processing.

Materials are generally processed in the following ways:

- Paper, which often will arrive commingled, is pulled off the production line at various points depending on the types of paper accepted, the system used, and the baler. This material is then baled for shipment to a broker/processor

- Steel cans are pulled from the system using a magnet and shredded or baled depending on the market

- Light aluminum and plastic is separated from glass using either air classification or inclined sorting equipment

- Glass is manually separated by color, then crushed and stored for the market

Any residual materials at the end of the conveyor may be diverted to composting programs, Refuse Derived Fuel (RDF), the transfer station, or the landfill for disposal.

An RDF processor may be added to the MRF to convert organic wastes to fuel should the medium-term diversion levels of 50 percent not be reached by 2000. The cost of an RDF processor capable of producing 50 to 100 TPD would be in the $1 million range. Additional materials diverted would include "other paper," "magazines/glossy inserts," and "other organic waste."

Effectiveness

In general, automated MRFs have a diversion potential of 30 percent to 40 percent of the total waste stream. Once a given material has been targeted, a 60 percent diversion for that material from the waste stream may be expected. The effectiveness of an automated MRF is at its highest when only recyclable-rich loads are processed through it. The most effective use of a MRF is as a sorting facility for selected commercial waste loads when residential wastes have been recycled through source separated collection programs and remaining commercial waste (for example that with high moisture content) has been directed straight to landfill.

Tables 5-9 and 5-10 indicate the amount of waste projected to be captured by an automated MRF. Table 5-10 also indicates projected revenues.

Table 5-9. Projected Effectiveness Of Mixed Waste Processing

	Waste Quantity TPY	Percentage of Targetable Recyclables	Percentage of Total Waste Disposed	Percentage of Waste Generated
Waste Generated	60,936	-	-	100
Waste Disposed	46,418	-	100	76.2
Targetable Recyclables	15,582	100	34	25.6
Recoverable Recyclables	12,253	79	26	20.1

cet Availability

cets are currently available for the materials to be recovered. However, when having been d with general refuse, the recyclables recovered may be more contaminated than materials cted through source separated collection programs. In general, materials culled from refuse be less marketable than those from source separated programs.

; term contracts for RDF will be necessary to ensure marketability.

end uses and markets for materials collected, see Table 5-12.

ic vs. Private Operation

facility would likely be operated by a private contractor, but may be owned by the County, City, or another public entity.

nical Reliability/Public Acceptance

igh the technology is still relatively new, automated MRFs are being used successfully ighout the country to divert recyclable materials from the waste stream. A centrally located ity would coordinate well with the existing waste management infrastructure and would ide a very efficient recycling program which the public would likely support.

rnative 8. Landfill Salvaging

aging operations manually recover bulky goods or useful items from mixed garbage after taken to the landfill. In most cases, loads are checked at the landfill gate when each truck lf-hauler arrives. If any given vehicle has a high percentage of clean, recyclable goods, the vehicle is directed to a special tipping area to discharge the load. Upon tipping the , the refuse is then sorted manually and recyclables are removed and set aside for future essing. Any nonrecyclable materials are then landfilled.

cal target commodities which may be diverted include, but are not limited to, scrap metals, ling materials, and wood, which can not be recycled efficiently through residential and nercial/industrial collection programs. Landfill salvaging is comparatively inexpensive since onnel and equipment are provided by the landfill. Adequate space is required for sorting storing materials until they are sold.

majority of targeted recyclable items are covered under the Special Waste Component ion 7) of this SRRE. Please refer to it for more details.

5.4 SELECTION OF PROGRAMS

Summarized below are the alternative programs selected for implementation by the City of West Sacramento. The selections are based on meetings and conversations with city staff over the period of development of the draft SRRE. Unless otherwise stated all programs will be operated by a private contractor under the direction of City Staff.

Alternative 1. Residential Curbside Recycling

This alternative has been selected for implementation in the short term. The program will collect recyclable glass, aluminum cans and foil, PET & HDPE and bi-metal food and beverage containers. The program can be expanded to collect mixed paper and cardboard, if necessary to meet prescribed goals.

Alternative 2. Multi-Unit Residential Recycling

This alternative has been selected for implementation in the short term. The program will collect mixed paper (including cardboard), recyclable glass, aluminum cans and foil, PET & HDPE and bi-metal food and beverage containers.

Alternative 3. Commercial/Industrial Collection Program

This alternative has been selected for implementation in the short term. The city's franchise hauler, Waste Management of Sacramento, will either collect source-separated or paper-rich waste of sufficient volume when recycled to constitute the difference between the diversion percentage attained through the remaining programs and the City's short-term goal of 25 percent. Based upon current projections, the hauler's diversion of commercial paper and cardboard will represent 4.4 percent of the total waste generated, or 2,687 TPY.

The hauler will also be directed in the short-term to collect restaurant waste and other food-rich-waste refuse separately for diversion to the anaerobic composting facility within the Yolo County Central Landfill. Food waste diverted to this program will be reduced in volume through anaerobic digestion but will not be counted as diversion.

Alternative 6. Intermediate Processing Center

This alternative has been selected for implementation in the short-term planning period for processing of paper and cardboard.

The City's hauler, Waste Management of Sacramento, will process West Sacramento's paper and cardboard in its facility in West Sacramento.

Alternative 7. Automated Material Recovery Facility

This alternative has been selected by the city for implementation in the medium-term with the facility to be sited at the Yolo County Central Landfill. The cities of West Sacramento and Woodland have agreed to commit their non-source separated commercial/industrial waste streams to the facility and will direct their respective haulers to take all waste to that facility. This facility will be developed in the medium-term and is projected to divert between six and nine percent of the total waste generated in the City of West Sacramento.

5.4.1. Alternatives Not Selected

Alternative 4. Drop Off Recycling

This alternative was not selected for implementation as it was deemed to be in conflict with other, more desirable programs and would detract from the city's diversion efforts without making a correlative contribution.

Alternative 5. Mandatory Recycling Laws

This alternative was not selected as the City believes that diversion projections will be met through voluntary, non-coercive measures. Further, since Commercial/Industrial waste will be processed through both source separated collection programs and a MRF, it has been deemed impractical to apply this alternative to those sectors of waste generators.

Alternative 8. Landfill Salvaging

This alternative was not viable for the city of West Sacramento as it does not control the landfill. However, extensive landfill salvaging is currently taking place and is elaborated upon in Section 7, the Special Waste Component.

5.4.2. Cumulative Integrated Effect of Selected Programs

Table 5-11 shows the range of diversion that can be expected for the various recycling programs selected.

Table 5-11. Cumulative Integrated Effect of Recycling Alternatives

Alternative	Short Term	Medium Term
Curbside Recycling	3.3	3.3
Multi-Unit Residential Recycling	0.7	0.9
Commercial Recycling	4.7	5.9
Automatic Material Recovery Facility (Mixed Waste)	0.0	13.4
Total	8.7	23.5

5.4.3. Markets and End-Uses for Recyclable Materials to be Diverted

Table 5-12 shows the markets and end uses for the various recyclable materials.

Table 5-12. Markets and End-Uses for Recyclable Materials Diverted to Selected Programs

Materials	Markets	Uses
Kraft paper/corrugated cardboard	Brokers	Paper Products
Mixed Paper	Brokers	Paper products/building products
Newsprint	Brokers	Paper products/building products
High-grade paper	Brokers, Mills	Paper products/building products
Plastic film	Mills	Plastic products
HDPE Plastic	Mills	Plastic products
PET plastic	Mills	New PET bottles/plastic products
Polystyrene	Mills	Plastic products
Tin food and beverage cans	Mills	Steel products/precipitation mining agent
Other ferrous metals	Brokers	Metal products
Aluminum cans	Mills	New aluminum cans
Nonferrous metals	Brokers	Metal products
Redeemable glass	Mills	New glass containers
Other recyclable glass	Mills	New glass containers
Other glass	End Users	Road aggregate
Chipped wood	End Users	Boiler fuel

5.4.4. Contingency Measures if Unfavorable Market Conditions Occur

Of the materials targeted for diversion, or possible diversion, only HDPE, Polystyrene, and polyethylene film are likely to be subject to market conditions so unfavorable as to require implementation of short-fall management practices.

HDPE, collected through source-separated programs, can be baled and stored space-efficiently for up to six months.

Plastic film, collected through the automated material recovery facility, can be stored space efficiently for up to two months. If no space and no market outlets are available, the plastic film may need to be landfilled.

Polystyrene, collected through the automated MRF and possibly source separated collection programs, is too bulky to store for any appreciable period of time. Dissolution of stable markets for this material will likely force the collector/processor to divert it directly to landfill.

5.5 PROGRAM IMPLEMENTATION

The following section describes the implementation of the selected recycling programs.

5.5.1. Government Agencies Responsible to Implement Programs

The City of West Sacramento, through its Finance Department will implement the City's parts of the programs selected. All necessary monitoring of AB 939 related private sector or government operated programs will be done by this department.

5.5.2. Implementation Tasks

Implementation schedules for programs selected are listed in Tables 5-13, 5-14, and 5-15. The County implementation schedule for the automated MRF is included in Table 5-16.

Table 5-13. Implementation Schedule for Curbside Recycling

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Identify materials volumes to be recovered	City/Hauler	2nd Qtr 1992	2nd Qtr 1992	$2,500
Identify markets	Hauler	2nd Qtr 1992	2nd Qtr 1992	$500
Disseminate information door hangers or bill inserts	City/Hauler	2nd Qtr 1992	3rd Qtr 1992	$3,500
Begin pilot program	Hauler	3rd Qtr 1992	4th Qtr 1992	$10,000
Evaluate pilot program	City/Hauler	4th Qtr 1992	4th Qtr 1992	$500
Amend franchise agreement	City	4th Qtr 1992	1st Qtr 1993	$2,000
Identify & order necessary equipment	Hauler	1st Qtr 1993	3rd Qtr 1993	$2,500
Develop public information regarding program changes	City	1st Qtr 1993	4th Qtr 1993	See Education Component
Receive equipment	Hauler	2nd Qtr 1993	4th Qtr 1993	$500
Begin Full Implementation*	Hauler	2nd Qtr 1993	Ongoing	$170,900

* $1.50 per unit per month for 9,387 units

Table 5-14. Implementation Schedule for Multi-Unit Residential Recycling

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Identify materials Volumes to be recovered	City/Hauler	2nd Qtr 1992	2nd Qtr 1992	---
Identify markets	Hauler	2nd Qtr 1992	2nd Qtr 1992	---
Identify & order necessary equipment	Hauler	3rd Qtr 1992	3rd Qtr 1992	---
Develop public information regarding program changes	City	4th Qtr 1992	4th Qtr 1992	See Education Component
Amend franchise agreement	City	4th Qtr 1992	1st Qtr 1993	---
Receive equipment	Hauler	1st Qtr 1993	1st Qtr 1993	$200
Disseminate information	Hauler	3rd Qtr 1993	3rd Qtr 1993	$1,500
Begin program expansion*	Hauler	3rd Qtr 1993	Ongoing	$98,700

* Total program costs for regular operation of the program are based on $2.00 per unit per month for 4113 mobile home units and units in buildings of 5 units or more.

Table 5-15. Implementation Schedule for Commercial Recycling

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Identify target materials	City/Hauler	2nd Qtr 1992	2nd Qtr 1992	$200
Identify Target customers	Hauler	2nd Qtr 1992	2nd Qtr 1992	$2,500
Identify secure markets	Hauler	2nd Qtr 1992	2nd Qtr 1992	$1,000
Begin collection of specific materials*	Hauler	1st Qtr 1993	Ongoing	$177,500
Begin Processing	Hauler	1st Qtr 1993	Ongoing	$88,800
Evaluate/Quantify capture	Hauler	Ongoing	Ongoing	$2,500
Report to City	Hauler	Ongoing	Ongoing	$1,000

* $40.00 per ton.
** $20.00 per ton.

Table 5-16. Yolo County Implementation Schedule for Mixed Waste MRF

Task	Responsible Entity	Start Date	Completion Date	Funding Source	Estimated Cost
Identify participating jurisdictions	County Dept of Public Works and Transportation (DPWT)	1/92	Completed	CSEF*	Capital cost: $10 - $15 million
Through the CoIWMP process, integrate city and county SRRE's	DPWT	3/92	12/92	CSEF	
Conduct feasibility study to determine facility/system parameters, economics, and targeted waste streams	DPWT	3/92	12/92	CSEF	
Develop policy issues including county role in ownership/operation and flow control	DPWT	4/92	1/93	CSEF	
Define vendor procurement process for facility construction and operation as appropriate - select vendor	DPWT and/or private sector contractor	1/93	7/93	CSEF	
Obtain local and state reviews and permits necessary	DPWT and/or private sector contractor	1/94	1/96	CSEF	
Prepare plans and specifications for construction and operation of the facility	DPWT and/or private sector contractor	1/95	1/96	CSEF	
Construct facility, conduct start-up and performance testing	DPWT and/or private sector contractor	1/96	6/97	CSEF	
Begin operations of MRF	DPWT and/or private sector contractor	6/97	Ongoing	CSEF	

* CSEF - County Sanitation Enterprise Fund.

5.5.6. Plans to Deter Illegal Removal of Recyclables (theft)

Should theft (scavenging) become a problem, the City will consider an anti-scavenging ordinance

and examine the feasibility of enforcement. Such enforcement may be linked to mandatory recycling laws (Alternative 5).

5.6 MONITORING AND EVALUATION

This section addresses processes used by the jurisdictions to monitor and evaluate selected programs.

5.6.1. Methods to Monitor and Quantify Program Results

The primary methods available to the City of West Sacramento to monitor its diversion levels is the Annual Waste Generation Study and the regular tallying of weights in and out of various solid waste and recycling facilities. Through quarterly reports from Waste Management of Sacramento, the City will be able to monitor all diversion being done by Waste Management of Sacramento (residential and commercial recycling). Some recycling will be done by entities elusive to the City's regulating and record keeping functions. Tracking of these activities will require periodic surveys of major recyclers and the California Department of Conservation. It will also be important for the City to keep abreast of trends in the unregulated, nonlocal, and informal recycling sectors that effect the City.

5.6.2. Reporting, Monitoring, and Evaluation

Waste Management of Sacramento will report quarterly the volumes of each material collected in the Curbside and Multi-Unit Residential recycling programs. The City will regularly survey Waste Management of Sacramento and all other identifiable commercial entities on their commercial recycling activities in the City of West Sacramento and may require reporting as part of franchise permits.

5.6.3. Criteria for Evaluation of Program Effectiveness and Contingency Measures for the City of West Sacramento and Waste Management of Sacramento

1) Were objectives for overall diversion attained?

- Identify reasons goals are not being met.
- Review goals and objectives. Were they realistic? Should they be modified?
- Are there any methods which could be used to increase efficiency of the collection system?
- Investigate employee training and performance.
- Investigate new incentives or programs to recycle.
- Review any new technologies or procedures which may increase efficiencies.
- Increase frequency of monitoring and review.

2) Were anticipated levels of materials recovered similar to their proportion in the waste

stream?

- Identify reason for target not being achieved.
- Is lack of recovery due to improper training?

3) Were targeted materials effectively marketed?

- Identify reasons for ineffective marketing.
- Evaluate external markets and whether demand levels are changing.
- Seek alternate markets.

4) Are targeted materials delivered according to market quality standards?

- If materials are contaminated, review handling methods.
- Ask broker/end-user why materials do not conform and what can be done.

5) Were all operational activities performed in an approved manner? Were all applicable federal, state, and local laws and ordinances observed?

- Identify different operating procedures to achieve compliance.
- Is targeted material or procedure contributing significantly to diversion goals? If not, discontinue.
- Seek conditional exception to regulation if needed for program integrity.

6) Are there any hazards posed by the working environment or the products being handled?

- Identify reasons for problems.
- If material or procedure is not vital to meeting goals and objectives, discontinue.
- If vital, seek alternate methods to attain compliance.

7) Are all parties performing according to terms of agreements?

- Evaluate adequacy of staffing levels.
- Review contract of operator.

SECTION 6

COMPOSTING COMPONENT

This component establishes the City's composting objectives, summarizes existing conditions, describes materials available to be composted, evaluates collection options and composting processes, and establishes a short- and medium-term program implementation schedule. In addition, this component estimates cost, and describes a method for monitoring and evaluating the effectiveness of the programs to be implemented.

Composting is a method of solid waste treatment by which organic solid wastes are biologically degraded under controlled aerobic or anaerobic conditions. The result is a stable, decomposed material which can be sold or distributed as a soil amendment that improves the moisture retention capacity of soil, adding nutrients and erosion control. At the same time that it produces a valuable resource, composting fulfills AB 939 goals by diverting a substantial volume of yard wastes and other organic materials from landfills.

Yard waste is the ideal material for composting because of its ease of separation and collection at the source. Wood waste can also be used, but it takes several years to decompose, making it more appropriate as a bulking agent in the composting of sewage sludge. Wood can be chipped and sold as mulch, soil amendment, and animal bedding which would qualify as recycling diversion credit. Wood wastes sold as boiler fuel are regarded as "transformation" and do not count in the short-term planning period towards the City's diversion goals. After 1995 transformation can provide a maximum diversion credit of 10 percent towards the 50 percent requirement.

Yard wastes are easily collected at the source (curbside collection or drop-off). This collection method produces relatively contaminant-free materials which minimizes the processing cost and produces a high quality end-product that is more easily marketed. Residential yard waste can be collected loosely at the curb, in separate containers such as paper or plastic bags; or in rigid plastic containers (30-, 60-, or 90-gallon) by a standard refuse truck. Even though curbside yard waste collection is expensive, it has a relatively high rate of participation. Drop-off collection is the least expensive method, but is expected to have a lower rate of participation. A drop-off collection facility is best used as a complement to a scheduled curbside collection program.

A variety of processing alternatives are available to the City, which include windrow composting, aerated static piles, and in-vessel systems. These processes are described in the Composting Process Alternative Section of this document. Windrow and aerated static piles are the least expensive methods, require more land, and take longer to produce a finished product.

In-vessel systems require more capital for equipment, but process material faster, and need less land.

The use of municipal solid waste (MSW), also referred to as mixed municipal solid waste (MMSW), involves composting the entire organic portion of the waste stream (food waste, yard waste, wood waste, and paper). Although this technology has been in use in Europe, it is not widely used in the United States. Markets for MSW compost are severely limited due to high contaminant levels.

MSW can also be co-composted with sewage sludge. This would restrict the market for the finished composting product to a higher degree than just MSW compost since sewage sludge may contain heavy metals that can end up in the final composting product. The EPA will release regulations in 1992 that may impact the use of sewage sludge composting products. It may be in the best interest of the City of West Sacramento to avoid the use of sewage sludge in any composting operation until these regulations are released.

6.1 GOALS AND OBJECTIVES

The following objectives for the short-term (present to 1995) and medium-term (1996 to 2000) planning periods have been established for the selected composting programs.

- Divert 1,980 tons per year (TPY) and 3,145 TPY for the short and medium-term planning periods respectively by composting residential and commercial/industrial yard waste.
- Develop the collection infrastructure to handle the source-separated yard waste from the City.
- Identify particular sub-groups of potential end-users and their anticipated product quality and quantity requirements.
- Require municipal departments to use composting products generated by the program, and inform residents of its availability and the beneficial uses of compost.
- Evaluate the feasibility of collecting food-waste for composting.
- Evaluate the feasibility of co-composting with other organic waste fractions as well as sewage sludge.

6.2 EXISTING CONDITIONS

There are no existing composting programs in the City of West Sacramento. There are no source separated yard waste collection programs or drop-off sites for yard waste currently in the City.

No existing programs will be decreased in scope, phased out, or closed during the short-term and medium-term planning periods.

6.2.1. Landfill Disposal

A substantial amount of compostable organic wastes continue to go to the landfill. Table 6-1 presents the total amount of organic waste which could be composted, but is currently being disposed at the Yolo County Central Landfill (YCCL).

Table 6-1. Compostable Organic Wastes Disposed of by West Sacramento

Material	Amount (TPY)	Percent of Total Waste Disposed	Percent of Total Waste Generated
Paper	10,259	22.1	16.8
Yard waste	4,140	8.9	6.8
Food	4,176	9.0	6.9
Manure	28	0.0	0.0
Total	18,603	40.0	30.5

Unless the City has definite markets for food waste compost it is recommended that they compost only yard waste in the short-term planning period of 1991 - 1995. This will give additional time for the composting process to be refined. The City can then evaluate additional composting for the medium-term (1996 - 2000) planning period to reach targeted AB 939 goals if they are below the desired levels of diversion.

Table 6-2 shows the waste targeted for composting in the short term.

Table 6-2. Compostable Organic Wastes Targeted for Composting

Material	Amount (TPY)	Percent of Total Waste Disposed	Percent of Waste Generated
Yard waste	4,140	8.9	6.8

6.3 EVALUATION OF ALTERNATIVES

As mentioned, the City of West Sacramento has no yard waste collection and composting program in place. At present all the collected yard waste is disposed of at the YCCL, however, a number of alternatives are available to the City to establish a program. These alternatives can be broadly classified into three categories, collection, processing, and siting. Presented below is a list of the alternatives considered within this section, followed by a thorough evaluation of each alternative.

Collection Alternatives

Alternative 1. Single Family Curbside Collection
Alternative 2. Commercial and Industrial Collection
Alternative 3. Drop-off Collection Sites

Composting Process Alternatives

Alternative 1. Windrow Process
Alternative 2. Aerated Static Piles
Alternative 3. In-vessel Composting
Alternative 4. Anaerobic Composting

Siting Alternatives

Alternative 1. Establish Local Municipal Site
Alternative 2. Establish Centralized Regional Site
Alternative 3. Establish Local Private Site

6.3.1. Collection Alternatives

Collection Alternative 1. Single Family Curbside Collection

Curbside collection of yard waste (leaves, tree and shrub prunings) in the City of West Sacramento will involve the source separation of this material by residents of single family dwellings into containers provided by the collection contractor. The yard waste will then be collected weekly and delivered to a processing facility where it will be converted into soil amendment and boiler fuel.

Effectiveness

West Sacramento's refuse collection program currently handles approximately 2,603 TPY (or 100 percent) of yard waste generated by the residential sector. Of the amount collected, none is composted. A successful source separated yard waste collection program could capture up to 75 percent of the generated residential yard waste, composting 83 percent thereof, for a diversion of 1,628 TPY, or 2.7 percent of the total waste generated.

Table 6-3. Effectiveness of Residential Yard Waste Composting

	TPY	% of Recoverable Material	% of Targetable Material	% of S.F.D. Waste Disposed	% of Waste Disposed	% of Waste Generated
Waste Generated	60,963	---	---	---	---	100
Waste Disposed	46,418	---	---	---	100	76.1
Residential Waste Disposed	17,252	---	---	100	37.2	28.3
Targetable Waste	2,603	---	100	15	5.6	4.2
Recoverable	1,952	100	75	11.3	4.2	3.2
Countable for AB 939 (1995)	1,620	83	62	9.4	3.5	2.7

Hazards

There are no hazards associated with the separate collection of yard waste other than the normal hazards from additional marginal truck traffic.

Ability to Accommodate Change

This alternative is highly adaptable to change.

Consequences on Waste Stream Composition

An effective yard waste collection program will result in a significant reduction in the amount of yard waste entering the waste stream and being landfilled from the City of West Sacramento.

Ability to be Implemented

This alternative can be implemented within 12 to 24 months.

Need for Facilities

A facility for processing and composting the collected yard wastes will be required. The site needs to be approximately 1 acre for every 7,000 cubic yards (1,400 tons) of yard waste composted. For a more detailed evaluation of facility requirements see Siting Alternatives 1-3.

Consistency with Applicable Local Policies, Plans, and Ordinances

A yard waste collection program does not conflict with local policies, plans, or ordinances.

Institutional Barriers to Implementation

There are no institutional barriers to implementation of this alternative.

Costs

Operating costs for collection of yard waste vary greatly with the type of collection. General overall costs for separate collection, including labor, equipment, and depreciation range from $60 to $80 per ton of yard waste collected for both containerized and loose-at-curb collection.[1] A collection rate of 1,628 TPY will result in collection costs ranging from 97,680 to 130,240 per year.

Generally, the introduction of separate yard waste collection will allow the refuse collector to reduce the number of refuse vehicles in operation to compensate for the reduction in refuse. Those vehicles and the costs associated with their operation can then be transferred to the yard waste collection program, thereby offsetting the new program's operating and capital equipment costs.

If the waste is collected commingled with general refuse, then collection costs can be minimized. No new equipment would be needed. The yard waste would be separated from the general waste by bagging. The bags of yard waste would be picked out at the tipping site. This method requires an automated material recovery facility and will generally result in a lower capture rate and higher contamination rate. See Recycling Alternative 7 for costs associated with the operation of a MRF.

Generally, the costs savings of commingled collection with general refuse are offset by the additional costs of MRF processing.

Market Availability

The yard waste that is collected will be delivered directly to the composting facility. If there is more than one private composting facility then the yard waste will be taken to the facility with the lowest tipping fee and/or the greatest ability to assure marketability and therefore diversion compliance.

Technical Reliability/Public Acceptance

Curbside collection of yard wastes has been a reliable and proven method of collection for many communities. Changes in quantity or quality of yard waste can easily be adapted to. The existing collection programs have widespread support and participation.

Collection Alternative 2. Commercial and Industrial Collection

As there is currently no yard waste collection program for the commercial and industrial sectors. It is assumed that 100 percent of the total commercial and industrial grass and leaves are

landfilled and that a percentage of the remaining yard wastes may be incinerated but are not countable as diversion in the short-term.

The urban geography of West Sacramento rules out loose collection. The recommended alternative is therefore containerized collection. Commercial and industrial businesses would be provided with separate containers, one- to eight-yard bins which would be dedicated to the collection of yard waste. The yard waste would be transported directly to a composting facility.

The self-haulers such as tree and gardening services which presently haul their yard waste to the landfill could be directed to deliver their waste to the composting facility, a drop-off point, or transfer station for transport to the composting facility.

Table 6-4. Effectiveness of Commercial/Industrial Yard Waste Composting

	TPY	% of Recoverable Material	% of Targetable Material	% of Comm/Ind Waste Disposed	% of Waste Disposed	% of Waste Generated
Waste Generated	60,963		---	---	---	100
Waste Disposed	46,418		---	---	100	76.1
Comm/Ind Disposed Waste	24,286		---	100	52.3	39.8
Targetable Waste	1,488		100	6.1	3.2	2.4
Recoverable	744	100	50	3.0	1.6	1.2
Countable for AB 939 (1995)	528	71	35.5	2.2	1.1	.9

Effectiveness

Separate collection is a very effective means of diverting yard waste. Participation rates for separate collection of yard waste range from 50 to 90 percent. Presently, 1,488 TPY of yard waste are disposed by commercial and industrial businesses. It is estimated that 60 percent of this material (893TPY) could be diverted if separate collection were available and the businesses were sufficiently motivated by an associated education and public information program or municipal ordinance.

Hazards
There are no hazards associated with the separate collection of yard waste other than the normal hazards from additional truck traffic.

Ability to Accommodate Change
This alternative is highly adaptable to change.

Consequences on Waste Stream Composition
An effective source-separated containerized yard waste collection program for commercial and industrial businesses will result in less organic material in the waste stream and possibly reduced methane gas production at the YCCL.

Ability to be Implemented
A source separated containerized yard waste collection program could be implemented in 6 to 12 months.

Need for Facilities
No facilities will be required for this collection alternative. A facility will be required to process the collected material, however. For evaluations of processing and siting options, see Composting Process Alternatives 1-4 and Siting Alternatives 1-3.

Consistency with Local Policies, Plans, and Ordinances
A source-separated container collection program for yard wastes does not conflict with local policies, plans or ordinances.

Institutional Barriers to Implementation
There are no institutional barriers that would prevent implementing a containerized collection program.

Costs
The costs associated with the implementation of this alternative will be determined by labor rates and capital equipment costs. Because it is as yet unclear what percentage of the City's businesses generate yard wastes in sufficient volume to justify source separated collection, the economies of scale of collection routing are indeterminable. However, the assumptions listed below support the general cost range of $60 to $80 per ton for collection.

Total available yard waste	1,488
Compostable portion (60%)	893
Weeks per year	52
Projected capture per/wk	17.2
Total collectable daily by a one-person truck	15
Truck/man days per week required	

annual average	1.1
Managers	.25
Office personnel	.25

Additional considerations:
Fuel, insurance, maintenance, and collection containers.

Market Availability

Source-separated yard waste offers the best opportunity for development of markets because of its consistent quality as a result of its being free from most contaminants. Private sector end-users are landscape contractors, nurseries, agriculture, and residential users. Public sector uses are in parks, road and highway maintenance, and landfill cover. If there is a surplus after the above markets have been explored then state agencies should be sought out. SB 1322 requires that the Department of General Services, the California Department of Transportation, and the Department of Forestry and Fire Protection use yard waste compost.

Technical Reliability/Public Acceptance

Source-separated collection of yard wastes has been a reliable and proven method of collection for many communities. This method can be easily adapted to changes in quantity or quality of yard waste. This alternative should readily receive public acceptance since the existing curbside collection programs have widespread support and participation.

Collection Alternative 3. Establish Drop-off Collection Sites

Drop-off sites achieve high participation rates from commercial and self-haul generators of yard waste. Drop-off collection sites vary from unattended containers to fully equipped and staffed facilities that receive and process recyclable and compostable materials. A drop-off collection program for the City of West Sacramento could include unattended container sites, a centralized drop-off facility, or a combination of both. Drop-off facility options could include the following:

Option 1 Satellite drop-off sites with a centralized receiving area: Sites would be identified in the City for locating collection bins where commercial landscapers and businesses could transport and dispose of their yard waste. The collection bins would be serviced on a regular basis and the yard waste taken to a centralized location for preparation and processing to compost.

Option 2 Centralized drop-off/processing facility: A centralized collection facility could require all yard waste generators in the City to take their yard waste to one centralized location. The collected yard waste could then be prepared for composting and/or transferred to another site for processing. This facility could also receive other waste materials in conjunction with yard waste collection.

Option 3 Centralized drop-off/processing facility in conjunction with satellite drop-off sites: Satellite drop-off sites in conjunction with a centralized drop-off/processing facility would offer a more convenient disposal method to generators of yard waste.

Effectiveness

Voluntary drop-off programs usually generate participation rates from the residential, commercial, industrial and self-haul sectors of between 5 and 20 percent. This would result in the drop-off of 207 TPY to 828 TPY or between 0.45 and 1.8 percent of the total waste disposed by the City of West Sacramento, but a diversion of waste disposed of only 0.27 percent to 1.0 percent as only 40 percent of the wood waste is compostable.

Table 6-5 shows the effectiveness of drop off sites for composting at 20% recovery rate.

Table 6-5. Effectiveness of Drop off Sites for Composting (at 20% Recovery Rate)

	TPY	% of Targetable Recyclables	% of Yard Waste Disposed	% of Waste Disposed	% of Waste Generated
Waste Generated	60,963	—	—	—	100
Waste Disposed	46,418	—	—	100	76.1
Total Disposed Yard Waste	4,140	—	100	8.9	8.9
Targetable Waste	4,140	100	100	8.9	8.9
Recoverable	828	20	20	1.8	1.4
Countable for AB 939	497	12	12	1.0	.8

Hazards

If yard waste is not regularly transferred to the composting facility, there may be a problem with odors from anaerobic decomposition and vectors (insects, rodents, birds) control. Odors may prevent people from using the site. Unattended containers may be vandalized or contaminated with general waste.

Ability to Accommodate Change

Any change in quality/quantity of yard waste can be accommodated by changing the number, size and location of the sites. However, if economic conditions deteriorate, people my mix general waste with the yard waste. To prevent illegal dumping, site supervision may be necessary.

Consequences on the Waste Stream Composition

A drop-off center for yard waste will result in a reduction in the amount of waste disposed in the YCCL and may result in reduced production of methane gas at the YCCL.

Ability to be Implemented

Drop-off collection could be implemented in the short-term planning period.

Need for Facilities

Facility requirements vary depending on the selected drop-off option.

A drop-off site located at a composting facility would require negligible improvements.

A drop-off site located such that it would serve as a transfer site will require the construction of a concrete pad and a 10 foot high ramp. If the average weight of the material is 200 pounds per cubic yard and 40-yard roll-off containers are used, then the facility will have to be large enough for 4 drop boxes, if removed an average of twice per week.

Consistency with Local Policies, Plans, and Ordinances

There are no local policies, plans, or ordinances that would affect a drop-off facility. However, zoning ordinances would require amendment.

Institutional Barriers to Implementation

Opposition to siting may be a barrier to implementation of this alternative.

Costs

Costs for a drop-off center are much less than curbside collection if a suitable site can be found. If the drop-off facility is located at the composting facility then capital costs would be negligible as no facility need be constructed. If the drop-off center has to be located elsewhere, the costs associated with the drop-off center would include the site design, site development, hauling, and possible staffing. Most drop-off sites are unattended, the City of West Sacramento may wish to operate the site unattended to determine if the amount of contamination is acceptable. The range of capital costs for a drop-off facility can vary from $1,000 for a flat area to drop the yard waste off at the composting facility to $100,000 for a site specifically designed for the collection of yard wastes. These values exclude the cost of the land. Operations and maintenance (O&M) costs, depending on the site location and method of operation, range between $2,000 to over $50,000 per year.

Market Availability

Compost produced from yard wastes left at a drop-off site will be of equal quality as compost made of source separated yard waste if the drop-off site is supervised and contaminants are kept out of the yard waste. Private sector end users are landscape contractors, nurseries, agriculture, and residential users. Public sector users are parks, road and highway maintenance, and landfill cover. If there is still a surplus after the above markets have been explored, then state agencies should be sought out. SB 1322 requires that Department of General Services, the California Department of Transportation, and the Department of Forestry and Fire Protection to use yard waste compost.

Technical Reliability/Public Acceptance

As demonstrated in successful programs nationwide, development of a drop-off site will increase the amount of yard waste diverted form the landfill. Because residents may not want a drop-off facility in their neighborhood, siting the facility may involve public education to counter resistance to the facility.

6.3.2. Composting Process Alternatives

There are three composting methods in common use. They are windrows, static piles, and in-vessel. While static piles and in-vessel composting are complex procedures, the windrow option can be operated with low or high technology. Another process that is not in common use is anaerobic composting. Anaerobic composting provides energy as well as compost, but requires a large input stream. Independent of the composting method chosen, the five essential factors that control the composting process are:

- Microbial population
- Aeration
- Temperature
- Moisture content
- Carbon availability

Processing Alternative 1. Windrow Process

In this system, organic materials are placed in windrows (elongated piles) that are eight to 15 feet wide and 5 to 10 feet high, and usually at least 50 feet long (no maximum length). The size of the windrows depends on the technology of operation and weather conditions. In colder weather, the piles should be as large as possible to retain the heat that is internally generated. Recycled compost or wood chips can be placed over the windrows for insulation.

Windrows can be used with minimal technology or low, medium, or high-level technology. The minimal technological process is to turn the windrows once per year. The windrows are usually about 12 feet high and 24 feet wide for this approach. The only equipment needed for the minimal technological operation is a front loader. The compost can be ready for market in one to three years, depending on the climate. This is the most economical method of composting, if space is available. This option requires a large buffer zone for odor control.

Low-level technology uses a two or three-stage approach to composting. Initially, the waste to be composted is placed in windrows that are approximately six feet high and 12 to 14 feet wide that are turned frequently in the first month. After the first month, two windrows are combined for the second stage of composting. After ten to 11 months, this compost can be pushed to the edge of the facility for curing in the final stage of this composting process. The final product is ready for market in 16 to 18 months. This process requires a considerably smaller buffer zone than the minimal technology approach.

The intermediate-level process requires turning the windrows every week. This process will produce compost in the shortest amount of time, four to six months. The last process, referred to as the high-level process, aerates the windrows mechanically using forced air. Larger windrows can be used in this process than in the minimal technology process. The compost product is ready in about one year.

The last approach, referred to as the high technology approach, is to aerate the windrows mechanically every few days (forced aeration). The composting product is ready in about three to five months.

Effectiveness

The windrows method is a very effective way to process yard waste. Depending on the turning energy input to the system, the time it takes to develop the final product can vary from three months to three years. Windrows can be used with a variety of technological levels and can be modified to work in any climate. This technique facilitates the composting of all of the yard waste that is delivered to the facility (see collection alternatives for specific quantities).

Hazards

The common hazards associated with composting facilities are odors, contaminants, and leachate. There is also a potential for vector problems. There can be hazards associated with equipment operation, but these will be minimized by properly training the equipment operators.

The most common complaints directed at windrow processes are odor complaints. This can be overcome by treatment, proper site and process management. A buffer zone of approximately 1/2 mile surrounds the existing facility. Some process techniques to control odors are:

- Reduce compost activities during high odor periods
- Turn windrows during low wind conditions

- Turn windrows frequently to prevent anaerobic conditions
- Use low odor amendments

The highest correlation for odor generation is the exposed surface area to volume ratio of the windrow. To a certain extent, large windrows emit less odors than small windrows. If a windrow becomes anaerobic, it could potentially be very odorous.

The presence of contaminants in the final compost product can be disastrous to marketing efforts. This hazard can be avoided by visually screening the input waste stream for contaminants and removing them before the material is placed in windrows.
The leachate that is generated from the windrow process can potentially contaminate local water sources. This can be controlled by collecting and treating or recycling the effluent. Alternatively, the leachate can be disposed by means of an evaporation pond.

Vectors can be controlled by revising certain aspects of the windrow process. Improved turning techniques, moisture adjustments, temperature adjustments, and trapping are effective methods for vector control.

Wind-blown litter can be controlled by a chain-link fence surrounding the property. Dust can be controlled by misting the material as it is received.

Ability to Accommodate Change
Windrow composting is adaptable to many economic, technological, and social changes. The processing technology is easily changed from low to high without equipment changes. The process can be performed for any economic condition that is warranted. The process can adapt to social changes. For example, if the public does not want to see the facility, it can be enclosed.

Consequences on Waste Stream Composition
A composting facility will result in reduced amount of methane gas production at the YCCL.

Ability to be Implemented
A windrow composting operation can be implemented in the short term. Approximately 18 to 24 months will be required to permit and build the facility.

Need for Facilities
A site will be necessary for the composting operation. Site improvement costs can be minimized if a site is chosen that meets the criteria given in the siting alternative section for a composting facility. The facility should be sized for at least the medium-term input stream. Approximately one acre for every 7,000 cubic yards (1,400 tons) of composting yard waste will be needed.

Consistency with Local Policies, Plans, and Ordinances

There are no conflicting policies, plans, or ordinances that would preclude a composting facility. A permit from the State Regional Water Quality Board may be required for disposal of the leachate that is generated. The California Integrated Waste Management Board (CIWMB) requires a solid waste facility permit. Zoning ordinances may require change.

Institutional Barriers to Implementation

There are no institutional barriers to composting yard waste. If the jurisdictions decide to move into sewage sludge composting in the future, there may be institutional barriers to the use of the final product. Sewage sludge composting is currently under review by the EPA. Municipal solid waste composting may lack public acceptance as the final product may be contaminated with plastics or other material difficult to compost.

Costs

Typical costs for a composting facility are in collection alternatives, processing, storage, marketing, program administration, public education, and technical assistance. These costs are offset by the benefits which include: revenues received from selling the finished compost, avoided costs from using the finished compost instead of purchasing a similar product, and avoided landfill tipping fees.

Operational costs for conventional windrow processing range from $20 to $30 per ton processed.

Market Availability

The market for compost produced from West Sacramento's yard waste will depend on several factors including: quality of product produced, demand by local government, demand by state government, and demand by local residents.

The compost product quality will be determined largely by process control, screening of the final product, and public perception of the final product (see Public Education Component). There generally exists a direct correlative relationship between the quality and marketability of municipal compost.

Contaminants can be kept to a minimum by source-separated collection. The process must be monitored regularly so that the windrows reach an internal temperature of at least 160° F. for two days or the product will be nitrogen poor and may contain weed seeds, pathogens, nondegraded pesticide residue, and odors. The optimal temperature is 132° F. The compost must be cured before marketing or it will burn out the roots of plants if used for horticultural or agricultural purposes. The end product should be tested for several parameters including pH and salt levels.

Once the product is cured it should be run through a screener to remove wood chips, plastic bags, and other contaminants that are visually unacceptable to the public.

The amount of compost screened will depend on the end-market availability. If the compost is marketed or given to the general public it must look and smell like high quality soil. If the compost is used for landfill cover then the wood chips and other large particles in the final product do not need to be screened out.

The compost can be used by both the public and private sectors. Different quality products (screened/unscreened) can be marketed to different sectors. The public will require a high quality product for horticultural use. It may be necessary to give the product away at first to build up confidence in the compost. The high quality compost can be marketed to nurseries, land developers, golf courses, and other private users.

If all the compost cannot be marketed locally then the City can explore the possibility of marketing the compost to state agencies. Senate Bill 1322 requires that the Department of General Services, the California Department of Transportation, and the Department of Forestry and Fire Protection use yard waste compost.

Technical Reliability/Public Acceptance

Windrow composting techniques are relatively simple and reliable. If a few parameters are controlled, such as temperature, aeration, and moisture content, then the system will operate on its own and be very reliable. Windrow composting is publicly acceptable if odors are controlled.

Processing Alternative 2. Aerated Static Piles

With static pile composting, organic wastes are aerated by blowers, similar to the high technology operation of windrows. The piles can be much larger than standard windrow piles because they are not limited by the size of equipment used to turn the windrows. The blower can be controlled by timers or by a temperature feedback system. Aerated composting has less odor forming potential than conventional windrow composting. This is because the conventional windrow composting operations have a tendency to operate under anaerobic conditions. Anaerobic composting releases more odors than aerobic composting. Composting of strictly yard waste or wood with static piles is rare, aerated static piles are commonly used to compost sewage sludge.

Effectiveness

This option is effective for co-composting yard waste with sewage sludge or other organic materials, but is not recommended for composting yard waste alone. A manure/yard waste mix would be suitable for composting with an aerated static pile system. The compost process would be as effective as the collection system that feeds it (see collection alternatives for specific quantities).

Hazards

The common hazards associated with composting facilities are odors, contaminants and leachate. Vectors can be a hazard if the facility is not properly operated. There can be hazards associated with equipment operation, but these will be minimized by properly training the equipment operators.

The most common complaint direct at composting facilities is odor. Aerated static piles offer better odor control than conventional windrow processes. If the pile is aerated by pushing air up through the pile from the bottom, then the compost acts as a filter for the odors. If the air is sucked through the pile (vacuum at bottom), then the air stream can be treated before release to the atmosphere.

The presence of contaminants in the final product can be disastrous to marketing efforts. This hazard can be avoided by visually screening the input waste stream for contaminants and pulling them out before the material is placed in an aerated static pile.

The leachate that is generated from the compost process can potentially contaminate local water sources. This can be controlled by collecting and treating or recycling the effluent.

If vectors become a problem then vector control will have to be implemented. Improved aeration, temperature and moisture adjustments, or trapping can be effective.

Ability to Accommodate Changes

Aerated static pile composting is adaptable to many economic, technological, and social changes. It can easily be converted to a windrow composting facility.

Consequences on Waste Stream Composition

A composting facility will result in a decrease in the amount of organic waste received at the local landfill.

Ability to be Implemented

An aerated static pile composting facility can be implemented in the short term.

Need for Facilities

A site will be necessary for the composting operation. Site improvement costs can be minimized if a site is chosen that meets the criteria given in the siting alternative section for a composting facility. The facility should be sized for at least the medium-term input stream. Approximately one acre for every 7,000 cubic yards (1,400 tons) of composting yard waste will be needed.

Consistency with Local Policies, Plans, and Ordinances

There are no conflicting policies, plans, or ordinances that would interfere with the construction of a composting facility. Depending on the location, a permit from the State Regional Water Quality Board may be required for disposal of the leachate that is generated. A conditional use

permit may be required depending on the local zoning ordinances. A solid waste facility permit will be required by the CIWMB.

Institutional Barriers to Implementation

There are no institutional barriers to composting yard waste. If the jurisdictions decide to move into sewage sludge composting in the future, there may be institutional barriers to the use of the final product. Sewage sludge composting is currently under review by the EPA.

Costs

Typical costs for a composting facility are in collection alternatives, processing, storage, marketing, and program administration. Revenue sources for a composting facility include: revenues from selling the finished compost; avoided costs from using the finished compost instead of purchasing similar product; and avoided landfill tipping fees. Capital costs for an aerated static pile composting facility are similar to those for windrow composting. While a windrow turner is not needed for this process, a ventilation system is. Operational costs are approximately $30 per ton of yard waste processed.[2] This could run as high as $124,000 per year.

Market Availability

The market for compost produced from West Sacramento's yard waste will depend on several factors including: quality of product produced, demand by local government, demand by state government, and demand by local residents.

The compost product quality will be determined largely by process control, screening of the final product, and public perception of the final product (see Public Education Component). There generally exists a direct correlative relationship between the quality and marketability of municipal compost.

Contaminants can be kept to a minimum by source-separated collection. The process must be monitored regularly so that the windrows reach an internal temperature of at least 160° F. for two days or the product will be nitrogen poor and may contain weed seeds, pathogens, nondegraded pesticide residue, and odors. The optimal temperature is 132° F. The compost must be cured before marketing or it will burn out the roots of plants if used for horticultural or agricultural purposes. The end product should be tested for several parameters including Ph and salt levels.

Once the product is cured it should be run through a screener to remove wood chips, plastic bags, and other contaminants that are visually unacceptable to the public.

The amount of compost screened will depend on the end-market availability. If the compost is marketed or given to the general public it must look and smell like high quality soil. If the compost is used for landfill cover then the wood chips and other large particles in the final product do not need to be screened out.

The compost can be used by both the public and private sectors. Different quality products (screened/unscreened) can be marketed to different sectors. The public will require a high quality product for horticultural use. It may be necessary to give the product away at first to build up confidence in the compost. The high quality compost can be marketed to nurseries, land developers, golf courses, and other private users.

If all the compost cannot be marketed locally then the City can explore the possibility of marketing the compost to state agencies. Senate Bill 1322 requires that the Department of General Services, the California Department of Transportation, and the Department of Forestry and Fire Protection use yard waste compost.

Technical Reliability/Public Acceptance

Aerated static pile composting techniques are relatively simple and reliable. A temperature feedback system to control aeration may be used. By controlling the temperature, aeration, and moisture content, a system can be designed that is very reliable. Aerated static pile composting is acceptable to the public because of the ease of odor control. The facility can be enclosed if there are public objections to its appearance.

Processing Alternative 3. In-Vessel Composting

This process entails the use of a fully- or partially-enclosed, often fully automated operation involving mechanical turning devices with feedback controls and/or forced aeration. Advantages of this method include rapid processing, avoidance of weather related problems and inefficiencies, more complete process and odor control, and less space required.

If the City of West Sacramento decides to compost all of the organic material in its municipal solid waste with an in-vessel system they could divert 48.5 percent of the waste stream that is currently going to landfills. This option would make significant strides toward the state mandated diversion levels, but might significantly affect the marketability of the compost due to the quantity of the compost produced. The compost may possibly be used as landfill cover material; but may be shut out of other markets because of the expected regional availability and quantity of compost in the near future.

Effectiveness

This option is also effective at removing compostable materials from the waste stream, but its expense and complexity will not make this a feasible option unless the input stream is large and other materials are composted with the yard waste. This compost process would be as effective as the collection system that feeds it (see collection alternatives for specific quantities).

Hazards

The common hazards associated with composting facilities are odors, contaminants and leachate. Vectors are not usually a problem with enclosed facilities. There can be hazards associated with

equipment operation, but these will be minimized by properly training the equipment operators.

The most common complaint directed at composting facilities is the odor. In-vessel composting facilities offer better odor control than conventional windrow processes. Since the process is enclosed, the odors can be treated as they are released from the vessel.

The presence of contaminants in the final product can be disastrous to marketing efforts. This hazard can be avoided by visually screening the input waste stream for contaminants and pulling them out before the material is placed in the vessel.

The leachate that is generated from the compost process can potentially contaminate local water sources. This can be controlled by collecting and treating or recycling the effluent.

Vectors are usually not a problem with in-vessel systems.

Ability to Accommodate Change

Once a system is designed, it is not particularly flexible in response to changing economic, technological, or social circumstances without economic penalties.

Consequences on Waste Stream Composition

A composting facility will result in reduced amount of methane gas production at the YCCL.

Ability to be Implemented

An in-vessel composting facility may be implemented in the short term. This method of composting generally is used for composting municipal solid waste. There are many plants of this type in Europe, but experience in America is very limited. This technology has been proven effective for composting municipal solid waste and sewage sludge, but has not been applied to yard waste. A pilot program should be done before committing to this option.

Need for Facilities

A site will have to be found for the composting operation. Site improvement costs can be minimized if a site is chosen that meets the criteria for a composting facility, given in the siting section. A grinder will be needed to prepare the material for composting. Conveyors may be needed to move the material from the grinder to the vessel and from the vessel to the final product area. The facility size requirements are less than the requirements for the windrow or aerated static pile processes. Approximately one acre per 2500 TPY would be needed for an in-vessel composting operation. Utility hookups will be needed.

Consistency with Local Policies, Plans, and Ordinances

There are no conflicting policies, plans, or ordinances that would affect a composting facility. Depending on the location, a permit from the State Regional Water Quality Board may be required for disposal of the leachate that is generated. The CIWMB will require a solid waste facility permit for the site.

Institutional Barriers to Implementation

There are no institutional barriers to composting yard waste. If the jurisdictions decide to move into sewage sludge composting in the future, there may be institutional barriers to the use of the final product. Sewage sludge composting is currently under review by the EPA. Contaminants in MSW compost may limit public acceptance.

Costs

Typical costs for a composting facility are in collection alternatives, processing, storage, marketing, program administration, public education and technical assistance. These costs are offset by the benefits which include: revenues received from selling the finished compost; avoided costs from using the finished compost instead of purchasing a similar product; and avoided landfill tipping fees.

Capital costs for in-vessel systems can be four to seven times higher than those for windrow or aerated static pile systems. An in-vessel system will require an initial investment or approximately $2 million. Operation and maintenance costs run between $40 and $80 per ton of yard waste processed.

Market Availability

The market for compost produced from West Sacramento's yard waste will depend on several factors including: quality of product produced, demand by local government, demand by state government, and demand by local residents.

The compost product quality will be determined largely by process control, screening of the final product, and public perception of the final product (see Public Education Component). There generally exists a direct correlative relationship between the quality and marketability of municipal compost.

Contaminants can be kept to a minimum by source-separated collection. The process must be monitored regularly so that the windrows reach an internal temperature of at least 160° F. for two days or the product will be nitrogen poor and may contain weed seeds, pathogens, nondegraded pesticide residue, and odors. The optimal temperature is 132° F. The compost must be cured before marketing or it will burn out the roots of plants if used for horticultural or agricultural purposes. The end product should be tested for several parameters including pH and salt levels.

Once the product is cured it should be run through a screener to remove wood chips, plastic bags, and other contaminants that are visually unacceptable to the public.

The amount of compost screened will depend on the end-market availability. If the compost is marketed or given to the general public it must look and smell like high quality soil. If the compost is used for landfill cover then the wood chips and other large particles in the final product do not need to be screened out.

The compost can be used by both the public and private sectors. Different quality products (screened/unscreened) can be marketed to different sectors. The public will require a high quality product for horticultural use. It may be necessary to give the product away at first to build up confidence in the compost. The high quality compost can be marketed to nurseries, land developers, golf courses, and other private users.

If all the compost cannot be marketed locally then the City can explore the possibility of marketing the compost to state agencies. Senate Bill 1322 requires that the Department of General Services, the California Department of Transportation, and the Department of Forestry and Fire Protection use yard waste compost.

Technical Reliability/Public Acceptance

Since this system is automated, there is a potential for system failure. There are many reliable technologies on the market for in-vessel compost facilities, but only a few have been built in the United States. This method is extremely acceptable to the public because the whole system is enclosed, creating minimal odor or visual problems.

Processing Alternative 4. Anaerobic Composting

Anaerobic composting is the process of producing compost without air. This process produces two products: compost and biogas. Biogas is a mixture of approximately 50 percent carbon dioxide and 50 percent methane. The biogas can be burned to generate electricity or it can be upgraded to pipeline quality natural gas and sold to utilities. The compost product that is produced is similar to that which is produced in aerobic processes.

Effectiveness

This option is also effective at removing compostable materials from the waste stream, but its expense and complexity render this option generally inapplicable to yard waste unless the input stream is at least 30 tons per day. This compost process would be as effective as the collection system that feeds it (see collection alternatives for specific quantities).

Hazards

There can be hazards associated with equipment operation, but these will be minimized by properly training the equipment operators. Methane gas is explosive and must be properly controlled. Vectors are usually not a problem with enclosed systems. For a further discussion of hazards, please refer to Hazards under Processing Alternative 1.

Ability to Accommodate Change

Anaerobic composting is adaptable to many economic, technological, and social changes. It can be converted to an aerobic composting facility, though this conversion would be very costly.

Consequences on Waste Stream Composition
A composting facility will result in reduced amount of methane gas production at the YCCL.

Ability to be Implemented
Approximately two to three years will be needed to permit, design, and build an anaerobic facility. A windrow composting operation can be implemented in the short term to bridge the gap until the facility will be in operation.

Need for Facilities
The proposed site can be used. A grinder will be needed to prepare the material for composting. Conveyors may be needed to move the material from the grinder to the composting location and from the composting location to the final product area. Anaerobic digesters and a methane gas control system are required. The site may be expanded in the future by increasing the energy available to the system and by the use of buffer areas which are used now for storage and curing.

Consistency with Local Policies, Plans, and Ordinances
There are no conflicting policies, plans, or ordinances that would affect a composting facility. Depending on the location, a permit from the State Regional Water Quality Board may be required for disposal of the leachate that is generated. The CIWMB will require a solid waste facility permit. A local use permit may be required.

Institutional Barriers to Implementation
There are no institutional barriers to composting yard waste. If the jurisdictions decide to move into sewage sludge composting in the future, there may be institutional barriers to the use of the final product. Sewage sludge composting is currently under review by the EPA.

Costs
Typical costs for a composting program involve collection, processing, storage, marketing, and program administration. Potential revenues and cost savings come from selling the finished compost, avoided costs from using the finished compost instead of purchasing a similar product, avoided landfill tipping fees, and the sale of methane generated by the process.

Anaerobic composting is not widely practiced, thus no detailed costs are available. A rough estimate of processing costs is $40 to $60 per ton. Capital costs will be higher than for a windrow process due to the equipment for control of the biogas that is generated.

Market Availability
The market for compost produced from West Sacramento's yard waste will depend on several factors including: quality of product produced, demand by local government, demand by state government, and demand by local residents.

The compost product quality will be determined largely by process control, screening of the final product, and public perception of the final product (see Public Education Component). There generally exists a direct correlative relationship between the quality and marketability of municipal compost.

Contaminants can be kept to a minimum by source-separated collection. The process must be monitored regularly so that the windrows reach an internal temperature of at least 160° F. for two days or the product will be nitrogen poor and may contain weed seeds, pathogens, nondegraded pesticide residue, and odors. The optimal temperature is 132° F. The compost must be cured before marketing or it will burn out the roots of plants if used for horticultural or agricultural purposes. The end product should be tested for several parameters including pH and salt levels.

Once the product is cured it should be run through a screener to remove wood chips, plastic bags, and other contaminants that are visually unacceptable to the public.

The amount of compost screened will depend on the end-market availability. If the compost is marketed or given to the general public it must look and smell like high quality soil. If the compost is used for landfill cover then the wood chips and other large particles in the final product do not need to be screened out.

The compost can be used by both the public and private sectors. Different quality products (screened/unscreened) can be marketed to different sectors. The public will require a high quality product for horticultural use. It may be necessary to give the product away at first to build up confidence in the compost. The high quality compost can be marketed to nurseries, land developers, golf courses, and other private users.

If all the compost cannot be marketed locally then the City can explore the possibility of marketing the compost to state agencies. Senate Bill 1322 requires that the Department of General Services, the California Department of Transportation, and the Department of Forestry and Fire Protection use yard waste compost.

Technical Reliability/Public Acceptance

Anaerobic composting techniques, although not in common use, are relatively simple and reliable once the system has been designed and installed.

6.3.3. Siting Alternatives

Sites that may be appropriate as a composting facility include:

- Buffer areas around landfills
- Waste water treatment facility

- Large, unused paved areas
- Buffer area around industrial sites and institutions
- Utility rights-of-way
- Unused State or Federal lands in the area
- Privately owned land
- Municipally-owned land used for buffer areas or storage

While it may be possible to have a site to serve one jurisdiction, a centralized site for the region is generally preferred on the basis of economies of scale, space availability, and administrative convenience.

The selection of a composting site requires careful consideration of, among other parameters:

- Proximity to the waste stream
- Proximity to potential markets
- Potential for using the land at no direct cost
- Distance from residential and other sensitive land uses
- Size (area)
- Accessibility
- Public attitudes
- Physical site conditions
- Need for permits
- Availability of utilities
- Current and adjacent land uses
- Need for improvements

Three primary options for siting a composting facility are:

- A local municipal site
- A centralized county site
- A private site

A composting facility will have to go through a permitting process that may impact where the site is located. A summary of the permitting steps is as follows:

1. City/County planning departments
   - Use permit
   - CEQA evaluation and determination
   - EIR or Negative Declaration

2. Public Works Department and Waste Advisory Committee for AB 939
   - Concurrence of proposed project needed
   - No permit requirements

3. Department of Public Health
    - Solid Waste Facility Permit or exemption from permit required

4. California Integrated Waste Management Board
    - Solid Waste Facility Permit via Department of Public Health
    - Planners review for CEQA compliance

5. Regional Water Quality Control Board
    - Waste Discharge Permit: Required if there is leachate generation

6. Air Pollution Control District
    - PM-10 permit requirements: Permit required for equipment that generates dust particles of less than 10 microns

Siting Alternative 1. Establish Local Municipal Site

A composting site might be able to be developed on public land in the City of West Sacramento to service the residents. Grinding or shredding equipment could be made available to the City by the County on a rotating basis with other composting sites in the County. Advantages of this approach include:

- Reduced transport time and cost from collection point to processing location
- Local control over distribution of end products

One disadvantage of this approach is a lack of economies of scale, resulting in greater expenditures for equipment or for costs associated with moving shared processing equipment between composting sites throughout the county.

Effectiveness

A local site would be very effective for composting the yard waste generated in the City of West Sacramento. This compost process would be as effective as the collection system that feeds it (see collection alternatives for specific quantities).

Hazards

The common hazards associated with composting facilities are odors, contaminants, and leachate. There is also a potential for vector problems. There can be hazards associated with equipment operation, but these will be minimized by properly training the equipment operators.

The most common complaints directed at windrow processes are odor complaints. This can be overcome by treatment, proper site and process management. A buffer zone of approximately 1/2 mile surrounds the existing facility. Some process techniques to control odors are:

- Reduce compost activities during high odor periods
- Turn windrows during low wind conditions
- Turn windrows frequently to prevent anaerobic conditions
- Use low odor amendments

The highest correlation for odor generation is the exposed surface area to volume ratio of the windrow. To a certain extent, large windrows emit less odors than small windrows. If a windrow becomes anaerobic, it could potentially be very odorous.

The presence of contaminants in the final compost product can be disastrous to marketing efforts. This hazard can be avoided by visually screening the input waste stream for contaminants and removing them before the material is placed in windrows.

The leachate that is generated from the windrow process can potentially contaminate local water sources. This can be controlled by collecting and treating or recycling the effluent. Alternatively, the leachate can be disposed by means of an evaporation pond.

Vectors can be controlled by revising certain aspects of the windrow process. Improved turning techniques, moisture adjustments, temperature adjustments, and trapping are effective methods for vector control.

Wind-blown litter can be controlled by a chain-link fence surrounding the property. Dust can be controlled by misting the material as it is received.

Ability to Accommodate Change

A local composting facility is more likely to adapt to specific local changes in a community than a regional site.

Consequences on Waste Stream Composition

A composting facility will result in a reduced amount of methane gas production at the YCCL.

Ability to be Implemented

A local facility should be able to be implemented in the short-term planning period, depending on the compost operation chosen and availability of land.

Need for Facilities

The composting facility will require one acre of land for every 1,400 to 2,500 TPY of material that is composted, depending on the technology chosen for operation. It may be wise to oversize the facility to provide a large buffer that can be used for future expansion if economic development is expected to occur in the area around the site. A small office will be needed. Access to utilities is preferred. An area may need to be fenced to contain the equipment used at the facility.

quality product for horticultural use. It may be necessary to give the product away at first to build up confidence in the compost. The high quality compost can be marketed to nurseries, land developers, golf courses, and other private users.

If all the compost cannot be marketed locally then the City can explore the possibility of marketing the compost to state agencies. Senate Bill 1322 requires that the Department of General Services, the California Department of Transportation, and the Department of Forestry and Fire Protection use yard waste compost.

Technical Reliability/Public Acceptance

The operation chosen will determine the technical reliability. The public may be more willing to accept a local facility if it is clean and they are educated as to the importance of composting to future waste disposal problems. The facility can be enclosed if the view is publicly unacceptable.

Siting Alternative 2. Establish Centralized Regional Site

A centralized County site has, among other advantages, economies of scale in processing and administrative continuity. A major disadvantage is the greater transport time and cost from collection point to processing location. The site could either be on County property or on other public property.

Composting sites are often located at unused portions of landfills or transfer stations. This tends to create a more efficient integrated waste management system. Permitting lags, if any, are usually minor, and equipment and personnel can be shifted relatively easily between the landfill and the composting sites as necessary.

Effectiveness

A centralized regional site will be effective at composting the yard waste generated in the City of West Sacramento as well as the yard waste generated throughout the region. It will raise the cost of collection because of the increased distance the yard waste has to be hauled but will decrease the initial equipment costs as they will be shared by all jurisdictions using the facility. This compost process would be as effective as the collection system that feeds it (see collection alternatives for specific quantities).

Hazards

The common hazards associated with composting facilities are odors, contaminants, and leachate. There is also a potential for vector problems. There can be hazards associated with equipment operation, but these will be minimized by properly training the equipment operators.

The most common complaints directed at windrow processes are odor complaints. This can be overcome by treatment, proper site and process management. A buffer zone of approximately 1/2 mile surrounds the existing facility. Some process techniques to control odors are:

- Reduce compost activities during high odor periods
- Turn windrows during low wind conditions
- Turn windrows frequently to prevent anaerobic conditions
- Use low odor amendments

The highest correlation for odor generation is the exposed surface area to volume ratio of the windrow. To a certain extent, large windrows emit less odors than small windrows. If a windrow becomes anaerobic, it could potentially be very odorous.

The presence of contaminants in the final compost product can be disastrous to marketing efforts. This hazard can be avoided by visually screening the input waste stream for contaminants and removing them before the material is placed in windrows.
The leachate that is generated from the windrow process can potentially contaminate local water sources. This can be controlled by collecting and treating or recycling the effluent. Alternatively, the leachate can be disposed by means of an evaporation pond.

Vectors can be controlled by revising certain aspects of the windrow process. Improved turning techniques, moisture adjustments, temperature adjustments, and trapping are effective methods for vector control.

Wind-blown litter can be controlled by a chain-link fence surrounding the property. Dust can be controlled by misting the material as it is received.

Ability to Accommodate Change
A regional center may not adapt as readily to local changes as a local facility because of the influence of other jurisdictions.

Consequences on Waste Stream Composition
A composting facility will result in reduced methane gas production at the YCCL.

Ability to be Implemented
A regional facility may take longer to site than a local facility, but there may be more sites to choose from. A regional facility may be able to be implemented in the short-term planning period.

Need for Facilities
It may be wise to oversize the facility to provide a large buffer that can be used for future expansion if economic development is expected to occur in the area around the site. A small

office will be needed. Access to utilities is preferred. An area may need to be fenced to contain the equipment used at the facility.

Consistency with Local Policies, Plans, and Ordinances

There are no conflicting policies, plans, or ordinances that would preclude a composting facility. Depending on the location, a permit from the State Regional Water Quality Board may be required for disposal of the leachate that is generated. The CIWMB will require a solid waste facility permit. A composting facility will be consistent with local policies as long as it is located in an area that has been zoned for this use.

Institutional Barriers to Implementation

People may not want a composting facility in their backyard, public education steps will have to be undertaken.

Costs

The costs associated with processing materials collected are generally the same per ton for a single jurisdiction site or a regional site once economies of scale have been reached. Site development costs, including the purchase of land and satisfying of CEQA requirements, are generally higher per ton ultimately processed for local sites as each jurisdiction must go through the same siting and permitting process. A centralized regional site, however, allows cities to combine their efforts and therefore is likely to reduce the total per ton investment required for start-up.

Market Availability

The market for compost produced from West Sacramento's yard waste will depend on several factors including: quality of product produced, demand by local government, demand by state government, and demand by local residents.

The compost product quality will be determined largely by process control, screening of the final product, and public perception of the final product (see Public Education Component). There generally exists a direct correlative relationship between the quality and marketability of municipal compost.

Contaminants can be kept to a minimum by source-separated collection. The process must be monitored regularly so that the windrows reach an internal temperature of at least 160° F. for two days or the product will be nitrogen poor and may contain weed seeds, pathogens, nondegraded pesticide residue, and odors. The optimal temperature is 132° F. The compost must be cured before marketing or it will burn out the roots of plants if used for horticultural or agricultural purposes. The end product should be tested for several parameters including pH and salt levels.

Once the product is cured it should be run through a screener to remove wood chips, plastic bags, and other contaminants that are visually unacceptable to the public.

The amount of compost screened will depend on the end-market availability. If the compost is marketed or given to the general public it must look and smell like high quality soil. If the compost is used for landfill cover then the wood chips and other large particles in the final product do not need to be screened out.

The compost can be used by both the public and private sectors. Different quality products (screened/unscreened) can be marketed to different sectors. The public will require a high quality product for horticultural use. It may be necessary to give the product away at first to build up confidence in the compost. The high quality compost can be marketed to nurseries, land developers, golf courses, and other private users.

If all the compost cannot be marketed locally then the City can explore the possibility of marketing the compost to state agencies. Senate Bill 1322 requires that the Department of General Services, the California Department of Transportation, and the Department of Forestry and Fire Protection use yard waste compost.

Technical Reliability/Public Acceptance

The operation chosen will determine the technical reliability. The public may be more willing to accept a local facility if it is clean and they are educated as to the importance of composting to future waste disposal problems. The facility can be enclosed if the view is publicly unacceptable.

Technical Reliability/Public Acceptance

The operation chosen will determine the technical reliability. The public may be more willing to accept a facility if it is clean and they are educated as to the importance of composting to future waste disposal problems. The facility can be enclosed if its appearance is publicly unacceptable.

Siting Alternative 3. Establish Local Private Site.

A privately owned and operated local composting facility would remove the direct financial responsibility for the City.

Advantages of this approach include:

- Reduced transport time and cost from collection point to processing location
- Local control over distribution of end products

Disadvantages for this approach include:

- Rates for processing compost are not controlled by the City

- The increased cost associated with permitting will be reflected in the processing fees.

- Facility can be operated to best advantage of the facility owner at any time instead of the best advantage of the City.

Effectiveness

A local site would be very effective for composting the yard waste generated in West Sacramento. This compost process would be as effective as the collection system that feeds it (see collection alternatives for specific quantities).

Hazards

The common hazards associated with composting facilities are odors, contaminants, and leachate. There is also a potential for vector problems. There can be hazards associated with equipment operation, but these will be minimized by properly training the equipment operators.

The most common complaints directed at windrow processes are odor complaints. This can be overcome by treatment, proper site and process management. A buffer zone of approximately 1/2 mile surrounds the existing facility. Some process techniques to control odors are:

- Reduce compost activities during high odor periods
- Turn windrows during low wind conditions
- Turn windrows frequently to prevent anaerobic conditions
- Use low odor amendments

The highest correlation for odor generation is the exposed surface area to volume ratio of the windrow. To a certain extent, large windrows emit less odors than small windrows. If a windrow becomes anaerobic, it could potentially be very odorous.

The presence of contaminants in the final compost product can be disastrous to marketing efforts. This hazard can be avoided by visually screening the input waste stream for contaminants and removing them before the material is placed in windrows.
The leachate that is generated from the windrow process can potentially contaminate local water sources. This can be controlled by collecting and treating or recycling the effluent. Alternatively, the leachate can be disposed by means of an evaporation pond.

Vectors can be controlled by revising certain aspects of the windrow process. Improved turning techniques, moisture adjustments, temperature adjustments, and trapping are effective methods for vector control.

Wind-blown litter can be controlled by a chain-link fence surrounding the property. Dust can be controlled by misting the material as it is received.

Ability to Accommodate Change
A local composting facility is more likely to adapt to specific local changes in a community than a regional site.

Consequences on Waste Stream Composition
A composting facility will result in lower methane gas production at the YCCL.

Ability to be Implemented
A local facility can be implemented in the short-term planning period if an owner and operator are found.

Need for Facilities
A private facility will need to be built.

Consistency with Local Policies, Plans, and Ordinances
There are no conflicting policies, plans, or ordinances that would preclude a composting facility. Depending on the location, a permit from the State Regional Water Quality Board may be required for disposal of the leachate that is generated. The CIWMB will require a solid waste facility permit which is being pursued currently.

Institutional Barriers to Implementation
Community opposition may occur as a response to the perception that a composting facility is a waste handling or processing facility.

Costs
Site development costs are Estimated at $10,000 per acre, equipment capital costs at $600,000, and processing costs between $10 and $30 per ton.

Market Availability
The market for compost produced from West Sacramento's yard waste will depend on several factors including: quality of product produced, demand by local government, demand by state government, and demand by local residents.

The compost product quality will be determined largely by process control, screening of the final product, and public perception of the final product (see Public Education Component). There generally exists a direct correlative relationship between the quality and marketability of municipal compost.

Contaminants can be kept to a minimum by source-separated collection. The process must be monitored regularly so that the windrows reach an internal temperature of at least 160° F. for two days or the product will be nitrogen poor and may contain weed seeds, pathogens, nondegraded pesticide residue, and odors. The optimal temperature is 132° F. The compost must be cured before marketing or it will burn out the roots of plants if used for horticultural

or agricultural purposes. The end product should be tested for several parameters including pH and salt levels.

Once the product is cured it should be run through a screener to remove wood chips, plastic bags, and other contaminants that are visually unacceptable to the public.

The amount of compost screened will depend on the end-market availability. If the compost is marketed or given to the general public it must look and smell like high quality soil. If the compost is used for landfill cover then the wood chips and other large particles in the final product do not need to be screened out.

The compost can be used by both the public and private sectors. Different quality products (screened/unscreened) can be marketed to different sectors. The public will require a high quality product for horticultural use. It may be necessary to give the product away at first to build up confidence in the compost. The high quality compost can be marketed to nurseries, land developers, golf courses, and other private users.

If all the compost cannot be marketed locally then the City can explore the possibility of marketing the compost to state agencies. Senate Bill 1322 requires that the Department of General Services, the California Department of Transportation, and the Department of Forestry and Fire Protection use yard waste compost.

Technical Reliability/Public Acceptance

The operation chosen will determine the technical reliability. The public may be more willing to accept a local facility if it is clean and they are educated as to the importance of composting to future waste disposal problems.

6.4 SELECTION OF PROGRAMS

6.4.1. Collection Alternatives Selected

This section will describe the programs selected by the City for implementation during the short- and medium-term planning period.

The following collection programs have been selected by the City of West Sacramento for implementation.

Collection Alternative 1. Residential Yard Waste Collection

This alternative has been selected for implementation in the short-term. The City will either issue an RFP for the contract or award it to the current waste hauler. Collection will be source separated and containerized.

Collection Alternative 2. Provide Commercial/Industrial Collection

This alternative has been selected for implementation in the short-term. The City will either issue an RFP for the contract or award it to the current waste hauler. Collection will be source separated and containerized.

6.4.2. Collection Alternatives Not Selected

The following collection programs have been rejected by the City of West Sacramento.

Collection Alternative 3. Establish Drop-off Sites

This alternative has been rejected as it is deemed less effective than containerized collection given that the residential sector would not be participating.

6.4.3. Facility Siting Alternatives Selected

The following compost facility siting alternative has been selected by the City of West Sacramento for implementation in the short-term.

Facility Siting Alternative 2. Centralized Regional Site

This alternative has been selected for implementation in the short-term. Since the facility already exists, the tasks necessary for implementation are limited to delivery of the source separated material. The facility will be used by the county and three of the four incorporated cities in the county. It is not scheduled to be open for municipal yard waste composting until 1992.

6.4.4. Facility Siting Alternatives Not Selected

The following composting facility siting alternative has been rejected by the City of West Sacramento.

Alternative 1. Local Municipal Site

This alternative has been rejected as development and operating costs were deemed prohibitive as compared to simply using the facility under development at the YCCL.

Alternative 3. Private Site

This alternative has been rejected as the City does not wish to encourage development of a site to compete with the facility at YCCL when the likely end-market will be the YCCL.

6.4.5. Facility Process Alternatives Selected

Processing Alternative 1. Windrow Process

Windrow processing was chosen because of the low operational costs, compared to other alternatives, and proven success. Windrow processing is just as effective as the other alternatives available and can adapt readily to changes in the input stream.

Processing Alternative 4. Anaerobic Composting

The City will participate in the County regional anaerobic composting program and will coordinate City efforts to meet County requirements. Food wastes and other organics will be targeted for collection and disposal within future YCCL modules. The City is aware that AB 939 diversion credits will not be applicable for waste processed by this means.

6.4.6. Processing Alternatives Not Selected

Alternative 2. Aerated Static Piles
Alternative 3. In-vessel Composting

These alternatives were not selected because of their higher cost and operational variations in comparison to windrowing.

Table 6-7 shows the composting implementation schedule.

6.4.7. Cumulative Integrated Effect of Selected Programs

Table 6-6 shows the range of diversion that can be expected for the various composting selected.

Table 6-6. Cumulative Integrated Effect of Selected Alternatives in Composting

Alternative	Short-Term	Medium-Term
Residential Composting	2.0	2.0
Commercial Composting	0.6	0.9
Total	2.6	2.9

6.5 PROGRAM IMPLEMENTATION

This section will include a schedule of implementation for tasks involved with each selected program. In addition, costs, responsible entities, and funding sources will be identified.

Table 6-7. Composting Implementation Schedule

Task	Responsible Entity	Standard Date	Completion Date	Estimated Cost
Undertake Feasibility Study	City/ Consultant	1st Qtr 1993	1st Qtr 1993	$10,000
Issue and Evaluate RFP	City	2nd Qtr 1993	2nd Qtr 1993	$10,000
Begin Residential Yard Waste Collection and Composting	Hauler	4th Qtr 1993	ongoing	$563,900 *
Identify Large Commercial/Industrial Yard Waste Generators. Promote Program	Hauler/City	2nd QTR 1994	ongoing	$1,000
Begin Commercial/Industrial Yard Waste Collection	Hauler	2nd QTR 1994	ongoing	$112,000**
Divert Yard Waste at Regional Site (YCCL)	YCCL Contractor	2nd QTR 1994	ongoing	$22,000***

* $6.00 per unit per month (single family and two- through four-unit buildings)
** $150 per ton collected
*** $30 per ton collected

Table 6-6. Cumulative Integrated Effect of Selected Alternatives in Composting

Alternative	Short-Term	Medium-Term
Residential Composting	2.7	2.7
Commercial Composting	.9	.9
Total	3.6	3.6

6.5 PROGRAM IMPLEMENTATION

This section will include a schedule of implementation for tasks involved with each selected program. In addition, costs, responsible entities, and funding sources will be identified.

Table 6-7. Composting Implementation Schedule

Task	Responsible Entity	Standard Date	Completion Date	Estimated Cost
Undertake Feasibility Study	City/ Consultant	1st Qtr 1993	1st Qtr 1993	$10,000
Issue and Evaluate RFP	City	2nd Qtr 1993	2nd Qtr 1993	$10,000
Begin Residential Yard Waste Collection and Composting	Hauler	4th Qtr 1993	ongoing	$563,900 *
Identify Large Commercial/Industrial Yard Waste Generators. Promote Program	Hauler/City	2nd QTR 1994	ongoing	$1,000
Begin Commercial/Industrial Yard Waste Collection	Hauler	2nd QTR 1994	ongoing	$112,000**
Divert Yard Waste at Regional Site (YCCL)	YCCL Contractor	2nd QTR 1994	ongoing	$22,000***

* $6.00 per unit per month (single family and two- through four-unit buildings)
** $150 per ton collected
*** $30 per ton collected

6.6 MONITORING AND EVALUATION

To ensure that the composting program is meeting its goals and objectives, the program should be monitored and evaluated on a regular basis. Monitoring should include the following measures:

- Recording by the City or its agent of the estimated cubic yards of materials accepted for processing at the composting site, on a daily basis
- Recording by the City or its agent of the estimated cubic yards or tons of reject materials that require disposal after pre- or post-processing, on an as applicable basis
- Recording by private contractors of the estimated cubic yards of materials deposited and accepted at the composting site, on a daily basis
- Other supplementary measures as deemed necessary or desirable

A waste generation study should be undertaken by West Sacramento, to evaluate changes in the disposal levels of materials targeted or that could be targeted by the composting program. Data gathered in the waste generation study should be compared with data gathered in the 1991 study conducted for the City.

The effectiveness of the composting program (including on-site composting and other organic waste reduction techniques) should be gauged in the intermediate term (by year 2000) as follows, subject to modification in accordance with State guidelines:

- Zero to 25 percent diversion of targeted waste, unsatisfactory
- 25 to 50 percent diversion of targeted waste, needs improvement
- 50 to 66 percent diversion of targeted waste, effective
- Greater than 66 percent of targeted waste or greater than 16 percent diversion (attributable to yard and wood waste) of all solid waste by the City, highly effective

Funding requirements for the monitoring program will include those for recordkeeping to document quantities of targeted waste diverted and quantities of solid waste disposed. Depending on the level of detail required by the State for subsequent waste generation studies, funding requirements could be significant.

6.6.1. Shortfall Implementation

In the event that the composting program is deemed unsatisfactory or in need of improvement, based on the evaluation criteria above, the City should re-assess their strategies in meeting their solid waste diversion objectives. Possible remedial strategies that should be considered include:

- Targeting additional materials for composting
- Allocating greater resources, such as for administrative staff time and public education and publicity
- Placing (or raising) a user fee on collection of trash and lowering (or eliminating) the user fee on collection of materials targeted for diversion, to encourage participation in either municipal composting or home composting programs
- Mandating (or enforcing with fines) the source separation of yard and wood waste
- Evaluate the feasibility of composting MSW

SECTION 7

SPECIAL WASTE COMPONENT

Special wastes are any solid wastes that present a hazard to human health or the environment if not properly handled or wastes that require unique handling or disposal methods because of physical characteristics. Handling and disposal of special wastes may also require permits from one or more state agencies. The California Integrated Waste Management Board defines special wastes as the following:

- Ash
- Nonhazardous sewage sludge
- Nonhazardous industrial sludge
- Asbestos
- Auto shredder waste
- Automobile bodies
- Other special wastes

Other special wastes can include bulky and hard-to-handle wastes such as furniture, refrigerators, and tires as well as potentially hazardous materials such as biomedical wastes generated by medical facilities. Special wastes generated in the City of West Sacramento and addressed in this component are the following:

- Sewage sludge
- Industrial sludge
- Tire waste
- Infectious wastes
- White goods
- Concrete and asphalt
- Wood waste

Sewage sludge is the waste derived from the treatment of wastewater by water pollution control plants. Depending on its content, sewage sludge may be classified as hazardous or nonhazardous. If dewatered sewage sludge meets the nonhazardous criteria of the State Water Resources Control Board, it may be disposed of in a municipal landfill. If the sewage sludge contains significant levels of heavy metals (i.e., copper, cadmium, chromium, lead, nickel, mercury, or zinc), it is considered hazardous and must be disposed of accordingly.

Industrial sludge is generated by industries that operate pretreatment programs for industrial wastewater. Such pretreatment is usually required when the wastewater contains materials that can pose a hazard to the safe and effective operation of publicly-owned treatment plants. Industrial sludge may contain constituents that require it to be classified as a hazardous waste, thus requiring disposal at a Class I landfill.

Tire waste consists of used tires, an inert waste that may legally be disposed of in any type of landfill. Landfilling tires presents some special difficulties because tires are resilient and have a tendency to "float" to the landfill surface where they can become vector habitats.

Infectious wastes or biomedical wastes are classified as hazardous wastes and include:

- Wastes from biological laboratories and medical clinics
- Pathological specimens such as human and animal tissues
- Contaminated medical equipment such as syringes, needles, bags, bottles, etc.
- Human dialysis waste
- Infected animal carcasses
- Any other contaminated material which presents a significant danger of infection

The new Medical Waste Act has redefined the terminology of the regulated waste stream by type of waste rather than by presence of disease-causing organisms. At this time medical waste includes any biohazardous waste and sharps waste. This waste must be rendered non infectious by steam sterilization or incineration prior to landfilling. At this time the waste is termed medical waste, and is considered municipal solid waste.

White goods are large household and industrial appliances, such as stoves, refrigerators, and clothes washers and dryers. These items cannot be compacted and present a space problem at landfills. In addition, refrigeration units contain freon, a material that is hazardous when it vaporized.

Concrete and Asphalt are materials used in construction and/or road work. Concrete is a product of sand, gravel, and cement. Asphalt is a tar-like substance mixed with sand and gravel.

Wood waste refers to pallets, wood crates, and scrap wood.

Program for Disposal of Special Wastes

Auto bodies and other bulky metallic wastes are no longer accepted for disposal at YCCL. Several auto salvaging and scrap metal operations in the area make use of auto bodies generated in Yolo County.

Automobile and truck tires entering the disposal site are directed to a stockpile in the recycling area, whereafter they are collected for shredding and landfilling.

Non metallic bulky items such as trees, branches, and stumps are accepted at YCCL where they are presently buried. However, the Valley By-Products facility will substantially reduce this component of the waste stream.

Most institutional wastes are disposed of in the sanitary landfill with no other special handling. Infectious medical wastes are no longer accepted at YCCL, unless they have been rendered non-hazardous by autoclaving or incinerating.

Liquid and semi-liquid wastes, defined as wastes with a moisture content of greater than 50 percent, including slurries such as cannery wastes, septage, and lime sludge are accepted for disposal in two newly constructed surface impoundments. These materials are dried and then excavated for disposal in the landfill.

Agricultural wastes such as stubble and other crop residues are presently disposed of by burning, discing into the soil, or burying. More stringent air pollution control requirements may lead to less agricultural burning in the future. These materials are also slated for use as fuels in the new Biomass Power Plant in Woodland.

Hazardous and certain Group 1 waste materials, including asbestos, are not accepted for disposal at YCCL. These materials are exported from the County for disposal at locations that have been designated as disposal sites for these materials. An area has been set aside at the YCCL recycling center for collection of car batteries, to prevent their inclusion in the landfill. The County Hazardous Waste Management Plan calls for a permanent household hazardous waste collection facility. The landfill is a potential location for such a hazardous waste transfer station. The County Public Works Department has also received a proposal to compost hazardous waste to benign end-products at the central landfill. YCCL has initiated a hazardous waste exclusion program in which landfill personnel are trained in recognition and handling of hazardous materials found in loads entering the landfill. Loads are currently inspected at the gate on a sporadic basis by County Environmental Health Sanitarians and again when they are tipped. When hazardous wastes are discovered, loads are refused, and proper handling advice is issued.

7.1 GOALS AND OBJECTIVES

The goals and objectives for the short and medium-term planning period are to reduce the quantity of inert solids, concrete, asphalt, and white goods currently being disposed through regional waste diversion efforts and divert these materials for beneficial uses.

7.2 EXISTING CONDITIONS

This section provides a description of the current practices within the City of West Sacramento for each waste type generated. Applicable regulatory requirements are also included.

Sewage Sludge

The City of West Sacramento Water Pollution Control Plant is located at 1991 South River Road. The wastewater is treated using an activated sludge system. The treatment plant has recently been expanded and arrangements are being made to establish a septage monitoring and disposal site. It is anticipated that by the fall of 1991, the West Sacramento Water Pollution

Control Plant will accept a controlled amount of septic waste for disposal and treatment. The sludge, following treatment in anaerobic digesters, is dewatered through belt press filtration. Approximately 730 tons of dry sludge per year is transported to the Yolo County Landfill,[1] and placed in the current operating Class III unit.

The City of West Sacramento Water Pollution Control Plant is under the jurisdiction of the Central Valley Regional Water Quality Control Board (CVRWQCB). The permit to operate is current under CVRWQCB Order No. 90-001.[2] The treatment plant is also under the jurisdiction of the Yolo/Solano County Air Pollution Control District. No permits are currently required or issued by this agency.[3]

Industrial Sludge

The City of West Sacramento regulates all businesses and industries through the Source Control Inspection Division. Permits are issued on a site-specific basis. Nonhazardous sludges are collected through an interceptor/clarifier system. The Source Control Inspection Division tests and inspects all systems semiannually, and also requires self-monitoring analysis.

Currently the Sacramento Regional Water Pollution Control Plant accepts nonhazardous sludges, which are combined with the 180 MGD wastewater influent flow.[4] The Yolo County Landfill does not accept these sludges; they must be transported out of the County for disposal.[5]

Tire Waste

Based on the waste generation analysis, the 161 TPY of annually discarded tires account for approximately 0.3 percent of the wastes generated from the residential and commercial sectors. Current tire disposal fees at the Yolo County Landfill are $1 to $3 per tire/$60 per ton. The landfill operates an effective self-haul salvaging program whereby tires are placed in a designated area and periodically transported for shredding and temporary landfilling. These landfilled tire shreds will potentially be recovered and incinerated.[6]

A total of 85.1 TPY, or .17 percent of the total waste generated as tire waste was diverted from the YCCL in 1990.

Infectious Waste

Infectious (biomedical) wastes are generated by the medical facilities located in the City of West Sacramento. Current disposal practices include pick up by a licensed hauler for treatment and disposal outside of the area, chemical sterilization and landfilling, and shipment of "sharps" in preapproved packaging which meets the criteria of the Department of Health Services and the United States Postal Service. [7]

White Goods

The Yolo County Landfill accepts white goods. The disposal company does not provide this pick-up service as part of routine residential collection; however, the City of West Sacramento and the franchised waste hauler cooperatively conduct an annual cleanup during which time

bulky items, including white goods, are picked up on the routine residential pickup days. The white goods are disposed of at the Yolo County Landfill or recycled through a scrap metal dealer.

The white goods observed during the Waste Generation Analysis were from commercial, industrial, and self-haul loads. The Waste Generation Study indicates that 585 TPY of white goods are landfilled.

White goods will be addressed in Section 7.3, Evaluation of Alternatives.

Concrete and Asphalt
Waste concrete and asphalt are usually generated as the result of construction activity. The Waste Generation Study indicates that 109 TPY of concrete and 101 TPY of asphalt are disposed at the Yolo County Landfill.

Alternatives will be suggested in Section 7.3, Evaluation of Alternatives.

Wood Waste
The wood waste disposed of from the City of West Sacramento is generally from construction activity and is 5,430 TPY or 8.9 percent of the total waste generated.

Suggestions will be made in Section 7.3, Evaluation of Alternative.

7.3 EVALUATION OF ALTERNATIVES

Three types of waste materials generated in the City of West Sacramento make up a significant portion of the special wastes being landfilled: white goods, concrete and asphalt, and wood. The following alternatives to landfilling these materials are described and evaluated in this section:

Alternative 1. Landfill Salvaging
Alternative 2. Concrete and Asphalt Recycling
Alternative 3. Expansion of Bulky Items Collection Days

Alternative 1. Landfill Salvaging

Landfill salvaging operations involve manually sorting refuse to recover reusable materials from the mixed waste after it is brought to the landfill. This method of salvaging can be relatively inexpensive through the use of existing landfill employees, equipment, and available space for sorting and storing the materials until they are transported to market.

The salvaging area at the landfill must be large enough to include a staging area for loading,

unloading, separation, and storage. Landfill staff would probably be responsible for labor associated with the program. This usually requires heavy equipment. Materials will be stored until an adequate quantity is accumulated to make transportation to market economically feasible.

White Goods

Approximately 585 tons of white goods are taken to the Yolo County Landfill each year. All of these items are readily recyclable through scrap metal dealers. The Yolo County Central Landfill is currently planning for implementation in the short term planning period, a regime of landfill salvaging which will recover 100 percent of all white goods landfilled at the active face and 100 percent of all white goods self hauled.

Concrete, Asphalt and Inert Solids

The Waste Generation Study also indicates that approximately 9917 tons of concrete, asphalt and inert solids are generated annually. This material can be crushed and reused as road base for roads, highways, subdivisions, driveways, and parking lots. Water districts also use these materials as fill (riprap). The landfill is currently recycling 7,995 TPY of concrete, asphalt and inert solids generated in West Sacramento. The remaining amount, 1,922 TPY, comes to the YCCL commingled with construction debris.

Wood Waste

The Waste Generation Study indicates that approximately 6,182 tons of wood waste were landfilled in 1990. Of this, 5,430 TPY is transformable as boiler fuel, the remaining 752 TPY being too contaminated.

Effectiveness

The special wastes most suitable for diversion are white goods, concrete, and wood. The estimated capture rate of those materials is summarized in Table 7-1.

Table 7-1. **Projected Amounts Diverted by Landfill Salvaging for Each Waste Type**

Waste Type	Amount Available (TPY) 1990	Short-Term 1995		Medium-Term 2000	
		Diversion Rate (%)	Amount Diverted (TPY)	Diversion Rate (%)	Amount Diverted (TPY)
White goods	585	90	664	90	917
Construction/ Demolition	2,904	90	2,388	90	3,180
Total	5,479	-	5,047	-	6,092

Hazards

Health and safety hazards associated with landfill salvaging are similar to those inherent in all landfill operations, such as the dangers of working in close proximity to large equipment and machinery.

Ability to Accommodate Change

Landfill salvaging is very adaptable to changing economic and technological conditions.

Consequences on Waste Stream Composition

Landfill salvaging will reduce the volume of white goods, concrete, asphalt, and wood from the waste stream, leaving a greater amount of nonrecyclable materials to be landfilled.

Ability to be Implemented

Landfill salvaging can be implemented at a landfill in less than six months, within the short-term planning period.

Need for Facilities

This alternative uses existing facilities at the landfill. Some minor modifications of those facilities may be required.

Consistency with Local Policies, Plans, and Ordinances

Landfill salvaging does not conflict with local policies, plans, or ordinances.

Institutional Barriers to Implementation

There are no institutional barriers preventing implementation of this alternative.

Costs

This program would use equipment already available at the landfill; however, additional equipment may be necessary. The program may also require additional staff/management to sort

and prepare recovered materials to market specifications.

According to the Yolo County SRRE, the estimated implementation costs for the self-haul bin transfer operation is approximately $280,000. Annual operations and maintenance cost is estimated to be $125,000. Funding for this program will be the County's Sanitation Enterprise Fund.

Market Availability

Markets are available for the materials recovered in this collection program. Specific buyers are provided in table 7-2. Additional markets may be available.

Table 7-2. Special Waste Materials Markets

White Goods	
C&C Metals 11320 Dismantle Court Rancho Cordova	Accepts delivery of white goods; compressors must be removed; no freezers. No minimum required.
Schnitzer Steel 12000 Folsom Blvd. Rancho Cordova	Accepts delivery of all white goods, as-is. No minimum required.
LMC Metals 130 North 12th Sacramento	Accepts delivery of white goods; motors and compressors must be removed. 200 lb. minimum.
Wood Waste	
Wood Fuel Processing Company 5079 South Township Road Yuba City	Processes olive pits, olive oil, and prune pits. Uses almond, walnut and prune brush to produce barbecue briquets. Processes mill-in waste less than 2 feet, trip ends from molding plants, and 2x4s any length.
Thermo Electron Company Woodland Biomass East Kentucky Street between Road 101 and 102 Woodland	Processes hogged or chipped brush chips, almond hulls, olive pits, peach pits, walnut shells and rice hulls.

Wheelbrator Shasta Energy Company, Inc. 20811 Industry Road Anderson	Processes almond and walnut shells, and orchard prunings. Equipment on site available to chip branches. Processes trim ends from molding plants, 3-inch (minus bark) sawmill waste, cull logs up to 72 inches in diameter, whole tree chips, chipped logging slash, and processed log yard waste.

Concrete and Asphalt

Harbor Sand and Gravel North End 28th Street/American River Levee/across from Sacramento River	Takes materials free of charge. Recycles clean concrete, concrete with small amount of rebar (sheared off), and asphalt. Size limit 2 feet x 2 feet x 6 inches. Produces roadbase from recycled product.

Alternative 2. Concrete and Asphalt Recycling

Concrete and asphalt can be recycled if segregated by material type. Markets for these materials are included in Table 7-2.

Effective concrete and asphalt recycling programs can be implemented through education and promotion programs that target concrete and asphalt generators. Modification of the landfill tipping fee for these materials provides economic incentives for presorting. The generators would need to presort into three categories: clean concrete, concrete with rebar, and asphalt.

Because the landfill is currently recycling a large percentage of concrete and asphalt for road base, the City will explore mandatory source separation of large quantities of concrete and asphalt generated in municipal projects, thereby assuring that a larger percentage of those materials is recycled.

Effectiveness
This alternative may result in a landfill reduction rate of up to 158 tons per year as shown in table 7-3. Combined with the existing landfill salvaging efforts at the YCCL, total inert solids diversion will reach in excess of 99 percent.

Table 7-3. Projected Effectiveness of Concrete and Asphalt Recycling

Waste Type	Amount Available (TPY) 1990	Short-Term 1995		Medium-Term 2000	
		Diversion Rate (%)	Amount Diverted (TPY)	Diversion Rate (%)	Amount Diverted (TPY)
Concrete and Asphalt	210	70	184	70	254

Institutional Barriers to Implementation
There are no institutional barriers to the implementation of this alternative.

Costs
Any costs in excess of the existing tipping fee for the materials targeted will likely be born by the generator.

Market Availability
Local markets are listed in Table 7-2.

Alternative 3. Bulky Items Collection Days

Bulky Items Collection Days are specified days in a year on which residents may set out bulky items and/or all general refuse for no additional charge. These programs generally work well in jurisdictions with quantity-based variable refuse rates, as they allow residents to dispose of extra wastes at no extra charge, thereby mitigating the incidence of illegal dumping.

Effectiveness
Because the City of West Sacramento provides unlimited refuse service at a flat rate and because the landfill is planning to salvage white goods from the general refuse, such a collection scheme would not mitigate public dumping or serve to further divert white goods. However, in light of the City's decision to pursue variable can rates for general refuse in the medium-term, this alternative will serve to mitigate illegal residential dumping in the medium-term.

Hazards

This alternative poses hazards related to handling and transporting bulky items. Personnel must be trained in proper lifting and moving techniques and forklift operation, if applicable. Special care must be exercised when handling refrigerators, freezers, and air conditioners that contain freon, which is hazardous if inhaled.

Ability to Accommodate Change

This alternative can easily accommodate change. Events can be held less or more often. The program can be expanded or decreased, and the items accepted can be changed as necessary. Holding the event more often may facilitate recycling of the white goods since there would be less to handle at one time.

Consequences on Waste Stream Composition

This alternative will have no effect on the waste stream.

Ability to be Implemented

This alternative can be planned and implemented in three to six months.

Need for Facilities

This alternative does not require new facilities.

Consistency with Local Policies, Plans, and Ordinances

This alternative is consistent with existing local policies.

Institutional Barriers to Implementation

There are no institutional barriers to implementation of this program.

Costs

Estimated costs for the implementation of this alternative include personnel time, equipment, and vehicles. Curbside collection is cost effective if the franchise waste hauler incorporates it into the regular collection routes. Costs will be higher if bulky items are collected separately from general refuse.

For costs associated with the development of education and public information brochures and flyers, see Section 8, Education and Public Information Component.

Market Availability
Local markets are listed in table 7-2. Other markets may be available.

7.4 SELECTION OF PROGRAMS

7.4.1. Programs Selected

The following alternatives have been selected for implementation by the City of West Sacramento.

Alternative 1. Landfill Salvaging

While the City of West Sacramento will not be responsible for implementation, it has elected to avail itself of the Landfill Salvaging services offered as part of the tipping fees assessed every load passing the gate at YCCL.

Alternative 2. Concrete and Asphalt Recycling

The City will require all large municipal and private construction contracts to include source separated disposal of concrete and asphalt for recycling. The contractor or City will be required to explore the markets before removing the waste, assuring that it be recycled and not disposed at the YCCL as excess road base.

Alternative 3. Bulky Item Collection Days

This alternative has been selected for implementation in the medium-term as a means of mitigating illegal dumping.

Table 7-4. Cumulative Integrated Effect of Selected Alternatives in Special Waste

Alternative	Short Term	Medium Term
Landfill Salvaging	3.9	3.9
Concrete and Asphalt Recycling	0.2	0.2
Bulky Item Collection Days	0	0
Total	4.1	4.1

7.5 PROGRAM IMPLEMENTATION

Tables 7-5, 7-6 and 7-7 indicate the implementation schedules for the selected alternatives.

Table 7-5. Program Implementation for Landfill Salvaging

Task	Responsible Entity	Start Date	Completion Date	Funding Source	Estimated Cost
Prepare engineering design and specifications	County DPW	9/91	1/92	CSEF*	$25,000
Obtain required permits	County DPW	9/91	3/92	CSEF	$10,000
Construct Facility	County DPW	7/92	9/92	CSEF	$245,000
Retain Contractor for operations	County DPW	9/92	9/92	CSEF	$0
Commence operations	Contractor/ County DPW	10/92	Ongoing	CSEF	$125,000 (annual)
Monitor program effectiveness	County DPW/Recycling Coordinator	12/92	Quarterly	CSEF	20 hours annually

* CSEF - County Sanitation Enterprise Fund.

Table 7-6. Concrete and Asphalt Recycling Implementation Schedule

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Write Model Contract Amendment for Municipal Contracts	City Staff	1st Qtr 1992	1st Qtr 1992	$750
Develop Ordinance and/or Policy	City Staff	3rd Qtr 1992	3rd Qtr 1992	$2,000
Introduce Ordinance and/or Policy	City Staff	3rd Qtr 1992	3rd Qtr 1992	$2,000
Operate Program	City Staff	3rd Qtr 1992	ongoing	$2,000

Table 7-7. Bulky Item Collection Days Implementation Schedule

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Advertise Program	City/Hauler	1st Qtr 1996	ongoing	$5,000
Begin Collection	City/Hauler	1st Qtr 1996	ongoing	$12,000

7.6 MONITORING AND EVALUATION

The annual waste generation study will provide the basis of the ongoing analysis of progress.

For Alternative 1, Landfill Salvaging, the Yolo County Central Landfill will provide periodic progress reports on its use of inerts and salvaging of white goods and any additional materials of salvagers in sufficient volume to record and assign to a particular jurisdiction.

For Alternative 2., Concrete and Asphalt Recycling, the City will require either weights or cubic yardage figures for all materials salvaged from regulated programs. These figures will be incorporated into the waste generation study and counted as diversion.

For Alternative 3., Bulky Item Collection Days, the City will survey the incidence of illegal dumping to determine if this alternative mitigate successfully the municipal costs incurred from such dumping. Further, the City will survey public acceptance of and participation in the program.

FOOTNOTES

1. Dale Kleaver, Superintendent, City of West Sacramento Water Pollution Control Plant, 5/18/91, oral communication.

2. Richard McHenry, Water Resources Control Engineer, Central Valley Regional Water Quality Control Board, 5/16/91, oral communication.

3. Dave Smith, Air Pollution Control Specialist, Yolo County Air Pollution Control District, 5/20/91, oral communication.

4. Kirk Freeman, Supervisor, City of West Sacramento Source Control Division, 5/28/91, oral communication.

5. Tom Mohr, Yolo County Department of Public Works, 5/28/91, oral communication.

6. Yolo County Solid Waste Management Plan, November, 1989, Sections 4.2.1 and 8.6.2.

7. Dick C. Huang, DMD, 5/16/91, oral communication.
   Diana Cosby, Gordon Q. Lee DDS, 5/15/91, oral communication.
   Carolyn Rommel, Thomas P. Roseberry DDS and Kenneth True DDS, 5/15/91, oral communication.
   Anne Rogers, Gaing W. Chang MD, 5/15/91, oral communication.
   Teresa Finley, Issc B. Freeman MD, 5/16/91, oral communication.
   Clarita Peralta, Health-Wise Medical Group, 5/15/91, oral communication.

SECTION 8

EDUCATION AND PUBLIC INFORMATION COMPONENT

This section describes the various education and public information programs to be developed in support of the specific alternatives selected by the City of West Sacramento to meet its waste diversion goals. The success of this component is necessary if the City is to succeed in achieving the objectives of the other, more technical, alternatives. Through education and public information, all participants (individuals, households, businesses and institutions) will gain the knowledge, understanding and hopefully, the desire to actively contribute in meeting the City of West Sacramento's environmental goals.

8.1 GOALS AND OBJECTIVES

Based upon data from the Waste Generation Study and in conjunction with the combined goals of the other components, the short-term goal of this component is to provide the education and public information support necessary to achieve an overall 25 percent diversion by 1995 and a 50 percent diversion by the year 2000. In order to accomplish this, the following objectives have been established.

- Create an awareness level of 60 percent by all West Sacramento residents regarding the City's recycling, composting, and waste reduction efforts by 1995 and a 90 percent awareness level by the year 2000.

- Develop and have in place, recycling, composting, and source reduction educational curricula utilized by 50 percent of all local schools by 1995 and 100 percent by the year 2000.

- Establish with the West Sacramento Chamber of Commerce a commercial recyclers forum and a source reduction and recycling awards recognition program for local businesses.

- In cooperation with the local Building Industry Association, develop source reduction and recycling programs targeted specifically at the development and construction industry.

- Create a centralized theme and recycling program identity by 1993.

8.2 EXISTING CONDITIONS

The following provides a description of the existing education and public information programs and activities currently in place in the City of West Sacramento.

City Activities

At present, the City Finance office is responsible for information regarding local solid waste recycling programs. A number of schools and businesses have established recycling programs. In most cases, the person in charge serves as the information source, producing handouts and other appropriate materials.

The State certified recycling redemption centers benefit from the promotion and media campaigns administered by the Division of Recycling, Department of Conservation. Local businesses promote the locations as part of the requirements of the law (AB-2020). The high visibility of the recycling domes also serve as a constant reminder to the citizens of West Sacramento that recycling is available to them.

Buy-back centers in the area do a limited amount of advertising and promotion. Primarily, the focus of these efforts is direct advertising to generate specific customers for their centers. Often, the campaigns promote redemption prices.

Schools

Several West Sacramento schools conduct their own recycling programs. Education and information materials are developed and transmitted within each institution.

Business, Industry, Government

A number of West Sacramento businesses, offices, and institutions have developed effective in-house recycling programs. As in the schools, the education and information materials are produced by each organization regarding their specific program.

8.3 PROGRAM ALTERNATIVES

The following alternatives for the West Sacramento education and public information component were selected for two key purposes:

- To increase overall awareness regarding all source reduction, recycling, and composting efforts in the City of West Sacramento
- To develop specific programs targeted at critical generators

Recycling Coordinator

The City will establish a position to coordinate the various education and public information efforts selected to meet diversion goals. The person will serve as liaison between the City's contract refuse hauler, all neighborhood associations, school programs, and the media. In addition, the coordinator will develop and make presentations to businesses and community groups, design and produce all collateral support materials for the source reduction and recycling programs, and develop local workshops.

Source Reduction Programs

Source reduction programs are a critical part of all integrated solid waste management techniques. Source Reduction is the phrase applied to those procedures which prevent goods and materials from entering the waste stream. Simply put, if there is no waste generated, then there is no waste to manage, thus eliminating the necessity of identifying recycling, reuse or disposal options for materials. Source reduction is perhaps the component most directly dependent upon and effected by, education and public information programs. However, source reduction requires long-term changes in consumer habits and product purchasing patterns; therefore, an immediate impact on waste generation may not be expected. Education and public information programs encouraging source reduction should be implemented in the short term so the effect will be able to contribute to long-term diversion goals. The Source Reduction Component for West Sacramento has recommended implementation of a range of programs.

Residential Sector Promotional Campaign

An instructional/information brochure will be developed. They will be given to every household, clearly explaining how to participate in the West Sacramento recycling programs. This brochure will also serve as a handout at presentations to service clubs and civic organizations prior to and after the recycling programs are operating.

School Curriculum

In cooperation with the West Sacramento School District, the City will select and assist in the implementation of specific educational programs for all elementary grades (K-6). Although packaged programs are available from the CIWMB and other sources, it will be imperative that materials be adapted to focus on West Sacramento's specific recycling programs. It is possible a co-sponsor would participate with the City and/or School District to purchase and offset some of the expenses associated with this program.

School Tours

In cooperation with the City's authorized hauler, tours will be arranged to provide students the opportunity to visit the nearby Yolo County Landfill and Recycling Processing Facilities. Student understanding of the technical and operational aspects of the recycling and composting process is important, not only for their benefit, but to arm them with accurate information as they share their knowledge with parents and friends. Additional student tours can be set up with local businesses and institutions which have special recycling programs or process recycled materials.

Commercial/Industrial (Business) Recycling

As part of the recycling component, the Recycling Coordinator would assist in the design, development, and implementation of the specific business recycling programs. As audits are made and individual programs are developed for businesses, the City will provide back-up support in the form of information materials and suggested implementation plans. The actual collection and processing of materials will be the responsibility of the City's authorized hauler.

Business Recognition Program

The City, in cooperation with the West Sacramento Chamber of Commerce or other business organizations, will establish recycling recognition events. A full spectrum of awards can be presented to those firms establishing recycling and source reduction programs, with special acknowledgements going to major diversion efforts or other significant achievements.

Media Advertising

On a regular basis, the City will purchase advertising space in local newspapers to show the progress and success of the various recycling and source reduction programs. The "thermometer" type of ads provide an ongoing indication of a program's achievement, while maintaining the peer pressure awareness so important in obtaining citizen participation.

Media Releases

In addition to a paid advertising campaign, the City will produce and transmit appropriate releases to all media throughout the West Sacramento area regarding the various aspects of the recycling and source reduction programs.

Community Events

The City, in cooperation with its local service clubs and volunteer organizations, will take part in promoting recycling at community events and other local activities such as the Community Day and Safety Day. In most cases, promotional information will be offered to attendees.

Video

The City will produce a video, or series of videos, to use in presentations to service clubs, and civic organizations or for on-the-air opportunities through local cable TV operations. In addition to generic information, specific videos can be developed to target groups, such as horse owner groups, and the construction and building industry.

8.4 PROGRAM SELECTION

Based on data from the Waste Generation Study, targeted waste generators were selected for the design and development of the education and public information programs. Based on the type and quantity of waste generated, the following were selected:

- Single family residents
- Multi-family residents
- Commercial/Industrial generators
- Institutions

All alternatives described above are selected for implementation.

8.5 PROGRAM IMPLEMENTATION

Tables 8-1 through 8-6 list the program implementation schedules.

Table 8-1. Implementation Schedule for Hiring of Staff

Task	Responsible Entity	Start Date	End Date	Funding Source	Cost
Hire Recycling Coordinator	City Department of Finance	1st QTR 1992	ongoing	Refuse Rate	$48,000/ yr

Table 8-2. Implementation of School Curriculum Introduction

Task	Responsible Entity	Start Date	End Date	Funding Source	Cost
Meet with schools to develop needs list	Recycling Coordinator	3rd QTR 1992	1st QTR 1993	Rate Payers	See Staff salary
Research & purchase curriculum	Recycling Coordinator	1st QTR 1993	4th QTR 1993	Refuse Rate	$10,000
School Presentations	Recycling Coordinator	1st QTR 1993	Ongoing	Refuse Rate	See Staff salary
Curriculum Updates	Recycling Coordinator	1st QTR 1994	Ongoing	Refuse Rate	$5,000

Table 8-3. Implementation Schedule for Commercial/Industrial Business Programs

Task	Responsible Entity	Start Date	End Date	Funding Source	Cost
Develop outreach materials for source reduction and recycling	Recycling Coordinator	1st QTR 1992	Ongoing	Refuse Rate	$2,500
Deliver materials to relevant businesses and organizations	Recycling Coordinator	3rd QTR 1992	Ongoing	Refuse Rate	$1,000

Table 8-4. Implementation Schedule of Community Events

Task	Responsible Entity	Start Date	End Date	Funding Source	Cost
Develop Public presentation	Recycling Coordinator	1st QTR 1992	1992	Refuse Rate	$6,000
Participate in events	Recycling Coordinator	1st QTR 1992	Ongoing	Refuse Rate	$2,000

Table 8-5. Implementation Schedule for Media Advertising

Task	Responsible Entity	Start Date	End Date	Funding Source	Cost
Identify and evaluate relevant media	Recycling Coordinator	1st QTR 1992	2nd QTR 1992	Refuse Rate	See staff salary
Develop Material	Recycling Coordinator	2nd QTR 1992	3rd QTR 1992	Refuse Rate	See staff salary
Purchase and schedule advertising	Recycling Coordinator	3rd QTR 1992	Ongoing	Refuse Rate	$10,000/ yr

Table 8-6. Implementation Schedule for Development of Collateral Materials

Task	Responsible Entity	Start Date	End Date	Funding Source	Estimated Cost
Develop Curbside Promotional materials	City	1st QTR 1992	1st QTR 1992	Refuse Rate	$10,000
Develop Apartment Recycling Brochure	Recycling Coordinator	1st QTR 1993	1st QTR 1993	Refuse Rate	$5,000
Disseminate Apartment Recycling Brochure	Recycling Coordinator	2nd QTR 1993	Ongoing	Refuse Rate	$5,000
Develop and Distribute General Source Reduction and Recycling Fact Sheets	Recycling Coordinator	2nd QTR 1993	Ongoing	Refuse Rate	$8,000
Continued Distribution of Materials	Recycling Coordinator	1994	Ongoing	Refuse Rate	$5,000

Table 8-7. Implementation Schedule for Development of Promotional Video

Task	Responsible Entity	Start Date	End Date	Funding Source	Cost
Research, advertise for and select appropriate groups for production	Recycling Coordinator	2nd Qtr 1993	2nd Qtr 1993	Refuse Rate	See Staff Salary
Review scripts/proposals	City Staff	3rd Qtr 1993	3rd Qtr 1993	Refuse Rate	$1,000
Begin production	Selected group(s)	4th Qtr 1993	1st Qtr 1994	Free Through U.C.D. and Public Access Cable	$0
Release Video, show video	City Staff	1st Qtr 1994	ongoing	Refuse Rate	See Staff Salary

8.6 MONITORING AND EVALUATION

The City of West Sacramento will be responsible for the monitoring and evaluation of all programs associated with achieving its desired diversion goals. In particular, the attainment of the education and public information objectives will be addressed in two basic methods:

- Surveys to assess the awareness level of the community regarding the various recycling and source reduction programs within the city of West Sacramento.
- The gathering of specific data to determine the effectiveness of selected alternatives to meet their objectives.

Telephone sample surveys will be conducted annually to determine the awareness level of West Sacramento citizens regarding community recycling and source reduction activities. When the selected alternatives are in place, the surveys will attempt to relate citizen awareness to actual participation in the programs. It is important for the City to have a true picture of the

relationship between simple awareness and actual participation. For example, the random telephone samplings will indicate awareness as follows:

Awareness	Effectiveness
0 percent - 25 percent	Not effective
26 percent - 50 percent	Somewhat effective
51 percent - 75 percent	Effective
76 percent - 100 percent	Very effective

Similarly, data gathered from actual citizen participation information should signify certain relationships between the programs and citizen awareness. As a guide, participation will be evaluated as follows:

Awareness	Effectiveness
0 percent - 25 percent	Not effective
26 percent - 50 percent	Somewhat effective
51 percent - 75 percent	Effective
76 percent - 100 percent	Very effective

It is important to assess the relationship between the two areas of awareness and participation. A high awareness and low participation would indicate a weakness in the operational structure of a program. Low awareness and low participation indicates an ineffective education and/or informational program.

The following monitoring plans will be utilized on an annual basis to audit each of the specific education and public information programs in order to determine their effectiveness in achieving desired goals:

School Curriculum

- Name and number of schools utilizing materials
- Number of classes within each school (Grade Levels)
- Number of students in each class
- Total number of students exposed to program

School Tours

- Name and number of schools utilizing materials
- Number of classes within each school (Grade Levels)
- Number of students in each class
- Total number of students taking field trip

Business Recycling Source Reduction Recognition Award Program

- Name and number of commercial/industrial recycling programs established.
- Specific diversion data (from hauler) of construction demolition debris programs.
- Details of event; who what, where, when, how
- Awards presented (results of achievements)
- Plans for ongoing continuity
- Number of businesses nominated
- Number of businesses eligible for consideration

8.7 SHORTFALL IMPLEMENTATION ALTERNATIVE

Should the monitoring of diversion objectives indicate a shortfall, the following measures will be implemented.

School Curriculum

Through informal surveys and from data provided by the California Division of Recycling, it appears there is high level of interest by schools requesting materials for classroom use. Should the City's objectives fall short, meetings will be set with teachers and school administrators to evaluate and redesign the program and/or materials in order to reach desired objectives.

School Tours

If desired objectives fall short, meetings will be set with school teachers and administrators to determine reasons why site tours are not meeting objectives. If transportation costs become a factor, the City will seek funding from available resources or possibly business/community support.

Business Commercial/Industrial Recycling

As part of the City's overall diversion goals and objectives Commercial/Industrial Recycling is a major factor. Should the efforts of this program fall short, a variety of plans will take effect.

- Organization of a volunteer group of business leaders will be sought to work

directly with the City's Recycling Coordinator to develop and expand programs.

- Evaluation of rate structures to encourage recycling.
- Evaluation of business licensing and fee structures.
- Ongoing advertising campaign to recognize leading business recycling programs.

Table 8-8. Monitoring and Evaluation Program

Measurement Method	Responsible Entity	Funding Requirements	Revenue Source
Telephone Surveys	City Recycling Coordinator	See Staff Salary	Refuse rate
Data Gathering	City Recycling Coordinator	See Staff Salary	Refuse rate
Compilation and Report Production	City Recycling Coordinator	See Staff Salary	Refuse rate

8.8 SUMMARY OF EDUCATION AND PUBLIC INFORMATION COMPONENT

Through the direction of the City's Recycling Coordinator, the efforts of Education and Public Information will be critical in meeting the objectives of each alternative, as well as the City's overall diversion goals. In order to be effective, the education and public information activities must be flexible. Programs must respond quickly to a particular need. Activities must address specific shortfalls or desired expansion of a plan. Cost-efficiency is vital. Care must be taken to not spend unnecessary dollars where efforts are successful and meeting goals. Similarly, critical monitoring must be done to pinpoint program areas that need additional support of education and public information. The administration of this component will be a key factor in the success of the City of West Sacramento Source Reduction and Recycling Element.

SECTION 9

FACILITY CAPACITY COMPONENT

The Facility Capacity Component describes the waste disposal facilities utilized by the City of West Sacramento, projects the future waste capacity needs of the City, and identifies what Yolo County will do to meet future capacity demands. In addition, a description of solid waste facilities that will be closed, expanded, or established in the 15-year planning period is included. At the outset of this component it is important to note that there are no waste disposal facilities within the City; all waste is exported to the County landfill located in the Unincorporated Area of the County.

9.1 EXISTING CONDITIONS OF DISPOSAL FACILITIES USED BY THE CITY OF WEST SACRAMENTO

One-hundred percent of the waste disposed of by the City is sent to the Yolo County Central Landfill (YCCL) located off County Road 28H, near the intersection with County Road 104. The landfill is owned and operated by the Yolo County Department of Public Works and Transportation. Earthco provides the daily refuse placement and cover through a contract with the County. The quantities and types of waste disposed of at the landfill from the City of West Sacramento are given in Table 9-1.

The disposal fees at the landfill, as of July 1, 1991, are as follows:

Commercial loads	$17.75 per ton
Commercial loads (imported)	$21.25 per ton
Noncommercial autos	$ 2.00 each
Noncommercial pickups and small trailers (8 feet or less)	$ 4.00 each
Noncommercial small trailers or pickups (8 feet or less) with loads greater than three feet above the bed	$ 6.00 each
Bulky wastes	$63.75 per ton
Auto tires	$ 2.00 each
Truck tires (16 to 22 inch)	$ 3.00
Tractor tires (24 inch and larger)	$ 4.00
Bulk tires	
(whole)	$78.00 per ton
(split)	$53.00 per ton
(Shredded)	$28.00 per ton
Household appliances	$ 3.00 each

Clean soil, unmixed concrete or asphalt chunks two feet or less in greatest dimension	$ 0
Mixtures with soil, gravel, and asphalt or large chunks of concrete or asphalt	$ 9.00 per ton
Septic, cannery, and similar liquid wastes	$34.00 per ton
Truck wash-out	$50.00 each
Minimum cash fee for weighed materials	$ 7.00
Separated recoverable materials	$ 0

The landfill hours of operation are:

Monday through Saturday	6:00 am to 5:00 pm
Sunday	7:00 am to 6:00 pm

The facility is open to the public from 6:30 am to 4:00 pm Monday through Saturday and 9:00 am to 5:00 pm on Sundays. The facility is closed on New Years Day, Easter Sunday, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

The landfill had a remaining capacity of 11,250,000 tons of waste as of January, 1991 and is expected to reach 100 percent capacity in 2025 with no diversion of the future waste stream. The Recycling, Composting, Source Reduction, and other programs that will satisfy the goals of AB 939 will prolong the life expectancy of the landfill.

The City of West Sacramento currently disposes 46,418 tons per year of solid waste at YCCL. This equals 20 percent of 231,772 tons per year being disposed of at the landfill. By achieving the diversion rates described in this SRRE, the City of West Sacramento's efforts will add approximately 3.5 years to the life of the Yolo County Central Landfill.

The landfill is located on a 724.54 acre parcel of which 640 acres are permitted by the California Integrated Waste Management Board (CIWMB) under Solid Waste Facility Permit 57-AA-001. The facility is permitted to receive 500 tons per day and currently receives approximately 750 tons per day of refuse of which approximately 15 percent is imported from Sacramento City and County. The YCCL permit is expected to be revised and approved by November, 1992.

Table 9-1. Types and Quantities of Materials Disposed by West Sacramento

WASTE TYPE	RESIDENTIAL S.F.D. (TONS/YEAR)	RESIDENTIAL M.F.D. (TONS/YEAR)	RESIDENTIAL TOTAL (TONS/YEAR)	COMMERCIAL (TONS/YEAR)	INDUSTRIAL (TONS/YEAR)	SELF-HAUL (TONS/YEAR)	OTHER WASTE (TONS/YEAR)	TOTAL WASTE (TONS/YEAR)	PERCENT WASTE (BY WEIGHT)
PAPER									
Newspaper	1,393	440	1,833	160	58	0	0	2,052	4.4
Corrugated	394	305	699	2,500	534	0	0	3,733	8.0
High-Grade	106	55	161	1,140	98	0	0	1,399	3.0
Mixed	1,122	483	1,605	747	723	0	0	3,075	6.6
Cont. Paper	996	658	1,654	632	295	0	0	2,781	6.0
PLASTIC									
PET	25	10	35	20	22	0	0	77	0.2
HDPE	59	40	99	37	28	0	0	165	0.4
Pigmented HDPE	35	28	63	15	55	0	0	133	0.3
PS	60	31	91	47	14	0	0	152	0.3
Film	268	171	439	889	171	0	0	1,496	3.2
Other Plastic	471	157	628	739	118	0	0	1,485	3.2
GLASS									
CA redemption	148	82	230	106	42	0	0	378	0.8
Other recyclable	654	228	882	26	1	0	0	909	2.0
Non-recyclable	6	1	7	289	67	0	0	363	0.8
METAL									
Aluminum cans	32	25	57	15	13	0	0	85	0.2
Bi-metal/tin	339	118	457	68	458	0	0	984	2.1
Ferrous metal	339	79	418	1,160	273	0	0	1,851	4.0
Non-ferrous metal	45	14	60	319	16	0	0	395	0.9
White goods	0	0	0	500	12	73	0	585	1.3
YARD WASTE									
Grass, leaves	1,663	0	1,663	732	47	0	0	2,662	5.7
Prunings	554	166	720	534	175	0	0	1,429	3.1
Mixed yard waste	0	0	0	0	0	49	0	49	0.1
OTHER ORGANIC									
Food	1,740	599	2,339	1,693	144	0	0	4,176	9.0
Tires	0	61	61	99	0	0	0	161	0.3
Rubber	33	1	34	167	51	0	0	251	0.5
Wood waste	76	78	154	3,873	1,403	0	0	5,430	11.7
Wood (press board, etc.)	58	14	72	353	327	0	0	752	1.6
Ag crop residue	0	0	0	0	0	0	0	0	0.0
Manure	25	1	26	0	3	0	0	28	0.1
Disposable diapers	210	254	464	2	1	0	0	467	1.0
Textiles, leather	167	227	394	100	23	0	0	517	1.1
OTHER WASTE									
Asphalt	2	0	2	0	99	0	0	101	0.2
Concrete	0	0	0	84	26	0	0	109	0.2
Inert solids	577	11	587	94	1,030	0	0	1,712	3.7
Composite materials	8	285	292	344	69	0	0	705	1.5
HHW matl/container	85	4	90	7	1	0	0	97	0.2
Misc.	214	203	417	189	16	1,789	0	2,371	5.1
SPECIAL WASTE									
Ash	93	0	93	0	0	0	0	93	0.2
Medical waste	1	6	7	4	0	0	0	11	0.0
Auto shredder	0	0	0	0	0	0	0	0	0.0
Auto bodies	0	0	0	0	0	0	0	0	0.0
Bulky waste	0	0	0	202	5	85	0	292	0.6
Other special	0	0	0	0	0	0	0	0	0.0
Construction/Demolition	0	0	0	0	0	2,904	0	2,904	6.3
TOTAL	12,218	5,034	17,252	17,868	6,418	4,880	0	46,418	100.0

9.2 ADDITIONAL CAPACITY REQUIREMENTS

Additional capacity requirements for a 15-year planning period are calculated using the following formula from the CIWMB planning guidelines and procedures for preparing, revising, and amending county-wide integrated waste management plans:

$$AC_n = [(G+I) - (D+TC+LF+E)]_n$$

where:

AC = Additional capacity required in year n.

G = The amount of solid waste projected to be generated in the jurisdiction (from Waste Generation Study).

I = The amount of solid waste expected to be imported to the jurisdiction for disposal in permitted solid waste disposal facilities through interjurisdictional agreement(s) with other cities or counties, or through agreements with solid waste enterprises, as defined in Section 40193 of the Public Resources Code.

D = The amount diverted through successful implementation of proposed source reduction, recycling, and composting programs (from the Waste Generation Study and the Integration Component).

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

LF = The amount of permitted solid waste disposal capacity which is available for disposal in the jurisdiction.

E = The amount of solid waste generated in the jurisdiction which is exported to solid waste disposal facilities through interjurisdictional agreement(s) with other cities or counties, or through agreements with solid waste enterprises, as defined in Section 40193 of the Public Resources Code.

n = Each year of a 15-year period commencing in 1991 (iterative in one-year increments).

The results of these calculations, as shown on table 9-2, indicate that the City needs additional waste disposal capacity. This is misleading because the CIWMB will not allow waste that is exported for disposal to be shown as such unless the jurisdiction has an official export agreement with the jurisdiction in which the disposal facility exists.

Table 9-2. Additional Capacity Requirements for the City of West Sacramento*

Year	AC (yd^3)	AC (TPY)	G (TPY)	I (TPY)	D (%)	D (TPY)	TC (TPY)	LF (TPY)	E (TPY)
1990	96,703	46,418	60,963	0	24	14,545	0	0	0
1991	101,296	48,623	63,859	0	24	15,236	0	0	0
1992	102,209	49,061	66,889	0	27	17,828	0	0	0
1993	98,951	47,497	70,066	0	32	22,569	0	0	0
1994	97,080	46,599	73,393	0	37	26,794	0	0	0
1995	96,703	46,418	76,877	0	40	30,459	0	0	0
1996	99,748	47,880	82,011	0	42	34,131	0	0	0
1997	98,953	47,498	87,484	0	46	39,986	0	0	0
1998	97,826	46,957	93,327	0	50	46,370	0	0	0
1999	98,765	47,408	99,557	0	52	52,149	0	0	0
2000	99,357	47,692	106,204	0	55	58,512	0	0	0
2001	105,990	50,876	113,294	0	55	62,418	0	0	0
2002	113,067	54,273	120,858	0	55	66,585	0	0	0
2003	120,617	57,897	128,927	0	55	71,030	0	0	0
2004	128,671	61,763	137,537	0	55	75,774	0	0	0
2005	137,260	65,886	146,719	0	55	80,833	0	0	0
Total	1,693,196	812,746	1,527,965	0	---	715,219	0	0	0

Note: Heading abbreviations are defined on page 9-4.

* 100 percent of the waste generated is exported to the YCCL without an official export agreement.

9.3 PLANS FOR FACILITY EXPANSIONS AND NEW SOLID WASTE FACILITIES

A wood processing facility is located adjacent to the YCCL. This facility is proposed to expand to wood and yard waste processing. The wood waste will be processed into fuel, mulch, and wood. The green waste will be processed into compost, possibly for use as an alternate daily cover at the landfill.

In addition, anaerobic composting within a landfill cell has been proposed for the generation of methane and for volume reduction of the waste.

No facilities are proposed for the City of West Sacramento.

FOOTNOTES

1. In-place volume calculation based on in-place density of 1200 pounds per cubic yards and cover ratio of 4:1.

SECTION 10

FUNDING COMPONENT

This Source Reduction and Recycling Element (SRRE) describes the programs that the City of West Sacramento will implement to meet the required diversion goals as mandated by AB 939. In order to accomplish the stated goals and objectives for each of the components of the SRRE, sufficient funding and resource allocation must be available for program planning and development. This can be accomplished by expanding existing funding sources and expanding the funding program to include additional means of revenue.

This section describes the current funding sources, provides cost estimates for the planning, development, implementation, and monitoring and evaluation for each component and identifies primary and contingency funding sources sufficient to support each component program.

10.1 CURRENT FUNDING SOURCES

This section will describe resources currently available to help fund programs selected in the SRRE.

Program costs will be extracted entirely from the general refuse, recycling and yard waste collection rates. The revenues will be made available from the Refuse Fund.

10.2 ESTIMATED PROGRAM COSTS

Table 10-1. Estimated Program Costs in Source Reduction (all listed costs are new costs)

Programs	Costs 1992	Costs 1993	Costs 1994	Costs 1995	Costs 1996
Quantity Based Variable Rates or User Fees	---	---	---	$41,500	$49,000
Backyard Composting	---	$2,800	$500	$500	$500
Awards & Public Recognition	---	$450	$200	$200	$200
Non-procurement Source Reduction	$200	$1,000	$500	$500	$500
Government Procurement Policies	---	$1,000	$1,000	$1,000	$1,000
Total	$200	$5,250	$2,200	$43,700	$51,200

Table 10-2. Estimated Program Costs in Recycling (all costs are new costs)

Program	Costs 1992	Costs 1993	Costs 1994	Costs 1995	Costs 1996
Curbside Recycling *	$19,000	$173,900	$170,900	$170,900	$170,900
Multi-unit Residential Recycling**	---	$100,400	$98,700	$98,700	$98,700
Implementation of Commercial Recycling	$3,700	$269,800	$269,800	$269,800	$269,800
Intermediate Processing Center	Incorporated into above program costs	Incorporated into above program costs	Incorporated into above program costs	Incorporated into above program costs	Incorporated into above program costs
Total	22,700	544,100	539,400	539,400	539,400

* $1.50 per unit per month for 9,387 units
** $2.00 per unit per month for 2,558 units

Table 10-3. Estimated Program Costs in Composting

Program	Costs 1992	Costs 1993	Costs 1994	Costs 1995	Costs 1996
Residential Collection and Processing*	$161,000	$563,900	$563,900	$563,900	$563,900
Commercial Collection ($30 per ton)	---	$57,000	$112,000	$112,000	$112,000
Commercial Processing ($30 per ton)	---	$11,000	$22,000	$22,000	$22,000
Total	$161,000	$631,900	$697,900	$697,900	$697,900

* $6.00 per unit per month for 7,832 units

Table 10-4. Estimated Program Costs in Special Wastes

Program	Costs 1992	Costs 1993	Costs 1994	Costs 1995	Costs 1996
Landfill Salvaging	Incorporated into Refuse Rate	Incorporated into Refuse Rate	Incorporated into Refuse Rate	Incorporated into Refuse Rate	Incorporated into Refuse Rate
Concrete and Asphalt Recycling	$6,700	$2,000	$2,000	$2,000	$2,000
Bulky Item Collection	---	---	---	---	$17,000
Total	$6,700	$2,000	$2,000	$2,000	$19,000

Table 10-5. Estimated Program Costs in Public Education

Program	Costs 1992	Costs 1993	Costs 1994	Costs 1995	Costs 1996
Recycling Coordinator	$48,000	$48,000	$48,000	$48,000	$48,000
School Curriculum	---	$10,000	$5,000	$5,000	$5,000
Commercial/ Industrial Business Programs	$3,500	$3,500	$3,500	$3,500	$3,500
Community Events	$6,000	$2,000	$2,000	$2,000	$2,000
Media Advertising	$10,000	$10,000	$10,000	$10,000	$10,000
Collateral Materials	$10,000	$18,000	$5,000	$5,000	$5,000
Video	---	$10,000	---	---	---
Total	$77,500	$92,500	$73,500	$73,500	$73,500

Table 10-6. Total Estimated Program Costs

Component	Costs 1992	Costs 1993	Costs 1994	Costs 1995	Costs 1996
Source Reduction	$200	$5,250	$1,200	$43,700	$51,200
Recycling	$22,700	$544,100	$539,400	$539,400	$539,400
Composting	$161,000	$631,900	$697,900	$697,900	$697,900
Special Wastes	$6,700	$2,000	$2,000	$2,000	$19,000
Education	$77,500	$92,500	$73,500	$73,500	$73,500
Total	$268,100	$1,275,750	$1,314,000	$1,356,500	$1,381,000

10.3 CONTINGENCY FUNDING MECHANISMS

Should the funding sources identified become insufficient to cover the cost of the programs, other methods of funding as follows could be utilized:

User Fees

User fees offer a fair means of payment for waste collection and disposal. 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.

County Service Areas

County service areas are a means of funding certain services for local government. A county service area is a geographic section of a county on which special assessments of the property tax are levied for services to that area.

Joint Powers Agreement

A joint powers agreement (JPA) is an agreement between two (or more) different government bodies to pool their financial resources. This offers the advantage of having more than one source of funding (i.e., City of West Sacramento and Yolo County).

Developer's Fees

As an alternative means of financing, fees could be charged to developers for solid waste management services when they submit their plans to develop a housing and/or industrial community. However, developers may pass such costs on to the home buyer. Overall fees could be reduced by an incentive program; for example, the developers could agree to institute source reduction and recycling programs or other innovations in their developments.

General Obligation Bonds

General obligation bonds are debt instruments backed by the full faith and credit of a governmental unit. City-backed obligation bonds must go to public vote for approval.

Revenue Bonds

Revenue bonds are also debt instruments secured by the pledge of certain revenues of a utility, such as tipping fees.

SECTION 11

INTEGRATION COMPONENT

The California Integrated Waste Management Act established a statewide hierarchy for integrated waste management in the following order: 1) source reduction; 2) recycling and composting; and 3) environmentally safe land disposal and transformation.

This section summarizes how the Source Reduction, Recycling, Composting, and Special Waste components combine to achieve the 25 percent and 50 percent mandates specified in Public Resources Code section 41780.

11.1 SUMMARY OF SELECTED PROGRAMS

The components of this Source Reduction and Recycling Element describe the programs to be established by the City of West Sacramento to meet the hierarchy of waste management practices and state mandated diversion goals. The following programs have been selected:

Source Reduction

1. Quantity Based Variable Rates or User Fees
2. Back yard composting
3. Awards and Public Recognition
4. Non-Procurement Service Reduction
5. Government Procurement Policies

Recycling

1. Curbside Recycling
2. Multi-Unit Residential Recycling
3. Commercial Recycling
4. Intermediate Processing Center (IPC)
5. Materials Recovery Facility (MRF)

Composting

1. Residential Collection
2. Commercial Collection
3. Regional Facility

Special Waste

1. Landfill Salvaging
2. Concrete and Asphalt Recycling
3. Bulky Item Collection Days

Public Education

1. Recycling Coordinator
2. School Curriculum
3. Commercial/Industrial Business Programs
4. Community Events
5. Advertising
6. Collateral Materials
7. Video

11.2 EXPLANATION OF INTEGRATION

This section will explain how the selected programs from each component will be integrated to form a cost-effective solid waste management plan.

Because of funding and manpower limitations, not all of the selected programs can be established immediately. Thus, the City of West Sacramento has established priorities for the implementation of the selected programs within the short- and medium-term planning periods. The following factors were used to prioritize the programs to provide the maximum waste diversion within the shortest time period and to allow for the ability to obtain the needed funding:

1. The category of the component in regards to the waste management hierarchy:

    a) Source reduction
    b) Recycling and composting
    c) Transformation and disposal

2. The amount of effort and funding required to design and implement the program.

3. The waste stream composition and the amount of waste that each program can divert from disposal.

4. The ability to incorporate the component into the perceived waste management structure.

The selected programs were prioritized as illustrated above to meet the goals and objectives of the SRRE.

11.3 SCHEDULE FOR IMPLEMENTATION

The cumulative integrated effect of selected programs and their respective implementation schedules are contained in the following tables. These schedules show the necessary tasks needed for implementation of each component of the SRRE through the short-term planning period.

11.3.1. Source Reduction

Table 11-1. Cumulative Integrated Effect of Programs Selected in Source Reduction

Alternative	Short-Term %	Medium-Term %
Backyard Composting	0.2	0.6
Total	0.2	0.6

11.3.2. Program Implementation

Table 11-2. Quantity Based Variable Rates or User Fees

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Determine total revenues required from garbage rate	City of West Sacramento	1/95	6/95	$20,000
Develop a new garbage rate	City of West Sacramento	6/95	12/95	$20,000
Develop public information	City of West Sacramento	12/95	12/95	$1,500
Public hearings	City of West Sacramento	1/96	3/96	$4,000
Promotion and education	City of West Sacramento/ Hauler	4/96	8/96	$10,000
Implementation	City of West Sacramento/ Hauler	9/96	---	$35,000
Total	---	---	---	$90,500

Table 11-3. Implementation Schedule for Backyard Composting

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Develop Public Information Literature	City	1st Qtr 1993	1st Qtr 1993	$1,800
Public Workshops	City	1st Qtr 1993	Ongoing	$500/yr.
Develop Public Demonstration Project	City	1st Qtr 1993	Ongoing	$500
Press Release	City	1st Qtr 1993	1st Qtr 1993	0
Total	----	----	----	$2,800

Table 11-4. Implementation Schedule for Awards and Public Recognition

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Develop Formal Program of Recognition	City	2nd Qtr 1993	2nd Qtr 1993	$250
Select First Recipient	City	2nd Qtr 1993	Ongoing	$100
Award Plaque, Trophy, etc.	City	2nd Qtr 1993	Ongoing	$100
Total	---	---	---	$450

Table 11-5. Implementation Schedule for Nonprocurement Source Reduction

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Develop Program	City	4th Qtr 1992	4th Qtr 1993	$200
Implement Program at City Hall	City	1st Qtr 1993	1st qtr 1993	$500
Promote Program as a Model for Business Community	City	2nd Qtr 1993	Ongoing	$500
Total	---	---	---	$1,200

Table 11-6. Implementation Schedule for Government Procurement Policies

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Identify Substitute Products and Areas of Waste	City	1st Qtr 1993	Ongoing	0
Create New Purchasing Guidelines	City	1st Qtr 1993	Ongoing	$1,000
Total	---	---	---	$1,000

11.3.3. Recycling

Table 11-7. Cumulative Integrated Effect of Recycling Alternatives

Alternative	Short Term	Medium Term
Curbside Recycling	3.3	3.3
Multi-Unit Residential Recycling	0.7	0.9
Commercial Recycling	4.7	5.9
Automatic Material Recovery Facility (Mixed Waste)	0.0	13.4
Total	8.7	23.5

Table 11-8. Implementation of Curbside Recycling

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Identify materials volumes to be recovered	City/Hauler	2nd Qtr 1992	2nd Qtr 1992	$2,500
Identify markets	Hauler	2nd Qtr 1992	2nd Qtr 1992	$500
Disseminate information door hangers or bill inserts	City/Hauler	2nd Qtr 1992	3rd Qtr 1992	$3,500
Begin pilot program	Hauler	3rd Qtr 1992	4th Qtr 1992	$10,000
Evaluate pilot program	City/Hauler	4th Qtr 1992	4th Qtr 1992	$500
Amend franchise agreement	City	4th Qtr 1992	1st Qtr 1993	$2,000
Identify & order necessary equipment	Hauler	1st Qtr 1993	3rd Qtr 1993	$2,500
Develop public information regarding program changes	City	1st Qtr 1993	4th Qtr 1993	See Education Component
Receive equipment	Hauler	2nd Qtr 1993	4th Qtr 1993	$500
Begin Full Implementation*	Hauler	2nd Qtr 1993	Ongoing	$170,900

* $1.50 per unit per month for 9,387 units

Table 11-9. Implementation Schedule for Multi-Unit Residential Recycling

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Identify materials Volumes to be recovered	City/Hauler	2nd Qtr 1992	2nd Qtr 1992	---
Identify markets	Hauler	2nd Qtr 1992	2nd Qtr 1992	---
Identify & order necessary equipment	Hauler	3rd Qtr 1992	3rd Qtr 1992	---
Develop public information regarding program changes	City	4th Qtr 1992	4th Qtr 1992	See Education Component
Amend franchise agreement	City	4th Qtr 1992	1st Qtr 1993	---
Receive equipment	Hauler	1st Qtr 1993	1st Qtr 1993	$200
Disseminate information	Hauler	3rd Qtr 1993	3rd Qtr 1993	$1,500
Begin program expansion*	Hauler	3rd Qtr 1993	Ongoing	$98,700

* Total program costs for regular operation of the program are based on $2.00 per unit per month for 4,113 mobile home units and units in buildings of 5 units or more.

Table 11-10. Implementation Schedule for Commercial Recycling

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Identify target materials	City/Hauler	2nd Qtr 1992	2nd Qtr 1992	$200
Identify Target customers	Hauler	2nd Qtr 1992	2nd Qtr 1992	$2,500
Identify secure markets	Hauler	2nd Qtr 1992	2nd Qtr 1992	$1,000
Begin collection of specific materials*	Hauler	1st Qtr 1993	Ongoing	$177,500
Begin Processing	Hauler	1st Qtr 1993	Ongoing	$88,800
Evaluate/Quantify capture	Hauler	Ongoing	Ongoing	$2,500
Report to City	Hauler	Ongoing	Ongoing	$1,000

* $40.00 per ton.
** $20.00 per ton.

Table 11-11. Yolo County Implementation Schedule for Mixed Waste MRF

Task	Responsible Entity	Start Date	Completion Date	Funding Source	Estimated Cost
Identify participating jurisdictions	County Dept of Public Works and Transportation (DPWT)	1/92	Completed	CSEF*	Capital cost: $10 - $15 million
Through the CoIWMP process, integrate city and county SRRE's	DPWT	3/92	12/92	CSEF	
Conduct feasibility study to determine facility/system parameters, economics, and targeted waste streams	DPWT	3/92	12/92	CSEF	
Develop policy issues including county role in ownership/operation and flow control	DPWT	4/92	1/93	CSEF	
Define vendor procurement process for facility construction and operation as appropriate - select vendor	DPWT and/or private sector contractor	1/93	7/93	CSEF	
Obtain local and state reviews and permits necessary	DPWT and/or private sector contractor	1/94	1/96	CSEF	
Prepare plans and specifications for construction and operation of the facility	DPWT and/or private sector contractor	1/95	1/96	CSEF	
Construct facility, conduct start-up and performance testing	DPWT and/or private sector contractor	1/96	6/97	CSEF	
Begin operations of MRF	DPWT and/or private sector contractor	6/97	Ongoing	CSEF	

* CSEF - County Sanitation Enterprise Fund.

11.3.4. Composting

Table 11-12. Cumulative Integrated Effect of Selected Alternatives in Composting

Alternative	Short-Term	Medium-Term
Residential Composting	2.0	2.0
Commercial Composting	0.6	0.9
Total	2.6	2.9

Table 11-13. Implementation Tasks for Programs Selected in Composting

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Undertake Feasibility Study	City/ Consultant	1st Qtr 1993	1st Qtr 1993	$10,000
Issue and Evaluate RFP	City	2nd QTR 1993	2nd QTR 1993	$10,000
Begin Residential Yard Waste Collection and Composting	Hauler	4th QTR 1993	ongoing	$563,900 *
Identify Large Commercial/Industrial Yard Waste Generators. Promote Program	Hauler/City	2nd QTR 1994	ongoing	$1,000
Begin Commercial/Industrial Yard Waste Collection .	Hauler	2nd QTR 1994	ongoing	$112,000**
Begin Composting at Regional Site (YCCL) Approx. 3rd QTR 1992	YCCL Contractor	2nd QTR 1994	ongoing	$22,000***

* $6.00 per unit per month (single family and two- through four-unit buildings)
** $150 per ton collected

*** $30 per ton collected

11.3.5 Special Waste

Table 11-14. Cumulative Integrated Effect of Special Waste Alternatives

Alternative	Short Term	Medium Term
Landfill Salvaging	3.9	3.9
Concrete and Asphalt Recycling	0.2	0.2
Bulky Item Collection Days	0	0
Total	4.1	4.1

Table 11-15. Landfill Salvaging Implementation Schedule

Task	Responsible Entity	Start Date	Completion Date	Funding Source	Estimated Cost
Prepare engineering design and specifications	County DPW	9/91	1/92	CSEF*	$25,000
Obtain required permits	County DPW	9/91	3/92	CSEF	$10,000
Construct Facility	County DPW	7/92	9/92	CSEF	$245,000
Retain Contractor for operations	County DPW	9/92	9/92	CSEF	$0
Commence operations	Contractor/ County DPW	10/92	Ongoing	CSEF	$125,000 (annual)
Monitor program effectiveness	County DPW/Recycling Coordinator	12/92	Quarterly	CSEF	20 hours annually

* CSEF - County Sanitation Enterprise Fund.

Table 11-16. Concrete and Asphalt Recycling Implementation Schedule

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Write Model Contract Amendment for Municipal Contracts	City Staff	1st Qtr 1992	1st Qtr 1992	$750
Develop Policy and/or Ordinance and Procedures	City Staff	3rd Qtr 1992	3rd Qtr 1992	$2,000
Introduce Policy and/or Ordinance	City Staff	3rd Qtr 1992	3rd Qtr 1992	$2,000
Operate Program	City Staff	3rd Qtr 1992	ongoing	$2,000

Table 11-17. Bulky Item Collection Days Implementation Schedule

Task	Responsible Entity	Start Date	Completion Date	Estimated Cost
Advertise Program	City/Hauler	1st Qtr 1996	ongoing	$5,000
Begin Collection	City/Hauler	1st Qtr 1996	ongoing	$12,000

Table 11-23. Implementation Schedule for Development of Collateral Materials

Task	Responsible Entity	Start Date	End Date	Funding Source	Estimated Cost
Develop Curbside Promotional materials	City	1st QTR 1992	1st QTR 1992	Refuse Rate	$10,000
Develop Apartment Recycling Brochure	Recycling Coordinator	1st QTR 1993	1st QTR 1993	Refuse Rate	$5,000
Disseminate Apartment Recycling Brochure	Recycling Coordinator	2nd QTR 1993	Ongoing	Refuse Rate	$5,000
Develop and Distribute General Source Reduction and Recycling Fact Sheets	Recycling Coordinator	2nd QTR 1993	Ongoing	Refuse Rate	$8,000
Continued Distribution of Materials	Recycling Coordinator	1994	Ongoing	Refuse Rate	$5,000

Table 11-24. Implementation Schedule for Development of Promotional Video

Task	Responsible Entity	Start Date	End Date	Funding Source	Cost
Research, advertise for and select appropriate groups for production	Recycling Coordinator	2nd Qtr 1993	2nd Qtr 1993	Refuse Rate	See Staff Salary
Review scripts/proposals	City Staff	3rd Qtr 1993	3rd Qtr 1993	Refuse Rate	$1,000
Begin production	Selected group(s)	4th Qtr 1993	1st Qtr 1994	Free Through U.C.D. and Public Access Cable	$0
Release Video, show video	City Staff	1st Qtr 1994	ongoing	Refuse Rate	See Staff Salary

11.4. CUMULATIVE INTEGRATED EFFECT OF ALL SELECTED PROGRAMS

Table 11-25. Cumulative Integrated Effect of Programs Selected

Program	Diversion Percentage	
	Short-Term	Medium-Term
Source Reduction	0.2	0.6
Recycling	8.7	23.5
Composting	2.6	2.9
Special Waste	4.1	4.1
Sub-Total	15.6	31.1
Existing Countable Diversion	19.8	23.9*
Total	35.4	55.0

* Includes current wood waste incineration.

CITY OF WEST SACRAMENTO

APPENDIX A - GLOSSARY

GLOSSARY

The following terms and definitions are derived from TITLE 14, PLANNING GUIDELINES AND PROCEDURES FOR PREPARING AND REVISING COUNTYWIDE INTEGRATED WASTE MANAGEMENT PLANS, Chapter 9, Article 3, Procedures for Preparing and Revising City and County Source Reduction and Recycling Elements, Section 18720, Definitions, per revisions dated February 1991.

Other terms and definitions have been added and are denoted by an asterisk preceding the term.

Agricultural Wastes
"Agricultural wastes" means solid wastes of plant and animal origin, which result from the production and processing of farm or agricultural products, including manures, orchard and vineyard prunings, and crop residues, which are removed from the site of generation for solid waste management. Agricultural refers to SIC Codes 011 through 0291.

Aluminum can or aluminum container
"Aluminum can" or "aluminum container" means any food or beverage container that is composed of at least 94 percent aluminum.

Asbestos
"Asbestos" means fibrous forms of various hydrated minerals, including chrysotile (fibrous serpentine), crocidolite (fibrous reibecktite), amosite (fibrous cummingtonite-grunerite), fibrous tremolite, fibrous actinolite, and fibrous anthophyllite.

Ash
"Ash" of "ashes" means the residue from the combustion of any solid or liquid material.

***Automated Material Recovery Facility**
"Materials recovery facility" means 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.

Bi-metal container
"Bi-metal container" means any metal container composed of at least two different types of metals, such as a steel container with an aluminum top.

Best readily available and applicable data or representative data
"Best readily available and applicable data" or "representative data" means information that is available to a jurisdiction from published sources, field sampling, the Board, or other identifiable entities which is the most current data and which addresses the situation being examined.

Buy-back recycling center
"Buy-back recycling center" means 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
"Capital costs" means 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
"Commercial solid wastes" means 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 waste refers to SIC Codes 401 through 4939, 4961, and 4971 (transportation, communications and certain utilities), 501 through 5999 (wholesale and retail trade), 601 through 6799 (finance, insurance and real estate), 701 through 8748 (public and private service industries such as hospitals and hotels), and 911 through 9721 (public administration). Commercial solid wastes do not include construction and demolition waste.

Commercial Unit
"Commercial Unit" means a site zoned for a commercial business and which generates commercial solid wastes.

Composition
"Composition" means a set of identified solid waste materials, categorized into waste categories and waste types pursuant to sections 18722(i) and (j) of Article 6.1 of this Chapter.

Composting
"Composting' means a method of waste treatment which produced a product meeting the definition of "compost" in Public Resources Code section 40116.

Composting facility
"Composting facility" means a permitted solid waste facility at which composting is conducted and which produced a product meeting the definition of "compost" in Public Resources Code section 40116.

Construction and demolition waste
"Construction and demolition waste" includes 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.

Corrugated Container
"Corrugated container" means a paperboard container fabricated from two layers of kraft linerboard sandwiched around a corrugating medium. Kraft linerboard means paperboard made from wood pulp produced by a modified sulfate pulping process, with basis weight ranging from 18 to 200 pounds, manufactured for use as facing material for corrugated or solid fiber containers. Linerboard also may mean that material which is made from reclaimed paper stock. Corrugating medium means paperboard made from chemical or semichemical wood pulps, straw or reclaimed paper stock, and folded to form permanent corrugations. Corrugated container refers to SIC Code 2653.

Cost-effective
"Cost-effective" means 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.

CCR
"CCR" means California Code of Regulations

Disposal
"Disposal" means the management of solid waste through landfilling or transformation at permitted solid waste facilities.

Disposal capacity
"Disposal capacity" means the capacity, expressed in either weight in tons or its volumetric equivalent in cubic yards, which is either currently available at a permitted solid waste landfill, or will be needed for the disposal of solid waste generated within the jurisdiction over a specified period of time.

Diversion Alternative
"Diversion alternative" means any activity, existing or occurring in the future, which has been, is, or will be implemented by a jurisdiction which could result in or promote the diversion of solid waste, through source reduction, recycling or composting, from solid waste landfills and transformation facilities.

Drop-off recycling center
"Drop-off recycling center" means a facility which 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.

Durability
"Durability" means the ability of a product to be used for its intended purpose for a period greater than the mean useful product lifespan of similar products.

End market or end use
"End market" or "end use" means 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
"Feasible" means that 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.

Ferrous metals
"Ferrous metals" means any iron or steel scrap which has an iron content sufficient for magnetic separation.

Food waste
"Food waste" means all animal and vegetable solid wastes generated by food facilities, as defined in California Health and Safety Code section 27521, or from residences, that results from the storage, preparation, cooking, or handling of food.

Hazard
"Hazard" means 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.

Household hazardous waste
"Household hazardous wastes" are those wastes resulting from products purchased by the general public for household use which, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may pose a substantial known or potential hazard to human health or the environment when improperly treated, disposed, or otherwise managed.

Household hazardous waste collection
"Household hazardous waste collection" means a program activity in which household hazardous wastes are brought to a designated collection point where the household hazardous wastes are separated for temporary storage and ultimate recycling, treatment, or disposal.

Implementation
"Implementation" means the accomplishment of the program tasks as identified in each component required by section 18733 of this Chapter.

Industrial solid waste
"Industrial solid waste" means 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.

Industrial unit
"Industrial unit" means a site zoned for an industrial business and which generates industrial solid wastes.

Inert solids or inert waste
"Inert solids" or "inert waste" means a non-liquid solid waste including, but not limited to, soil and concrete, that does not contain hazardous waste or soluble pollutants at concentrations in excess of water-quality objectives established by a regional water board pursuant to Division 7 (commencing with section 13000) of the California Water Code and does not contain significant quantities of decomposable solid waste.

***Intermediate Processing Center (IPC)**
"Intermediate Processing Centers (IPCs)" are distribution centers that receive, separate, process, and market recyclable materials. They can be operated in conjunction with drop-offs, curbside collection programs, industrial/commercial recycling ventures, and buy-back centers processing either separate or commingled recyclalbes.

Jurisdiction
"Jurisdiction" means the city or county responsible for preparing any one or all of the following: the Countywide Integrated Waste Management Plan, or the Countywide Siting Element, or the Source Reduction and Recycling Element.

Marine wastes
"Marine wastes" means solid wastes generated from marine vessels and ocean work platforms, solid wastes washed onto ocean beaches, and litter discarded on ocean beaches.

Market development
"Market development" means 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.

Materials recovery facility
"Materials recovery facility" means 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
"Medium-term planning period" means a period beginning in the year 1996 and ending in the year 2000.

MFD
"MFD" means multi-family dwelling.

Mixed paper
"Mixed paper" means a waste type which is a mixture, unsegregated by color or quality, of at least two of the following paper wastes: newspaper, corrugated cardboard, office paper, computer paper, white paper, coated paper stock, or other paper wastes.

Model component format
"Model component format" means that format described in section 18733.1 through 18733.6 of Article 6.2 of this Chapter which shall be used for preparation of several of the individual components of a SRR Element.

Municipal solid waste or MSW
"Municipal solid waste" or "MSW" means 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. Municipal solid waste does not include agricultural crop residues (SIC Codes 071 through 0724, 0751, animal manures (SIC Code 0751), mining waste and fuel extraction waste (SIC Codes 101 through 1499), forestry wastes (SIC Codes 081 through 0851, 2411 and 2421), and ash from industrial boilers, furnaces and incinerators.

Non-ferrous metals
"Non-ferrous metals" means any metal scraps that have value, and that are derived from metals other than iron and its alloys in steel, such as aluminum, copper, brass, bronze, lead, zinc and other metals, and to which a magnet will not adhere.

Non-recyclable paper
"Non-recyclable paper" means discarded paper which has no market value because of its physical or chemical or biological characteristics or properties.

Non-renewable resource
"Non-renewable resource" means a resource which cannot be replenished, such as those resources derived form fossil fuels.

Normally disposed of
"Normally disposed of" refers to those waste categories and/or waste types which: have been demonstrated by the Solid Waste Generation Study, conducted pursuant to section 18722 of this Chapter, to constitute at least 0.001 percent of the total weight of solid wastes disposed in a solid waste stream attributed to the jurisdiction as of January 1, 1990; which are deposited at permitted solid waste landfills or transformation facilities subsequent to any recycling or composting activities at those solid waste facilities; and 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).

Old newspaper
"Old newspaper" means any newsprint which is separated from other types of solid waste or collected separately from other types of solid waste and made available for reuse and which may be used as a raw material in the manufacture of a new paper product.

Operational Costs
"Operational costs" means those direct costs incurred in maintaining the ongoing operation of a program or facility. Operational costs do not include capital costs.

Organic waste
"Organic waste" means solid wastes originated from living organisms and their metabolic waste products, and from petroleum, which contain naturally produced organic compounds, and which are biologically decomposable by microbial and final action into the constituent compounds of water, carbon dioxide, and other simpler organic compounds.

Other plastics
"Other plastics' means all waste plastics except polyethylene terephthalate (PET) containers, film plastics, and high density polyethylene (HDPE) containers.

Permitted capacity
"Permitted capacity" means 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
"Permitted landfill" means 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, or which is permitted under the regulatory scheme of another state.

Permitted solid waste facility
"Permitted solid waste facility" means a solid waste facility for which there exists a Solid Waste Facilities Permit issued by the local enforcement agency and concurred in by the California Integrated Waste Management Board, or which is permitted under the regulatory scheme of another state.

Plan or Countywide Integrated Waste Management Plan
"Plan" or "Countywide Integrated Waste Management Plan" means the Countywide Integrated Waste Management Plan as defined in section 41750 of the Public Resources Code.

Program
"Program" means the full range of source reduction, recycling, composting, special waste, or household hazardous waste activities undertaken by or in the jurisdiction or relating to management of the jurisdiction's waste stream to achieve the objectives identified in the Source Reduction, Recycling, Composting, Special Waste, and Household Hazardous Waste components, respectively.

Purchase preference
"Purchase preference' means 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
"Rate structure" means 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.

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

Region
"Region" means the combined geographic area of two or more incorporated area; two or more unincorporated area; or any combination of incorporated and unincorporated ares.

***Refuse Derived Fuel (RDF)**
Refuse derived fuel is a product composed of the residual waste from a materials recovery facility. The common components of RDF are mixed and contaminated paper and plastics.

Repairability
"Repairability" means 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
"Residential solid waste" means solid waste originating from single-family or multiple family dwellings.

Residential unit
"Residential unit" means a site occupied by a building which is zoned for residential occupation and whose occupants generate residential solid wastes.

Reusability
"Reusability" means the ability of a product or package to be used more than once in its same form.

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

Rubber
"Rubber" means an amorphous polymer of isoprene derived from natural latex of certain tropical plants or from petroleum.

Salvage
"Salvage" means the controlled removal of solid waste materials at a permitted solid waste facility for recycling, reuse, composting, or transformation.

Seasonal
"Seasonal" means those periods of time during the calendar year which are identifiable by distinct cyclical patterns of local climate, demography, trade or commerce.

Sewage sludge
"Sewage sludge" means residual solids and semi-solids resulting from the treatment of waste water, but does not include waste water effluent discharged from such treatment processes.

SFD
"SFD" means single-family dwelling.

Short-term planning period
"Short-term planning period" means a period beginning in the year 1991 and ending in the 1995.

SIC Code
"SIC Code" means the standards published in the U.S. Standard Industrial Classification Manual (1987), which is herein incorporated by reference.

Sludge
"Sludge" means residual solids and semi-solids resulting from the treatment of water, waste water, and/or other liquids. Sludge includes sewage sludge and sludge derived from industrial processes, but does not include effluent discharged from such treatment processes.

Solid Waste Generation Study
"Solid Waste Generation Study" means the study undertaken by a jurisdiction to characterize its solid waste stream and comply with all the requirements of sections 18722, 18724 and 18726 of this Chapter.

Source Reduction and Recycling Element or SRR Element
"Source Reduction and Recycling Element" or "SRR Element" means the source reduction and recycling element required pursuant to Public Resources Code sections 41000 and 41300.

Source separated
"Source separated' describes the segregation, by the generator, of materials designated for separate collection for some form of materials recovery or special handling.

Special waste
"Special waste" means any hazardous waste listed in section 66740 of Title 22 of the California Code of Regulations, or any waste which has been classified as a special waste pursuant to section 66744 of Title 22 of the California Code of Regulations, or which has been granted a variance for the purpose of storage, transportation, treatment, or disposal by the Department of Health Services pursuant to section 66310 of Title 22 of the California Code of Regulations. Special waste also includes any solid waste which, because of its source of generation, physical, chemical or biological characteristics or unique disposal practices, is specifically conditioned in a solid waste facilities permit for handling and/or disposal.

Statistically representative
"Statistically representative" means 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 this Chapter. 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 or materials and solid wastes in a refuse vehicle load of solid waste.

Tin can or tin container
"Tin can" or "tin container" means any food or beverage container that is composed of steel with a tin coating.

Ton
"Ton" means 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.

TPY
"TPY" means tons per year.

Transformation facility
"Transformation facility" means 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. Transformation facility does not include a composting facility.

Volume
"Volume" means 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 categories
"Waste categories" means 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 section 18722 of Article 6.1 of this Chapter, except where a component-specific requirement provides alternative means of classification.

Waste diversion
"Waste diversion" means to divert 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 transformation facilities through source reduction, recycling or composting.

Waste generator
"Waste generator" means any person, as defined by section 40170 of the Public Resources 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.

Waste type
"Waste type" means 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 section 18722 of Article 6.1 of this Chapter, except where a component-specific requirement provides alternative means of classification.

White goods
"White goods" means discarded, enamel-coated major appliances, such as washing machines, clothes dryers, hot water heaters, stoves and refrigerators.

Wood waste
"Wood waste" means solid waste consisting of wood pieces of particles which are generated form the manufacturing or production of wood products, harvesting, processing or storage of raw wood materials, or construction and demolition activities.

Yard waste
"Yard waste" means any wastes generated from the maintenance or alteration of public, commercial or residential landscapes including, but not limited to, yard clippings, leaves, tree trimmings, prunings, brush, and weeds.

YCCL
"YCCL" means Yolo County Central Landfill.

CITY OF WEST SACRAMENTO

APPENDIX B
CIWMB - COMMENTS AND RESPONSE TO COMMENTS

GENERAL COMMENTS / RESPONSE TO COMMENTS

COMMENTS FROM CALIFORNIA INTEGRATED WASTE MANAGEMENT BOARD (RECEIVED FEBRUARY 5, 1992)

STATE

It appears that the City is planning to cooperate with the County of Yolo, other city governments, and independent contractors on a number of programs. The final SRRE and HHWE should include some documentation of any agreements entered into. Examples of documentation would include a Joint Powers Agreement, or a Memorandum of Understanding. While the Board encourages a regional approach to waste management issues when possible and appropriate, the City must note that each jurisdiction is ultimately responsible for the implementation of their own program.

CITY

Many of the programs outlined in the SRRE and HHWE will entail cooperation with Yolo County, other city governments and independent contractors. This is being accomplished through a Technical Advisory Committee (TAC) which is made up of city, county and private members. This committee reports to the County Waste Advisory Committee (WAC). There are no formal documents or agreements between jurisdictions in place at this time.

STATE

Table 1-12 within the Executive Summary indicates a current diversion level of 20.1% for the City; however, there are no documentation within the SRRE to substantiate this claim. Please clarify within the final SRRE the current cumulative diversion level, and substantiate the percent claimed within the text of the document.

CITY

Section 3.4 of the Waste Characterization Component describes the current diversion. This is substantiated further in section 5.2 of the Recycling Component, section 4.2 of the Source Reduction Component, and section 7.2 of the Special Waste Component.

STATE

The final SRRE and HHWE should respond to the concerns raised in both the general letter and the attachments. In the development of the final documents, please remember that they should provide for flexibility by including contingency plans and alternatives. In this way, a jurisdiction will be prepared for unforeseen possibilities or problems that may come up as the plan is implemented.

CITY

These concerns have been noted and are addressed in the documents.

COMMENTS ON THE WASTE GENERATION STUDY / RESPONSES TO COMMENTS

COMMENTS FROM CALIFORNIA INTEGRATED WASTE MANAGEMENT BOARD (RECEIVED FEBRUARY 5, 1992)

STATE
(Pages 3-2 and 3-3, Yolo County Central Landfill Density Study)

The last paragraph on page 3-2 and the first complete paragraph on page 3-3 reference a density study conducted by Yolo County Central Landfill. The final SWGS should reference the source for the study (i.e., author, title, publisher, place of publication, page number and year published), as required by Title 14, California Code of Regulations (14 CCR), section 18722 (f)(1).

CITY

Yolo County Central Landfill periodically performs density compaction studies. The county has provided three references which provide approximate in-place density estimates.

1) Earthco. Yolo County Central Landfill Quarterly Compaction Study. Earthco Company, January 1990.
   - This study estimates in-place density of 1,250 pounds per cubic yard.

2) Blue Ridge Services. Yolo County Central Landfill Quarterly Compaction Study. Blue Ridge Services, June 1991.
   - Estimates an in-place density of 1,230 pounds per cubic yard.

3) Yolo County Central Landfill Contract Plan and Specifications. March 1991 through March 1998.
   - Specifies an in-place density of 1,200 pounds per cubic yard. This value was used to estimate landfill volume requirements.

STATE
(Page 3-3, Waste Composition)

The second paragraph under this heading identifies the largest waste category found in the jurisdiction's waste stream as waste paper. The final SWGS should cite the study from which this waste category was determined.

CITY

In an effort to determine the number of samples to be taken for a statistically representative sampling, the percentage of waste paper expected to be found in the waste stream was estimated to be 35 percent. Waste paper includes all paper disposed. Sampling programs conducted in Culver City, Glendale, Sante Fe Springs, Santa Clara County, and other regions indicate that the percentage of waste paper in the residential waste stream varies between 30 and 40 percent. Thirty-five percent was used as a baseline to determine the number of samples necessary to achieve desired precision levels.

The number of samples selected for residential and commercial, and industrial sources was based on the degree of accuracy sought as well as the availability of samples during the sampling period.

STATE
(Page 3-3, Waste Composition)

The table found under this heading identifies several precision levels for determining waste composition and the corresponding number of samples required to be taken to achieve the levels. The final SWGS should identify which precision level was used.

CITY

The precision level used to estimate the waste composition for residential, commercial, industrial waste sources for the City of West Sacramento ranged between 3 to 5 percent.

STATE
(Page 3-3, Waste Composition)

This section should also show all calculations used to determine the number of samples to be taken.

CITY

Sample Size Calculation

The formula utilized for sample size calculations was the following:

$$n = (z*s/q)^2$$

where

n = number of samples

z = normal standard deviate for 90 percent confidence interval
s = sample standard deviation
q = transformed value of sensitivity

Example Calculation:

Assuming a mean value for mixed waste paper of 35 percent and precision levels of 3, 5, and 7 percent, the number of samples necessary for representative sampling are summarized as follows:

- Precision level of 3 percent.

  $q = [1.3284 - 1.266] = 0.0623$

  $n = (1.645*0.1632/0.0623)^2 = 18$

- Precision level of 5 percent.

  $q = [1.3694 - 1.2661] = 0.1033$

  $n = (1.645*0.1632/0.1033)^2 = 6.8$

- Precision level of 7 percent.

  $q = [1.4101 - 1.266] = 0.1440$

  $n = (1.645*0.1632/0.1440)^2 = 3.5$

STATE
(Page 3-4, Single-Family Dwellings Waste Composition)

The first paragraph identifies a total of "147 residential samples . . . obtained from single-family dwellings from the study jurisdiction." The final SWGS should identify the number of samples taken in each of the Cities and the unincorporated portion of the County. The final SWGS should also include the weight of each of the samples taken.

CITY

The number of samples taken and average weight per sample for West Sacramento are summarized below.

West Sacramento Sampling Summary

Source	Number of Samples	Sample Weight
Residential SFD	40	43.7
Residential MFD (Regional)	6	217.5
Commercial	21	377.0
Industrial	12	367.2

STATE
(Page 3-4, Single-Family Dwellings Waste Composition)

The second paragraph states: "residential samples collected from the Cities of West Sacramento, Winters, and Woodland were combined for statistical analysis . . . of household hazardous waste generated on a regional basis." This statement appears to imply that the data collected from these three cities was considered representative of the entire County and was, therefore, used to estimate HHW generated in the County. The final SWGS should include an explanation of the method used to determine that the samples taken were random and representative of the waste stream for the entire County as required by 14 CCR, section 18722(h). Please note: Household hazardous waste which is diverted from disposal cannot be counted toward meeting waste diversion goals per CCR, section 18720(a)44.

CITY

Residential data collected from the cities of West Sacramento, Winters, and Woodland were combined to arrive at an overall estimate of HHW generated on a regional basis and served to estimate the quantity of HHW generated from these cities only.

Samples obtained from these cities were selected at random. Samples were taken from low, medium, and high income areas (identified by the jurisdiction), for each day of refuse collection. Collection routes were identified and households were selected for sampling based on random number generation.

The estimate of the quantity of HHW generated from the unincorporated residential areas of the County was based on samples taken from residential waste generated in the unincorporated area.

HHW diversion in the County was not counted towards waste diversion.

STATE
(Page 3-4, Multi-Family Dwelling Waste Composition)

The first paragraph state: "A total of 6 samples, averaging 218 pounds, were obtained . . . from the Cities of Winters and Woodland. These samples were combined for statistical analysis and . . . considered as being representative for multi-family dwellings in the Cities of Winters, Woodland, West Sacramento, and the Unincorporated Area." The final SWGS should include an explanation of the method used to determine that the samples taken were random and representative of the waste stream for the entire County as required by 14 CCR, section 18722(h).

CITY

The number of samples taken was largely based on the availability of samples which were strictly MFD in origin over the duration of the sampling period.

These samples were not considered to be representative of the entire County, but representative of the cities of Winters, Woodland, and West Sacramento and the Unincorporated Area. Separate samples were obtained from the City of Davis due to the fact that recycling services are offered to MFD communities.

These samples were considered to be representative largely due to the fact that recycling services were not being offered to MFD's in the sampled jurisdictions. Vehicles selected for sampling were specifically targeted (based on communications with contract haulers) to obtain samples of waste which were MFD in origin.

Analysis of the Yolo County regional waste composition data for MFD's indicates that the waste composition is very similar to other jurisdiction data. As an example, the waste composition for Yolo County compares well with the City of Culver City MFD data. The variation of percent composition for each waste category varies by as little as 0.1 percent to a maximum of 2.8 percent. Significant differences do occur with the waste types such as newsprint (4.4 percent less in Yolo County) and grass clippings (3 percent greater in Culver City); however, this is the extent of the divergence. At this stage of the planning process, the Yolo County MFD waste composition data was considered to be adequate for planning purposes.

STATE
(Page 3-5, Commercial / Industrial / Institutional Waste Sources)

The first paragraph includes the statement: "A total of 94 samples were obtained from commercial, industrial, and institutional sources." The final SWGS should identify the number

of samples taken in each of the Cities and the unincorporated portion of the County and how these samples were determined to be both random and representative as required by 14 CCR, section 18722(h).

CITY

The number of samples taken and average sample weight from each jurisdiction and sources of generation (i.e, residential, commercial, and industrial) are summarized on each waste composition table in the Final SWGS.

Samples of residential waste were selected at random at the point of generation. Samples were taken from low, medium, and high income areas (identified by the jurisdiction), for each day of refuse collection. Collection routes were identified and households were selected for sampling based on random number generation.

Samples of waste from commercial and industrial sources were obtained from randomly selected vehicle loads at the point of disposal. Vehicle loads which were selected at random and found to contain mixed refuse from residential, commercial, or industrial sources were either discarded or sampled if representative samples of commercial or industrial waste could be obtained.

Samples were determined to be representative of commercial and industrial sources based on the types of wastes, generator addresses, or other information found in the sample which indicated the source of generation.

STATE
(Page 3-5, Self-Haul Waste Sources)

This item states: "125 self-haul vehicles were visually surveyed . . . for white goods, mixed yard waste, bulky wastes, and construction and demolition debris, with the remaining refuse characterized as miscellaneous waste." The final SWGS should explain why only these solid waste categories were used as opposed to those required pursuant to 14 CCR, section 18722(j). This apparent limitation on waste type identification may make it difficult for the jurisdiction to accurately quantify disposal and anticipated diversion quantities for each of the required waste types without study data which disaggregates to the required solid waste categories.

CITY

Visual observations of self-haul waste being disposed of indicated that the waste types identified were the predominant materials observed in the self-haul waste stream. The predominant waste types indicated were white goods, mixed yard waste, bulky waste, construction and demolition debris, and miscellaneous waste. Categorization of wastes into the waste types of "bulky waste" and "construction and demolition waste" was in error.

Miscellaneous wastes consisted of various waste types which could not be easily quantified such as residential refuse. Bulky wastes consisted of waste items such as household furniture and mattresses.

An analysis of waste types generated from construction and demolition sources in Yolo County was conducted and is included the final SWGS.

Self-haul wastes will be sampled in subsequent solid waste generation studies if it is determined that the self-haul planning data is inadequate.

STATE
(Page 3-5, Self-Haul Waste Sources)

This same item references " 'loose' volume/weight conversion factors". The final SWGS should reference the source for the conversion factors (i.e., author, title, publisher, place of publication, page number and year published), as required by CCR, section 18722(f)(1).

CITY

Source: Wilson, David Gordan. 1977. Handbook of Solid Waste Management. Van Nostrand Rienhald Company. Pages 42-43.

STATE
(Page 4-1, Waste Diversion Characterization)

The second paragraph under this heading includes the statement: "the quantity of waste diverted through source reduction, recycling, composting, and transformation was estimated through . . . recycling surveys." The final SWGS should include the following information regarding the surveys conducted to determine quantity of waste diverted from disposal:

1) Complete references for information taken from existing published data (sections 18722(l)(3) and 18724(c)).
2) Description of the sampling method used and how it was determined to be random and representative.
3) All calculations and discussions thereof explaining how the number of units to be surveyed was determined.
4) The number of people (or businesses) surveyed, the number of people (or businesses) that responded, and the survey procedure used.

CITY

"The final SWGS includes the following information regarding the surveys conducted to determine quantity of waste diverted from disposal":

1) Source: Wilson, David Gordan. 1977. Handbook of Solid Waste Management. Van Nostrand Rienhald Company. Pages 42-43.

2) Surveys were not distributed on a random basis. Companies which were identified as being "major employers" in the jurisdiction were sent a written survey to identify the quantity of waste diverted from waste disposal. Several companies which were targeted through the written survey were also telephoned to increase the level of response. Small grocery stores, tire retailers, and large tire users were also contacted by phone.

   The quantity of waste diverted through certified recycling centers was based on information provided by the Department of Conservation - Division of Recycling.

   The quantities of waste claimed for diversion were quantities of waste reported by those companies which responded to the survey.

3) No calculations were involved. Companies were chosen as described above.

4) Twenty-four companies within the City of West Sacramento were surveyed through telephone or written surveys. A total of 15 responses were obtained.

STATE
(Page 4-1, Waste Diversion Characterization)

It would also be helpful if copies of all survey forms used (with a discussion of how and for whom they were used) were included in the final SWGS.

CITY

Comment noted.

STATE
(Page 4-1, Waste Diversion Characterization)

The final SWGS should also describe and quantify all transformation which is being counted toward achievement of diversion goals. Please be aware that transformation quantities can only be applied toward the achievement of diversion goals after January 1, 1995 and said quantities

may only be applied toward meeting 10 percent of the 50 percent diversion requirements (Public Resources Code (PRC), section 41783). In addition, transformation can only be counted toward meeting the diversion requirements if the transformation project meets certain standards as specified in PRC, section 41783.

CITY

The transformation of waste generated in the City of West Sacramento is limited to wood and tire waste. Wood waste diversion is achieved through wood waste processing at the Central Landfill where wood is chipped and diverted as wood fuel to Woodland Biomass and Rockland Biomass transformation facilities. Tires are largely diverted to Oxford Energy for transformation.

The City of West Sacramento is aware of the limitations on transformation as described and specified in PRC, Section 41783.

STATE
(Page 4-1, Waste Diversion Characterization)

The final SWGS should also describe and quantify all source reduction which is being counted toward achievement of diversion goals (14 CCR, section 18734.2).

CITY

Source reduction activities counted towards waste diversion was limited to use of non-disposable diapers through the utilization of diaper services in the jurisdiction. This quantity is indicated in the SWGS and amounts to 35.8 tons per year. This estimate was based on information provided by two diaper service companies serving the region. The average weight per disposable diaper diverted was estimated to be 0.5 pounds.

STATE
(Page 5-3, Table 5-3, Waste Generation Projections)

This table does not identify the units of measure used nor does it specify whether it is intended to project disposal under current conditions or under conditions set forth by the Source Reduction and Recycling Element (SRRE). The final SWGS should resolve these two discrepancies. In addition, pursuant to 14 CCR, section 18722(c), the final SWGS should include 15 year projections of waste disposal both under current conditions and under conditions set forth by the SRRE.

CITY

Table 5-3 of the SWGS projects the total quantity of waste generated in the jurisdiction under current conditions. Units are in tons per year. Fifteen year waste projections under current conditions and under conditions set forth in the SRRE have been included in Section 3 of the SRRE.

STATE
(Page 5-3, Table 5-3, Waste Generation Projections)

Units of Measurement
The final SWGS should include the quantity of wastes disposed and/or transformed in terms of volume. The volume measurements given for solid waste disposal should be expressed in terms of in-place volume, after compaction, in the landfill (14 CCR, section 18722(f)(4)). Volume measurements need only be reported for total quantities (instead of by individual waste type) of waste disposal and/or transformed. Please be certain to reference (i.e., author, title, publisher, place of publication, page number and year published) all conversion factors used as required by 14 CCR, section 18722(f)(1).

CITY

The SWGS indicates the quantity of waste disposed in terms of volume (cubic yards) in Table 3-14; however, the materials currently diverted through transformation were not included. The volume of waste currently being disposed is estimated to be 77,363 cubic yards. The volume of waste disposed including waste transformed is estimated to be a total of 81,367 cubic yards. The conversion factor used to arrive at these estimates was 1,200 pounds per cubic yard. This conversion factor was based on Yolo County Central Landfill Contract Plans and Specifications - March 1991 through March 1998.

STATE
(Page 5-3, Table 5-3, Waste Generation Projections)

15-Year Waste Diversion Projections
The final SWGS should include 15-year projections of the quantity of wastes diverted and generated both under current conditions and under conditions set forth by the SRRE. Each projection should be listed on a year-by-year basis.

CITY

Section 3 of the SRRE has been revised to included these 15 year waste projections.

STATE
(Page 5-3, Table 5-3, Waste Generation Projections)

Seasonal Variations for Solid Waste Diversion
The final SWGS should include a discussion of the effect of seasonal waste variation on the quantity of waste diverted as required by 14 CCR, section 18722(i)(2). The discussion should also include any assumptions made about the presence or lack of seasonal impact on the quantity of wastes diverted.

CITY

Information with respect to seasonal variations of the diverted waste stream from the City of West Sacramento is not available. However, information is available as to seasonal variations for selected waste types diverted from the City of Davis during 1990 and may serve as an indicator of seasonal variability in the region. Data provided for newspaper, cardboard, and glass are summarized as follows:

Newspaper--

Peak levels of diversion for newspaper during 1990 occurred during the months of May, November, and December. Minimum diversion rates occurred during the months of February and October. Monthly diversion rates were relatively constant during the remainder of the year.

Cardboard--

Diversion rates for cardboard remained relatively constant during the period of January through May with diversion rates increasing from June through December.

Glass--

Peak diversion rates for glass occurred in May and November. Diversion rates for glass remained relatively constant throughout the year with the exception of April when the lowest diversion rate was recorded.

STATE
(Page 5-3, Table 5-3, Waste Generation Projections)

Diversion of Inert Wastes
Please recall that inert solids, scrap metals, white goods and agricultural wastes cannot be counted toward waste diversion goals unless the following conditions were met as of January 1, 1990 (Public Resources Code, section 41781):

- A waste diversion program was in place for this waste type.

- This waste type was normally disposed at a permitted solid waste disposal facility used by the City.

CITY

State conditions for allowing inert solids, scrap metals, white goods, and agricultural wastes (as stated in the SWGS comments), are the following:

- A waste diversion program was in place for this waste type; and
- This waste type was normally disposed at a permitted solid waste disposal facility.

The inclusion of inert solids for waste diversion meet both of these criteria. An active waste diversion program is currently in-place at Yolo County Central Landfill targeting inert solids for construction related purposes. The SWGS indicated that inert solids are currently generated and disposed of from the City of West Sacramento at the Yolo County Central Landfill.

STATE
(Page 5-3, Table 5-3, Waste Generation Projections)

Accuracy of Data
The final study should include a description of the procedures to be used to quantify future data on wastes disposed, transformed and diverted as required by 14 CCR, section 18722(o). This discussion should include how often and from whom reports will be expected.

CITY

Procedures used to quantify future data for waste disposed, transformed, and diverted will be through the following:

Waste Hauler Reporting--

The contract waste hauler will report the quantity of waste collected, disposed, and diverted from residential, commercial, and industrial sources. This information will be verified with Yolo County Central Landfill records.

Contractor and Non-Certified Recycling Center Reporting Requirements--

Contractors and non-certified recycling centers doing business in the City will be required submit estimates of waste disposal and diversion as a condition of business license renewal.

Certified Recycling Center Diversion--

Quantities of wastes diverted through Certified Recycling Centers will be determined through communications with the Department of Conservation.

Private Sector Recycling--

The quantity of waste diverted through private sector recycling efforts will continue to be documented through written and telephone surveys.

Yolo County Central Landfill Records--

Waste loads from non-account sources which are "overloads" will be required to weigh-in at the landfill scale house where the origin of the waste will be verified.

Solid Waste Generation Studies--

Solid Waste Generation Studies will be conducted as often as necessary as determined in the jurisdiction annual evaluation.

STATE

II. Comments on the Source Reduction Component

California Code of Regulations (CCR), section 18733.6 (c)(2) requires the identification of the specific branch if the city government which will oversee the monitoring and evaluation of the source reduction program. The final SRRE should be more specific than "the City" when identifying responsible parties.

CITY

The City Finance Department will oversee the monitoring and evaluation.

STATE

II. Comments on the Source Reduction Component

It isn't clear to Board staff if the City is claiming a current diversion level for source reduction activities. Please clarify within this component for the final SRRE if any of the 20.1% current diversion is being attributed to source reduction.

CITY

As stated in section 4.2 and Table 3-11, the current waste diversion includes source reduction of 35.8 TPY of diapers. This equates to 0.06% of the waste generated.

STATE

II. Comments on the Source Reduction Component

All other regulatory requirements have been met.

STATE

III. Comments on the Recycling Component

The Existing Conditions section on page 5-3 states that the City has no formal recycling public awareness or promotional activities, and has not formally participated in, or established, recycling opportunities. The text does indicate minimal activity via grocery store recycling of cardboard, and five California Redemption Centers, yet Table 1-12 in the Executive Summary indicates a current diversion level of 20.1%. As required by CCR, section 18733.2(a)(2), the text of this component needs to quantify the waste diverted which is attributable to recycling. Please correct this in the final SRRE.

CITY

Section 5.2 has been revised to include the currently operated diversion programs. Table 5-2 has been added to quantify the existing diversion.

STATE

III. Comments on the Recycling Component

As required by CCR, section 18733.6(c)(2) please give a more specific identification of the branch of city government which will be responsible for the monitoring and evaluation of the recycling program.

CITY

The City Finance Department will oversee the monitoring and evaluation.

STATE

IV. Comments on the Composting Component

The text of the component states that there are no formal composting or yard waste collection programs, and the existing conditions section does not quantify composting activities. Board staff is assuming that the current diversion level of 20.1% appearing in Table 1-12 of the Executive Summary is attributable entirely to the five California Beverage Container Collection Centers and the corrugated cardboard recycling being done by grocery stores within the City.

CITY

Table 3-11 shows the current diversion by component.

STATE

IV. Comments on the Composting Component

As required by CCR, section 18733.6(c)(2) please give a more specific identification of the branch of city government which will be responsible for the monitoring and evaluation of the recycling program.

CITY

The City Finance Department will oversee the monitoring and evaluation.

STATE

V. Comments on the Special Waste Component

Agricultural and or cannery wastes, asbestos, and dead animals are special wastes that cities such as West Sacramento typically generate. These wastes are not listed in the waste generation study and are not addressed in this section. Please address the disposal and/or diversion of these special wastes, if in fact, the City does generate them and inadvertently left them out.

CITY

Information on the disposal of these wastes has been added to the SRRE.

STATE

V. Comments on the Special Waste Component

Although ash, auto bodies, and autoshredder waste are identified in the waste generation study as special wastes generated in the City of West Sacramento, they are not discussed in this section. Please discuss how the City of West Sacramento disposes of, or diverts, these special wastes within this component of the final SRRE.

CITY

Information regarding the disposal of these waste has been added to the SRRE.

STATE

V. Comments on the Special Waste Component

This section incorrectly states that "tires may be disposed of at any type of landfill". Please reword this to read "tires may be disposed of at any type of **permitted** landfill".

CITY

Revision has been made.

STATE

V. Comments on the Special Waste Component

Please note that the treatment plant for sewage sludge is under the jurisdiction of the Yolo / Solano County Air Pollution Control District, not the Yolo County Air Pollution Control District.

CITY

Revision has been made.

STATE

V. Comments on the Special Waste Component

Please identify the specific landfill and the area of the landfill that the approximate 730 TPY of dry sludge is placed.

CITY

Section 7.2.1 Sewage Sludge has been revised to state that approximately 730 tons of dry sludge per year is transported to the Yolo County Landfill, and placed in the current operating Class III unit.

STATE

V. Comments on the Special Waste Component

Please be aware that the new Medical Waste Act has redefined the terminology of the regulated waste stream by the type of waste rather than by presence of disease-causing organisms. At this time medical waste includes any biohazardous waste and sharps waste. This waste must be rendered non infectious by stream sterilization or incineration prior to landfilling. At this time the waste is termed medical waste, and is considered municipal solid waste.

CITY

Revision has been made.

STATE

V. Comments on the Special Waste Component

CCR, section 18733.5(d) requires the identification of known costs, revenues, and revenue sources necessary for implementation of the selected alternatives. Please add this information to the final SRRE.

CITY

Known costs for the programs selected are shown on Tables 7-5 though 7-7 and on Table 10-4 of the Funding Component. Revenues to cover the proposed costs will come from the City Refuse Fund.

STATE

V. Comments on the Special Waste Component

As required by CCR, section 18733.6(c)(2) please give a more specific identification of the branch of city government which will be responsible for the monitoring and evaluation of the recycling program.

CITY

The City Finance Department will oversee the monitoring and evaluation.

STATE

VI. Comments on the Education and Public Information Component

CCR, section 18740(d)(4) requires the identification of program implementation costs, revenues, and revenues necessary for program implementation.

CITY

Program costs are shown on Tables 8-1 through 8-6. Revenues will be provided by the City Refuse Fund.

STATE

VI. Comments on the Education and Public Information Component

CCR, section 18740(e)(5) and (6) requires the component to identify measures to be

implemented if monitoring shows a shortfall in attaining diversion objectives, and establishing a monitoring and reporting schedule.

CITY

See section 8.7, Program Implementation Alternatives.

STATE

VII. Comments on the Disposal Facility Capacity Component

All regulatory requirements for this component have been addressed.

STATE

VIII. Comments on the Funding Component

The funding component is the section of the element that should include a recap of all program costs and revenue sources that were discussed in the individual component program sections. Section 10.1 stated that revenues will be available from the Refuse Fund, however, it does not show any revenue projection figures so a comparison of costs versus revenues can not be made.

CITY

The current refuse budget is $1,816,000.00 per year (1991-1992). This is projected to increase to $2,023,226.00 (1992-1993). The difference is $117,000.00 in residential recycling and $90,000.00 in commercial recycling. This funding will cover the programs to be implemented per this SRRE.

STATE

VIII. Comments on the Funding Component

More detail is needed in the area of contingency funding. Describe the process and/or limitations, if any, on increasing rates, special assessments, and the joint powers agreement with Yolo County and the City to pool financial resources. These options should be discussed in more detail and indicate what amounts can be obtained.

CITY

If additional revenues are needed in the future the general refuse, recycling, and yard waste collection rates will be raised to cover costs. There are no limitations on raising the rates.

STATE

IX. Comments on the Integration Component

CCR, section 18748(a) states that "The Integration Component shall explain how the Source Reduction, Recycling, Composting, and Special Waste components combine to achieve the 25% and 50% mandates". The City of West Sacramento's SRRE does not adequately address the requirements of this section. The final element will need to show an integration of all the components and explore how they combine and complement one another.

CITY

Table 11-5 shows the cumulative integrated effect of the selected programs and how they combine to achieve 41.5% diversion in the short-term and 60.2% in the medium term.

STATE

IX. Comments on the Integration Component

The implementation schedule is very comprehensive and indicates a high degree of planning and attention to detail through the short-term planning period. The final SRRE will need to include implementation of diversion programs to the year 2000.

CITY

Each of the selected programs will be implemented in the short-term planning period. Additional diversion in the medium-term will be accomplished through the development of an MRF by Yolo County and intensified operation of the implemented programs.

STATE

IX. Comments on the Integration Component

Table 11-23 indicates an existing countable diversion level of 20.1% but this figure was not discussed or substantiated within the components of the SRRE. Please include a thorough discussion of the current diversion level within the final SRRE.

CITY

Section 3.4 of the Waste Characterization Component describes the current diversion. This is substantiated further in section 5.2 of the Recycling Component, section 4.2 of the Source Reduction Component and section 7.2 of the Special Waste Component.